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High School Longitudinal Study of 2009 (HSLS:09)

Base-Year Data File Documentation

ies NATIONAL CENTER FOR EDUCATION STATISTICS
Institute of Education Sciences

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Executive Summary

Design and Purposes of HSLS:09

The High School Longitudinal Study of 2009 (HSLS:09) is the fifth in a series of National Center for Education Statistics (NCES) secondary longitudinal studies. All of the studies monitor the transition of national samples of young people from their high school experiences through their postsecondary years, including further education, participation in the work force, and the assumption of other adult roles.

The core research questions for HSLS:09 explore secondary to postsecondary transition plans and the evolution of those plans; the paths into and out of science, technology, engineering, and mathematics; and the educational and social experiences that affect these shifts.

The HSLS:09 base year took place in the 2009–10 school year, with a randomly selected sample of fall-term 9th-graders in more than 900 public and private high schools with both a 9th and an 11th grade. Students took a mathematics assessment and survey online. Students' parents, principals, and mathematics and science teachers and the school's lead counselor completed surveys on the phone or on the Web.

The first follow-up of HSLS:09 will take place in the spring of 2012 when most sample members will be in the spring of their 11th grade. Dropouts and transfer students will be followed, as well as those who remain in the base-year school. A postsecondary update will take place in the summer of 2013, to learn about the cohort's postsecondary plans and decisions. High school transcripts will be collected in the fall of 2013, and a second follow-up will take place a few years beyond high school graduation. Further information on study design and purposes can be found in chapter 1 of this document.

Instrumentation

Base-year instrument design for HSLS:09 was guided by a theoretical framework or conceptual model. The model takes the student as the fundamental unit of analysis and attempts to identify factors such as motivation, beliefs, and interests that lead to academic goal-setting and decision-making. It traces the many influences (including perceived opportunities, barriers, and costs) on students' values and expectations that factor into their most basic education-related choices. The HSLS:09 design also acknowledges the importance of social context—families, teachers, peers, and the wider community—to students' experiences.

The student questionnaire for in-school administration was, for the first time in the history of the study series, made electronic, as was the student assessment in algebraic reasoning. The contextual questionnaires as well—parent, teacher, school administrator, and counselor—were designed for web self-administration or computer-assisted telephone interview (CATI) administration by an interviewer. Computerization of the instruments was desired for its

contribution to higher quality data, because online quality editing and routing through the questionnaires would reduce error. Computerization was also of benefit to the assessment, especially in the accurate assignment of second-stage forms (a two-stage adaptive test was employed).

Student Questionnaire. The content of the student questionnaire included both future locating and substantive questions. The questionnaire elicited demographic information (e.g., sex, race/ethnicity); language background; and school experiences in the current and previous school year (including mathematics and science experiences and course enrollment). It also inquired into constructs such as mathematics self-efficacy and identification and high school, postsecondary, and career plans, among other topics.

Parent Questionnaire. The parent questionnaire included locating and substantive items. Substantive items covered household members and their roles and characteristics; demographic data; information on immigration status and language use; socioeconomic status (education, occupation, income); the student's educational history (including grade retention and change of schools); family interactions; parental involvement in the ninth-grader's learning; and plans and preparations for postsecondary education.

Teacher (Mathematics and Science) Questionnaire. Teachers were selected by virtue of teaching an HSLS:09 student in science or mathematics. The teacher questionnaire collected background information about the respondent, including both demographic characteristics and educational and teaching history. Mathematics and science teachers were asked to evaluate their mathematics or science department and provide information at the classroom level. In part because of the fall timing of the survey (exposure to the student was comparatively low), teachers were not asked to supply ratings or evaluations of individual HSLS:09 students.

School Administrator Questionnaire. The school questionnaire allowed for two respondents: the factual information sections (1–4) could be delegated to a knowledgeable staff member, but the final section was to be completed only by the principal, because its content concerned the principal's background and beliefs. The questionnaire elicited information about school characteristics; the student population; the school's teachers; course offered; and the goals, beliefs, and background of the principal.

Counselor Questionnaire. The counselor questionnaire sought information about school programs and practices, especially as they related to activities to assist the transition of students into high school, student program or course assignment, and the various facets of counseling services. The bulk of questions inquired about staffing and practices (e.g., counselor certifications and caseloads, basis for assignment to students), programs (enrichment, services for struggling students, dropout prevention programs, and so on), and mathematics and science placement (placement criteria for both ninth-graders and upperclassmen in both mathematics and science).

Mathematics Assessment in Algebraic Reasoning. The mathematics assessment was designed to provide a measure of student achievement in algebraic reasoning at two points in time (9th and 11th grade). The test framework was designed to assess a cross-section of understandings representative of the major domains of algebra and the key processes of algebra. The test and item specifications describe six domains of algebraic content and four algebraic processes:

- Algebraic Content Domains:
  - The language of algebra
  - Proportional relationships and change
  - Linear equations, inequalities, and functions
  - Nonlinear equations, inequalities, and functions
  - Systems of equations
  - Sequences and recursive relationships
- Algebraic Processes:
  - Demonstrating algebraic skills
  - Using representations of algebraic ideas
  - Performing algebraic reasoning
  - Solving algebraic problems

The assessment was built as a two-stage test, with a router (completed by all students) and a second-stage assignment of one of three forms of variable difficulty.

Sample Design

In the base-year survey of HSLS:09, students were sampled through a two-stage process. First, stratified random sampling and school recruitment resulted in the identification of 1,889 eligible schools. A total of 944 of these schools participated in the study, resulting in a 55.5 percent (weighted) or 50.0 percent unweighted response rate. In the second stage of sampling, students were randomly sampled from school ninth-grade enrollment lists, with 25,206 eligible selections (or about 27 per school).

The target population at the school level was defined as regular public schools, including public charter schools, and private schools, in the 50 United States and the District of Columbia, providing instruction in both 9th and 11th grade. The target population of students was defined to include all ninth-grade students who attended the study-eligible schools in the fall 2009 term.

All students who met the target population definition were deemed eligible for the study. However, not all students were capable of completing a questionnaire or assessment. Students

who, by virtue of language barriers or severe disabilities, were unable to participate directly in the study were retained in the sample and contextual data were sought for them. Their ability to complete the study instruments will be reassessed in the first follow-up. Of the 25,206 eligible students, 24,658 were classified as questionnaire-capable and 548 as questionnaire-incapable.

HSLS:09 school and student samples are nationally representative and also state-representative for a subset of 10 states. For most purposes, the student is the unit of analysis. Data at the school, classroom, or home level may be attached to the student record as contextual data. Several contextual respondent populations were sampled. The school's head administrator comprises one such respondent group. The lead counselor (or most knowledgeable about the entering 9th-grade class) was identified (with the help of the school), and used as a source of school-level student contextual data. Mathematics and science teachers of HSLS:09 ninth-graders enrolled in the subject were asked to complete a teacher questionnaire. The final source of contextual data was the parent. The parent was self-selected, using the criterion that the responding parent should be the one most knowledgeable about the ninth-grader's current situation.

Results of School Recruitment and Data Collection

Table ES-1 summarizes the results of school recruitment and instrument completion by each component.

Table ES-1. Summary of HSLS:09 base-year response rates: 2009

Instrument	Selected	Participated	Weighted percent	Unweighted percent
School	1,889	944	55.5	50.0
School administrator[1]	944	888	94.9	94.1
School counselor[1]	944	852	91.3	90.3
Student questionnaire[2, 3]	25,206	21,444	85.7	85.1
Student assessment[2, 3]	25,206	20,781	83.0	82.4
Parent questionnaire[2]	25,206	16,995	67.5	67.4
School administrator[2]	25,206	23,800	94.5	94.4
School counselor[2]	25,206	22,790	90.0	90.4
Teacher questionnaire				
Mathematics teacher[4]	23,621	17,882	71.9	75.7
Science teacher[5]	22,597	16,269	70.2	72.0

[1] Uses the school base weight.
[2] Uses the student base weight.
[3] Among questionnaire-capable students (n = 24,658), some 21,444 completed the student questionnaire, and 20,781 completed the mathematics assessment. Thus, 87.0 percent (unweighted) completed the student interview or 87.4 percent weighted. Likewise, 84.3 percent (unweighted) completed a mathematics assessment or 84.7 percent weighted.
[4] Uses the student base weight. Results reflect students who were enrolled in a mathematics course.
[5] Uses the student base weight. Results reflect students who were enrolled in a science course.
NOTE: All percentages are based on the row under consideration.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Overall, about half of eligible selected schools participated, for a realized sample of 944 schools. More than 21,000 students participated, or about 86 percent (weighted) of eligible selected fall ninth-graders.

Of the students participating, approximately 98 percent were surveyed in in-school sessions, and 2 percent outside school. In-school sessions were 90 minutes in length, with 15 minutes for instructions and setup, 35 minutes for the student questionnaire, and 40 minutes for the two-part, 40-question adaptive algebraic reasoning assessment.

Parent and school staff surveys (administrator, counselor, mathematics teacher, science teacher) were designed for computerized administration in either of two modes—web-based self-administration, or CATI (computerized interviewer-administration).

Weighting

Analytic weights are used in combination with software that accounts for HSLS:09 complex survey design to produce estimates for the target population, with appropriate standard errors. Five sets of analytic weights were computed for HSLS:09: a school-level weight, a student-level weight, two student-level weights associated with contextual data from science and mathematics courses, and a student-level weight for use with parent-supplied family and home contextual data.

The school-level weight can be used for school-level analyses involving the school administrator and counselor questionnaires. The student-level weight is used with student-level analyses. Because of the comparatively low unit response rates for parents and teachers, three special student weights—adjusted for parent, mathematics teacher, and science teacher nonresponse, respectively—were also produced. These weights presuppose that parents and teachers provide contextual data for participating students, and that the student is the unit of analysis.

Variance estimation is provided through two means: BRR (Balanced Repeated Replication) provided on both public- and restricted-use files and a Taylor series linearization (available on the restricted-use file). The BRR approach to calculating HSLS:09 standard errors is recommended, although both methods give similar results.

School Nonresponse Bias Analysis

Nonresponse bias analyses were conducted to determine whether unit nonresponse from any of the five interview data sources (school, student, parent/guardian, mathematics teacher, and science teacher) significantly increased the estimated bias for a set of population estimates. Weighted response rates for mathematics and science teachers as well as parents of the sampled students fell below 85 percent and thus, per NCES standards, were subjected to the bias analysis procedures. The remaining sources were also included for a complete evaluation of HSLS:09.

Characteristics associated with the school (e.g., school type, percent minority) and with the sampled student (e.g., race/ethnicity, sex) were used in the bias tests.

Findings were compared before and after the base weights were adjusted for nonresponse. For example, among the 60 tests conducted, 18.3 percent were identified as having a significant level of bias before the weights were adjusted. This amount falls to almost zero once the weights were adjusted. The proportion of significant bias tests was largest for the school analytic weights (20 percent); however, the median absolute relative bias was reduced by more than 6 percentage points.

Overall the unit nonresponse bias showed minimal levels of bias for estimates generated with the student weights, the home-life weights, and the mathematics enrollee weight. Non-negligible biases were linked to the school and science enrollee weights and were primarily a result of some domains with relatively small sample sizes.

Imputation

Imputation of values for missing items is also an important feature of the HSLS:09 data set. Despite the best efforts of data collectors, some questionnaire items remain unanswered. Completeness of some key student variables in HSLS:09 was also adversely affected by unit nonresponse at the parent level (e.g., family income, parental educational attainment, and occupation, all critical components of the socioeconomic status index), or, more rarely, the failure of questionnaire completers to complete an assessment.

Imputation addresses the problem of missing items. Advantages of using imputed values include the ability to use all study respondent records in an analysis (complete-case analysis), which affords more power for statistical tests. Additionally, if the imputation procedure is effective (i.e., the imputed value is equal to [or close to] the true value) then the analysis results are likely less biased than those produced with the incomplete data file.

HSLS:09 variables in general did not suffer from high levels of item nonresponse. Nevertheless, a set of key analytic variables was identified for item imputation to facilitate complete-case analysis on data obtained from the participating ninth-grade students. Values were assigned in place of missing responses for 18 variables identified from the student and parent questionnaires through single-value imputation. Missing student ability estimates in mathematics (*theta*), the associated standard error of measurement (*sem*) for the *theta*, and SES values derived from parent responses were replaced with five values using a multiple imputation procedure. Regardless of the method, indicator variables (flags) were created to allow users to easily identify the imputed values.

Disclosure Risk Analysis and Protections

The disclosure treatment methods used to produce the HSLS:09 base-year data files include variable recoding, suppressing, and swapping. Some variables that had values with

extremely low frequencies were recoded to ensure that the recoded values occurred with a reasonable frequency. Other variables were recoded from continuous to categorical values. Thus, rare events or characteristics have been masked for certain variables.

Other variables were classified as high risk and were suppressed from the public-use file. The suppressing techniques included removing the response from the file (i.e., reset to a "suppressed" reserve code) or removing records entirely from the public-use file (e.g., student nonrespondents).

Foreword

This manual has been produced to familiarize data users with the design, and the procedures followed for data collection and processing, of the base year of the High School Longitudinal Study of 2009 (HSLS:09). It also provides the necessary documentation for use of the public-use data files, and information that will be helpful to analysts in accessing and understanding the restricted-use files.

Chapter 1 serves as an introduction to HSLS:09. It includes an overview and history of the National Center for Education Statistics (NCES) program of longitudinal high school cohort studies, summarizes the HSLS:09 objectives, and supplies an overview of the base-year and longitudinal study design.

Chapter 2 describes the base-year data collection instruments, including both the development and content of the student, parent, science and mathematics teacher, counselor, and school administrator questionnaires. Chapter 2 also provides information on the development of the direct algebra assessment and the scoring procedures and psychometric characteristics.

The sample design used in the base year is documented in chapter 3. Data collection methods and results—including schedules, training, procedures, and response rates—are presented in chapter 4.

Chapter 5 describes data preparation and processing, including the receipt control system, coding operations, machine editing, and data file preparation. Additionally, chapter 5 provides information on the data preparation, scaling, and psychometric characteristics of some of the scales used in the student, teacher, school administrator, and school counselor surveys.

Chapter 6 describes weighting, variance estimation, and unit nonresponse bias estimation, while chapter 7 examines item-level statistical issues such as item nonresponse bias, imputation, and disclosure risk analysis. Chapter 8 describes the contents of the data files, including the data structure and linkages to other databases.

The appendixes include, among other topics, a hardcopy codebook of the base-year Electronic Codebook (ECB) variables; a list of the ECB variables in the order of their appearance; a hardcopy version of the electronic base-year questionnaires, including flow charts and item wording; supplementary documentation for sample selection, imputed variables, bias analysis, and design effects; documentation of composite (derived) variables; and a glossary of terms.

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Chapter 1. Introduction

1.1 Overview of the Data File Documentation

This manual provides guidance and documentation for users of data from the base year of the High School Longitudinal Study of 2009 (HSLS:09). HSLS:09 is sponsored by the National Center for Education Statistics (NCES) of the Institute of Education Sciences, U.S. Department of Education, with additional support from the National Science Foundation. The base-year study was conducted through a contract to RTI International,[1] a university-affiliated, nonprofit research organization in North Carolina, in collaboration with its subcontractors, the American Institutes for Research, Horizon Research, Windwalker, Research Support Services, and MPR Associates. This manual contains information about the purposes of the study, the survey instruments, the assessment, the sample design, and the data collection and data processing procedures. The manual provides guidance for understanding and using all components of the base-year study—student questionnaire and mathematics assessment data; questionnaire data from parents; and questionnaire data from mathematics and science teachers, school administrators, and counselors.

The HSLS:09 base-year dataset has been produced in both public-use and restricted-use versions. The publicly released data files reflect alteration or suppression of some of the original data. Such edits were imposed to minimize the risk of disclosing the identity of responding schools and the individuals within them. Although the main focus of this documentation is the public-use files, it contains much information relevant to the restricted-use data as well.

HSLS:09 base-year data have been made available for public users in two formats—via the eDAT (a web-based application on the NCES server) and through an electronic codebook (ECB) designed to be run in a Microsoft Windows environment on the user's PC. In addition to the public-use ECB (NCES 2011-334), a restricted-use ECB (NCES 2011-333) is available to licensed users.

Chapter 1 addresses three main topics. First, it supplies an overview of the NCES education longitudinal studies program, thus situating HSLS:09 in the context of the earlier NCES high school cohorts studied in the 1970s, 1980s, 1990s, and 2000s. Second, it introduces HSLS:09 by delineating its principal objectives. Third, it provides an overview of the base-year study design. In subsequent chapters, these additional topics are addressed: instrumentation (chapter 2), sample design (chapter 3), data collection methods and results (chapter 4), data preparation and processing (chapter 5), weighting and estimation (chapter 6), item nonresponse and imputation (chapter 7), and data file structure and contents (chapter 8). Appendixes provide

[1] RTI International is a trade name of Research Triangle Institute.

additional information, including a hardcopy version of the questionnaires, technical detail concerning sample selection, codebooks for school- and student-level data, and a glossary of terms.

1.2 Historical Background

1.2.1 NCES Secondary Longitudinal Studies Program

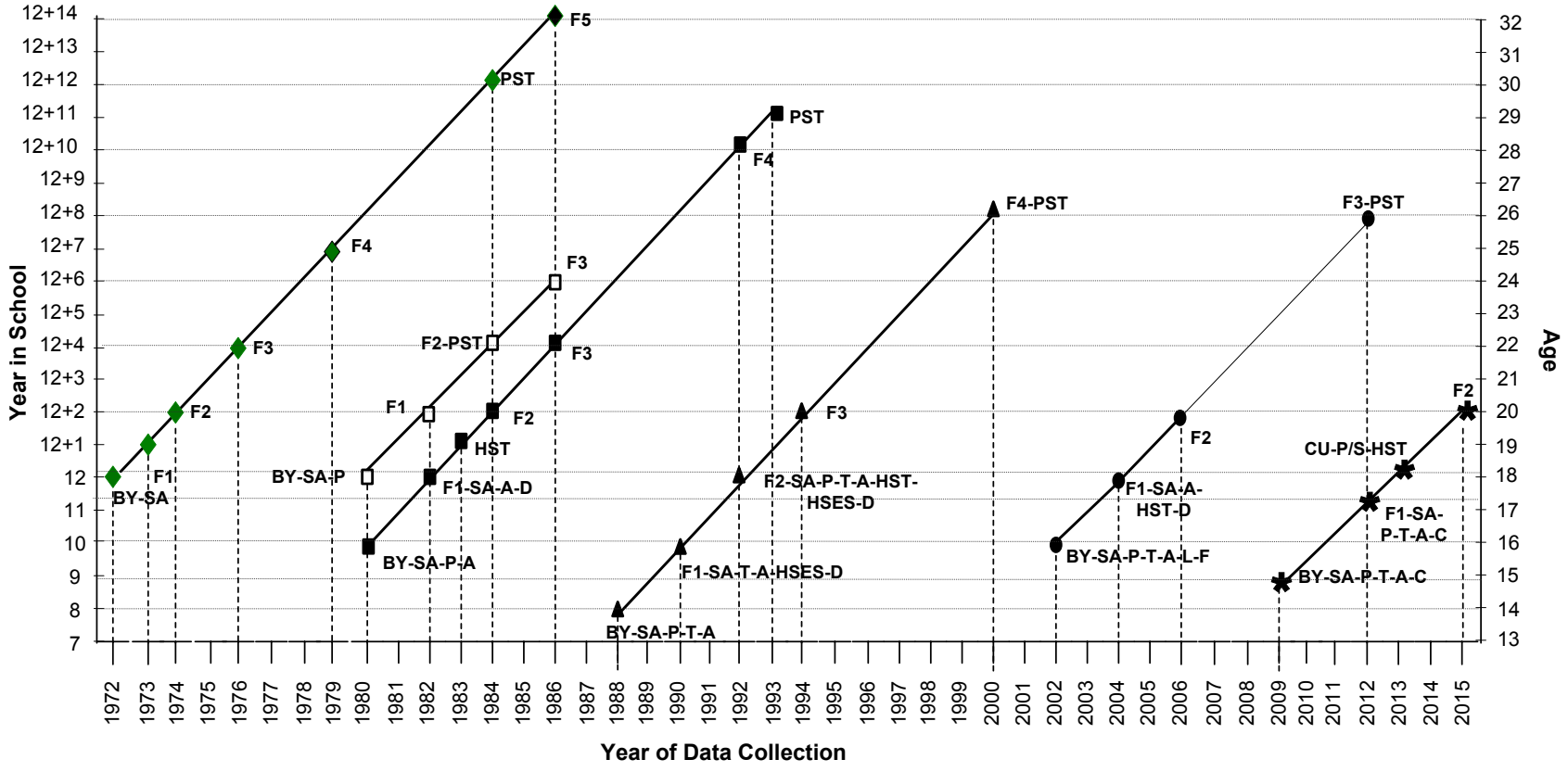
In response to its mandate to "collect and disseminate statistics and other data related to education in the United States" and the need for policy-relevant, nationally representative longitudinal samples of secondary school students, NCES instituted the Secondary Longitudinal Studies Program. The aim of this continuing program is to study the educational, vocational, and personal development of students at various stages in their educational careers, and the personal, familial, social, institutional, and cultural factors that may affect that development.

NCES (and HSLS:09) are authorized by section 406(b) of the General Education Provision Act (20 U.S.C. 1221e) as amended by the Education Sciences Reform Act of 2002. The Education Sciences Reform Act of 2002 replaced the former Office of Educational Research and Improvement with the Institute of Education Sciences, in which NCES is now housed.

The Secondary Longitudinal Studies program consists of three completed studies: the National Longitudinal Study of the High School Class of 1972 (NLS:72), the High School and Beyond (HS&B) longitudinal study of 1980, and the National Education Longitudinal Study of 1988 (NELS:88). In addition, base-year and first and second follow-up data for the Education Longitudinal Study of 2002 (ELS:2002)—the fourth longitudinal study in the series—are now available, and the ELS:2002 third follow-up will take place in the summer of 2012. Taken together, these studies describe (or will describe) the educational experiences of students from four decades—the 1970s, 1980s, 1990s, and 2000s—and also provide bases for further understanding the correlates of educational success in the United States. These studies are now joined by a fifth longitudinal study—HSLS:09.

Figure 1 includes a temporal presentation of these five longitudinal education studies and highlights their component and comparison points for the time frame 1972–2015. (If HSLS:09 follows the precedent of NELS:88, the terminal interview will take place at around age 26 in the spring or summer of 2021, with postsecondary transcripts collected in the fall of 2021.)

Figure 1. Longitudinal design for the NCES high school cohorts: 1972–2015



NLS:72=National Longitudinal Study of the High School Class of 1972
HS&B=High School and Beyond: 1980
NELS:88=National Education Longitudinal Study of 1988
ELS:2002=Education Longitudinal Study of 2002
HSLS:09=High School Longitudinal Study of 2009

BY=Base year data collection
F1=1st follow-up data collection
F2=2nd follow-up data collection
F3=3rd follow-up data collection
F4=4th follow-up data collection
F5=5th follow-up data collection

P=Parent survey
T=Teacher survey
A=Administrator survey
L=Library/media center survey
F=Facilities checklist
CU=College update
HST=High school transcript
SA=Student assessment

PST=Postsecondary transcript
C=Counselor questionnaire
P/S=Parent or student
HSES=HS effectiveness study
D=Dropout survey

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

1.2.2 National Longitudinal Study of the High School Class of 1972

The Secondary Longitudinal Studies program began about 40 years ago with the implementation of startup activities for NLS:72.[2] NLS:72 was designed to provide longitudinal data for educational policymakers and researchers to link educational experiences in high school with important downstream outcomes such as labor market experiences and postsecondary education enrollment and attainment. With a national probability sample of 19,001 high school seniors from 1,061 public and religious and other private schools, the NLS:72 sample was representative of approximately 3 million high school seniors enrolled in 17,000 U.S. high schools during the spring of the 1971–72 school year. Each member of this cohort was asked to complete a student questionnaire and a cognitive test battery. In addition, administrators at the sample members' schools were asked to supply information about the schools' programs, resources, and grading systems, as well as survey data on each student. No parent survey was conducted. However, postsecondary education transcripts were collected in 1984 from the institutions attended by sample members. Five follow-up surveys were completed with this student cohort, with the final data collection taking place in 1986, when the sample members were 14 years removed from high school and approximately 32 years old.

A wide variety of data were collected in the NLS:72 surveys. For example, in addition to background information about the student and his or her family, the base-year and follow-up surveys collected data on each respondent's educational activities (e.g., schools attended, grades received, and degree of satisfaction with educational institutions). Participants were also asked about their work experiences, periods of unemployment, job satisfaction, military service, marital status, and children. Attitudinal information on self-concept, goals, community involvement, and personal evaluations of educational activities were also included in the study.

1.2.3 High School and Beyond

The second in the series of NCES secondary longitudinal studies was launched in 1980. HS&B included one cohort of high school seniors comparable to the NLS:72 sample; however, the study also extended the age span and analytical range of NCES longitudinal studies by surveying a sample of high school sophomores. Base-year data collection took place in the spring term of the 1979–80 academic year with a two-stage probability sample. More than 1,000 schools served as the first-stage units, and 58,000 students within those schools were the second-stage units. Both cohorts of HS&B participants were resurveyed in 1982, 1984, and 1986; the sophomore group also was surveyed in 1992.[3] In addition, to better understand the school and home contexts for the sample members, data were collected from teachers (a teacher comment form in the base year asked for teacher perceptions of HS&B sample members), principals, and a

[2] For reports on the NLS:72 project, see Riccobono et al. (1981) and Tourangeau et al. (1987).
[3] For a summation of the HS&B sophomore cohort study, see Zahs et al. (1995). For more information on HS&B in the high school years, with a focus on the sophomore cohort, see Jones et al. (1983). For further information on HS&B, see the NCES website: http://nces.ed.gov/surveys/hsb/.

subsample of parents. High school transcripts were collected for a subsample of sophomore cohort members. As in NLS:72, postsecondary transcripts were collected for both HS&B cohorts; however, the sophomore cohort transcripts cover a much longer time span (to 1993).

With the study design expanded to include a sophomore cohort, HS&B provided critical data on the relationships between early high school experiences and students' subsequent educational experiences in high school. For the first time, national data were available that showed students' academic growth over time and how family, community, school, and classroom factors promoted or inhibited student learning. Researchers were able to use data from the extensive battery of achievement tests within the longitudinal study to assess growth in knowledge and cognitive skills over time. Moreover, data were then available to analyze the school experiences of students who later dropped out of high school, and eventually, to investigate their later educational and occupational outcomes. These data became a rich resource for policymakers and researchers over the next decade and provided an empirical base to inform the debates of the educational reform movement that began in the early 1980s.

1.2.4 National Education Longitudinal Study of 1988

Much as NLS:72 captured a high school cohort of the 1970s and HS&B captured high school cohorts of the 1980s, NELS:88 was designed to study high school students of the 1990s—but with a baseline measure of their achievement and status, prior to their entry into high school. NELS:88 is an integrated system of data that tracked students from junior high or middle school through secondary and postsecondary education, labor market experiences, and marriage and family formation.

Data collection for NELS:88 was initiated with the eighth-grade class of 1988 in the spring term of the 1987–88 school year. Along with a student survey, NELS:88 included surveys of parents (base year and second follow-up), teachers (base year, first and second follow-ups), and school administrators (base year, first and second follow-ups). The cohort was also surveyed twice after their scheduled high school graduation, in 1994 and 2000.[4] High school transcripts were collected in the autumn of 1992 and postsecondary transcripts in the autumn of 2000. Through a process of sample freshening, NELS:88 offers three nationally representative cohorts of students: spring-term 8th-, 10th-, and 12th-graders.

[4] The entire compass of NELS:88, from its baseline through its final follow-up in 2000, is described in Curtin et al. (2002). Outcomes for the 1988 eighth-grade cohort in 2000 are reported in Ingels et al. (2002). Documentation of the NELS:88 assessment battery is found in Rock and Pollack (1995). The quality of NELS:88 data in the in-school rounds is examined in McLaughlin and Cohen (1997). The sample design is documented in Spencer et al. (1990). Eligibility and exclusion issues are addressed in Ingels (1996). NCES keeps an updated version of the NELS:88 bibliography on its website. The bibliography encompasses both project documentation and research articles, monographs, dissertations, and paper presentations employing NELS:88 data (see http://nces.ed.gov/surveys/nels88/Bibliography.asp).

1.2.5 Education Longitudinal Study of 2002

ELS:2002 was designed to monitor the transition of a national sample of young people as they progress from 10th grade through high school and—as its predecessor studies—on to postsecondary education or the world of work.

ELS:2002 gathers information at multiple levels. In the base year (2002), it obtained information not only from students, but also from students' parents, teachers, and the administrators (principal and library media center director) of their schools. In the first follow-up (2004), the sample was freshened to represent the senior cohort of 2004 as well as the sophomore cohort of 2002, and high school transcripts were collected as were student questionnaires and tests and school administrator data.

In the second follow-up (2006), when most sample members had been out of high school for 2 years, computer-assisted student questionnaires were administered via the Web or telephone or in person, and data linkages and merges were added to the database, including Scholastic Assessment Test and ACT scores, General Educational Development scores, data from the Central Processing System, information from the Free Application for Federal Student Aid, and information from the National Student Loan Data System, including both federal loan and Pell grant information. A contract has been awarded for collection of third follow-up data in 2012.[5]

1.3 High School Longitudinal Study of 2009

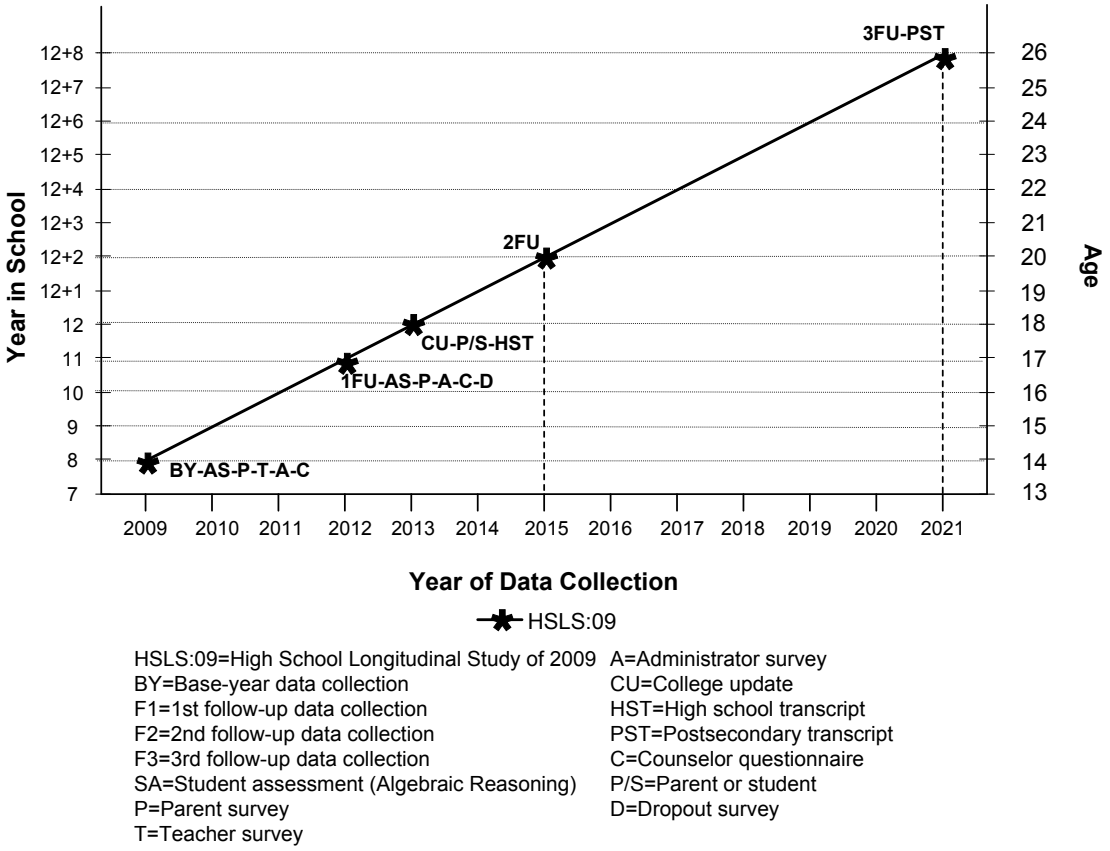
1.3.1 Overview of the HSLS:09 Design and Objectives

The longitudinal design of HSLS:09 is set out in figure 2. The HSLS:09 base year took place in the fall term of the 2009–10 school year, with a randomly selected sample of fall-term 9th-graders in more than 900 public and private high schools with both a 9th and an 11th grade.[6] Students took a mathematics assessment and survey online. Students' parents, principals, and mathematics and science teachers as well as the school's lead counselor completed surveys on the phone or on the Web.[7]

The first follow-up of HSLS:09 will take place in the spring of 2012 when most sample members will be in the spring of the 11th grade. A postsecondary update (or College Update) will take place in the summer of 2013, to find out about the cohort's postsecondary plans and decisions. High school transcripts will be collected in the fall of 2013, and a second follow-up will take place in 2015, when most sample members will be 2 years beyond high school graduation.

[5] ELS:2002 is documented in Ingels et al. (2007) (http://nces.ed.gov/pubsearch/pubsinfo.asp?/pubid=2008347). A bibliography is maintained on the NCES ELS:2002 website (http://nces.ed.gov/surveys/els2002/bibliography.asp).
[6] Types of schools that were excluded from the sample based on the HSLS:09 eligibility definition are described as part of the discussion of the target population (see chapter 3, section 3.2.1).
[7] However, an abbreviated paper-and-pencil questionnaire was used in some (779) parent interviews.

Figure 2. Longitudinal design for the HSLS:09 ninth-grade cohort: 2009–21



SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

The core research questions for HSLS:09 explore secondary to postsecondary transition plans and the evolution of those plans; the paths into and out of science, technology, engineering, and mathematics; and the educational and social experiences that affect these shifts. (More will be said about research objectives in section 1.3.2 below.)

HSLS:09 has both deep affinities and important differences with the prior studies, both of which will be highlighted in the discussion of study design below. Distinctive and innovative features of HSLS:09 include the following:

- use of a computer-administered assessment and student questionnaire in a school setting;
- an assessment that focuses on algebraic reasoning;
- use of computerized (web/computer-assisted telephone interview) parent, teacher, administrator, and counselor questionnaires;

- inclusion of a counselor survey to document school course and program assignment policies and procedures;
- starting point in the fall of ninth grade, the traditional beginning of high school;
- enhanced emphasis on the dynamics of educational and occupational decision-making;
- enhanced emphasis on science, technology, engineering, and mathematics (STEM) trajectories;
- follow-up in spring of 11th grade, including follow-up mathematics assessment;
- concern with general trends in youth transition, not grade-based specific comparisons with prior spring cohorts of eighth-graders, sophomores, and seniors; and
- linkage to selected state administrative data systems and augmentation of selected state public school samples to render them state-representative.

At the same time, there are also major points of continuity with all or several of the past studies:

- commitment to collecting high school (grades 9–12) transcripts as in HS&B, NELS, and ELS;
- a nationally representative school sample with an oversample of private schools and student numbers that are sufficient for subgroup reporting by major race/ethnicity categories, including Asians;
- commitment to following the cohort beyond high school;
- commitment to identifying and following high school dropouts;
- contextual samples of parents as in HS&B, NELS, and ELS;
- contextual samples of teachers as in HS&B, NELS, and ELS;
- a school administrator survey as in HS&B, NELS, and ELS;
- an ability-adaptive assessment battery as in NELS and ELS; and
- production of a general purpose dataset that will support a broad range of descriptive and interpretive reporting.

1.3.2 HSLS:09 Research and Policy Issues

HSLS:09 provides a link to its predecessor longitudinal studies, which address many of the same issues of transition from high school to postsecondary education and the labor force. At the same time, HSLS:09 brings a new and special emphasis to the study of youth transition by exploring the path that leads students to pursue and persist in courses and careers in the fields of science, technology, engineering, and mathematics.

HSLS:09 measures mathematics achievement gains in the first 3 years of high school, but also will relate tested achievement to students' choice, access, and persistence—both in

mathematics and science courses in high school, and thereafter in the science, technology, engineering, and mathematics pipelines in postsecondary education and in STEM careers. Indeed, the HSLS:09 mathematics assessment serves not just as an outcome measure, but also as a predictor of readiness to proceed into STEM courses and careers.

Additionally, HSLS:09 focuses on students' decision-making processes. Generally, the study questions students on when, why, and how they make decisions about high school courses and postsecondary options, including what factors, from parental input to considerations of financial aid for postsecondary education, enter into these decisions. Questionnaires focus on factors that motivate students for STEM coursetaking and careers.

The transition into adulthood is of special interest to federal policy and programs. Adolescence is a time of psychological and physical changes. Attitudes, aspirations, and expectations are sensitive to the stimuli that adolescents experience, and environments influence the process of choosing among opportunities. Parents, educators, and policymakers all share the need to understand the effects that the presence or absence of good educational guidance from the school, in combination with that from the home, can have on the educational, occupational, and social success of youth.

These patterns of transition cover individual and institutional characteristics. At the individual level the study will look into educational attainment and personal development. In response to policy and scientific issues, data will also be provided on the demographic and background correlates of educational outcomes. At the institutional level, HSLS:09 focuses on school effectiveness issues, including promotion, retention, and curriculum content, structure, and sequencing, especially as these affect students' choice of, and assignment to, different mathematics and science courses and achievement in these two subject areas.

By collecting extensive information from students, parents, teachers, school counselors, school administrators, and school records, it will be possible to investigate the relationship between home and school factors and academic achievement, interests, and social development at this critical juncture. The school environment is captured primarily through student, teacher, and administrator reports. The extent to which schools are expected to provide special services to selected groups of students to compensate for limitations and poor performance (including special services to assist those lagging in their understanding of mathematics and science) can be examined. Base-year teachers reported on sampled students' specific classroom environment and supplied information about their own background and training. Moreover, in the base-year and first follow-up parent surveys, the study provides a basis for examining policy issues related to parents' role in the educational success of their children, including parents' educational attainment expectations for their children, attitudes toward curricular and postsecondary educational choices, and the correlates of active parental involvement in their children's educational experiences; these are among the many questions HSLS:09 can address about the home education support system and its interaction with the student and the school.

Additionally, because the survey focuses on 9th-graders, it will permit the identification and study of high school dropouts and underwrite trend comparisons with dropouts identified and surveyed in HS&B, NELS:88, and ELS:2002—but especially NELS:88, because both HSLS:09 and NELS:88 allow "early" dropouts (prior to spring of 10th grade) to be identified and studied as well as "late" dropouts in the last 2 years of high school.

In sum, through its core and supplemental components and over the next decade, HSLS:09 data will allow researchers, educators, and policymakers to examine motivation, achievement, and persistence in STEM coursetaking and careers. More generally, HSLS:09 data drive analyses of changes in young people's lives and students' connections with communities, schools, teachers, families, parents, and friends along a number of dimensions, including the following:

- academic (especially in mathematics), social, and interpersonal growth;
- transitions from high school to postsecondary education, and from school to work;
- students' choices about, access to, and persistence in mathematics and science courses, majors, and STEM careers;
- the characteristics of high schools and postsecondary institutions and their impact on student outcomes;
- baccalaureate and sub-baccalaureate attainment;
- family formation, including marriage and family development, and how prior experiences in and out of school relate to these decisions, and how marital and parental status affect educational choice, persistence, and attainment; and
- the contexts of education, including how minority and at-risk status is associated with education and labor market outcomes.

1.3.3 HSLS:09 Analysis Files and Systems

HSLS:09 base-year data are available in two distinct applications: a restricted-use (NCES 2011-333) and a public-use (NCES 2011-334) electronic codebook housed on a DVD; and an online Education Data Application Tool for public use data. Details of file structure and contents across these applications are supplied in chapter 8.

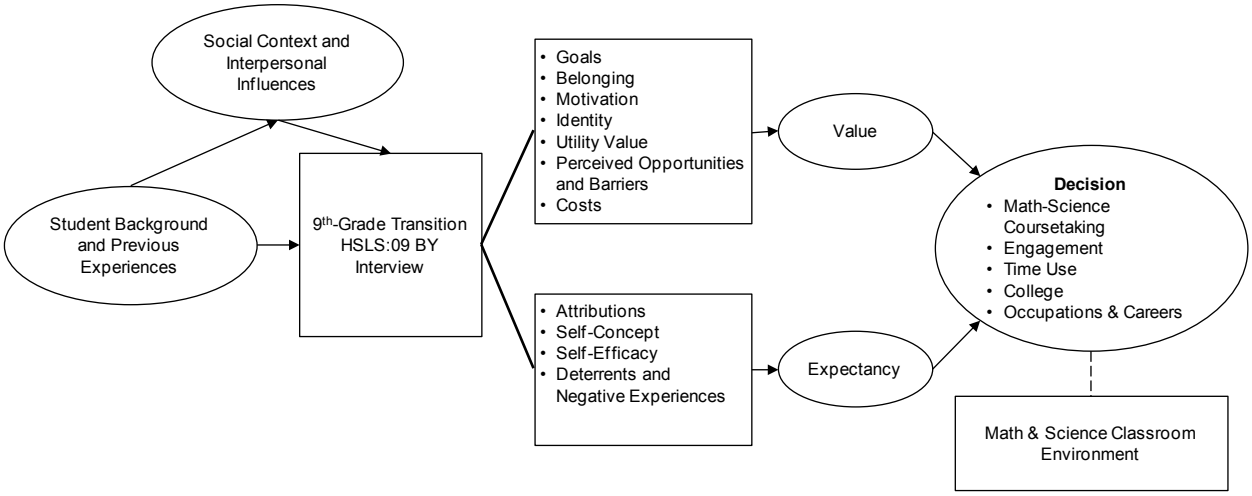
Chapter 2.
Base-Year Instrumentation

2.1 Introduction

2.1.1 Instrument Development Process and Procedures

Instrument design for the High School Longitudinal Study of 2009 (HSLS:09) was guided by a theoretical framework or conceptual model. This model (figure 3) takes the student as the fundamental unit of analysis and attempts to identify factors that lead to academic goal-setting and decision-making. It traces the many influences (including motivation, interests, perceived opportunities, barriers, and costs) on students' values and expectations that factor into their most basic education-related choices. The study design also reflects the interaction between students and their families, teachers, peers, and community.

Figure 3. HSLS:09 base-year student survey conceptual map



SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

The theoretical framework or conceptual model served as the starting point for identifying constructs to be measured. From this framework, broad research domains were identified as relevant, and from each domain, key constructs were drawn. Items that could best measure the constructs were subsequently sought and selected. For example, "student background/ demographic characteristics" constitutes a research domain. Nested within it is the construct of English-language status, which in turn is tapped by specific items (e.g., items asking about whether a language other than English is spoken in the home). It should be noted that many of the constructs are subject-specific (mathematics or science)—for example, mathematics

(and science) identity, mathematics (and science) utility, mathematics (and science) self-efficacy—and employ multiple items (to support reliable measurement).

Guided by the framework, the development and review process for each questionnaire consisted of the following steps:

1. *Literature review*. The research literature was consulted to help to flesh out the framework by developing it at the level of specific constructs, and where possible, items or clusters of items that were intended to measure the construct. Past questionnaires from the National Center for Education Statistics (NCES) Secondary Longitudinal Studies study series were one source of items. However, many of HSLS:09's themes were new to the study series. Indeed, considerable emphasis was placed on representing the recent relevant research literature at its broadest and deepest. Although some preference was given to items that had been used successfully on large national youth populations, and whose measurement properties were therefore well known, items used only on a small scale were also considered for the field test, as well as items written by the instrument development team to fill gaps in the available literature. In addition to field testing, new items were subject to cognitive interviews.
2. *Consultation*. The NCES project officer consulted with various federal government offices and interest groups concerning data needs.
3. Circulating drafts of work in progress. Draft elements of the field test (and later, full-scale) questionnaires—usually specific items, listed under and intended to measure a broader construct—were shared between the contractor teams for the separate questionnaires, and NCES and Education Statistical Services Institute (ESSI) staff, who took an active role in the development process.
4. *Technical review panel (TRP) review*. The HSLS:09 TRP, a specially appointed, independent group of substantive, methodological, and technical experts, reviewed questionnaire content at each of its three meetings held under the base-year contract. The TRP met in November 2007 to review plans for the field test, including preliminary statements of questionnaire themes and constructs. The second meeting was held in January 2008, and drafts of the field test instruments were reviewed. The third meeting was held in January 2009, to review field test results and make recommendations for the main study questionnaires.[8]
5. *Writing of justifications for Office of Management and Budget (OMB) review*. For both the field test instruments, and later the main study instruments, a justification was written for the questionnaire items, noting issue areas, constructs to be measured within each, and the wording and response categories for the items that would be used to measure each construct. These draft questionnaires with justifications were submitted to the federal OMB for review and approval and subject to an ample public comment period. The questionnaires were revised based on OMB comments, and any questions from the public were addressed by the NCES project officer.

[8] Minutes of the TRP meetings can be found in appendix D of the HSLS:09 base-year Field Test Report (Ingels et al. 2010).

6. *Field testing and revision*. As noted above, the final step was revision of the instruments for the main study based on results from the field test, cognitive interviews, and OMB feedback. However, considerable hands-on testing of the programming logic for the questionnaires (and the computerized assessment) constituted the final step in developing a survey-ready instrument, after content approval from OMB.

Specific items for the base-year mathematics assessment were reviewed by a mathematics advisory panel of mathematicians and mathematics educators (see section 2.3.1.1). Assessment items are not reviewed by OMB, nor were specific assessment items reviewed by the TRP. However, the larger assessment framework and goals and the assessment results (as seen in overall item statistics from the field test) were an integral element of the TRP deliberations.

The field testing of procedures, questionnaires, and assessments was an especially important step in the development of the full-scale surveys. Field test instruments were evaluated in a number of ways. For the questionnaires, field test analyses included evaluation of item nonresponse, examination of test-retest reliabilities, calculation of scale reliabilities, and examination of correlations between theoretically related measures. For the achievement test in mathematics, item parameters were estimated for both 9th and 11th grade in the base-year field test. Both classical and Item Response Theory (IRT) techniques were employed to determine the most appropriate items for inclusion in the final (base-year main study) forms of the two stages of the test. Psychometric analyses included various measures of item difficulty and discrimination, investigation of reliability and factor structure, and analysis of differential item functioning. The base-year field test report is available from NCES (Ingels et al. 2010).

2.1.2 HSLS:09 Instrument Development Goals

The primary research objectives of HSLS:09 are longitudinal in nature; therefore, the first priority for the study questionnaires was to select the items that would prove most useful in predicting outcomes as measured in future survey waves. The study of the transition through high school and out of high school to postsecondary education, the labor force, and, by degrees, adult status, is the major goal of all NCES high school longitudinal studies. To this goal HSLS:09 has added its special emphasis, on student choice behaviors, observed over time and studied in their school context, and on the science, technology, engineering, and mathematics (STEM) pipeline and its outcomes, both in educational and occupational terms. The innovation of starting the study at the very beginning of high school, fall of 9th grade, is another noteworthy element of the HSLS:09 design that differentiates it from preceding studies and that requires some differences of content.

However, instrument development goals of the study are reflected in technical innovations as well. Since the National Longitudinal Study of the High School Class of 1972 (NLS:72) in 1972, the entire suite of NCES secondary longitudinal studies has used paper-and-pencil methods for in-school data collection. It was a major goal of HSLS:09 that the student questionnaire and assessment—and the parent, teacher, administrator, and counselor surveys—

should be computerized (a minor exception was a highly abbreviated paper version of the parent questionnaire, administered for nonresponse conversion). The advantages of an electronic questionnaire and assessment are readily stated.

The advantage for the mathematics assessment is that computerization of the first stage of the two-stage adaptive test allows for a more sophisticated routing that draws on IRT to base second-stage assignment of form on the total pattern of first-stage responses. Computerization also eliminates the possibility of test administrator error in scoring the first-stage test. The advantage for the student questionnaire is that an electronic instrument facilitates complex routing, and provides for online consistency checking. This is a profound break with the past, and will be even more important in the first follow-up, when, already, students are setting out on different paths that can be captured only with a more complex branching than would be feasible for a paper questionnaire. The instrument also prompts the respondent to correct errors and omissions, and supplies help text where needed. Electronic instruments accommodate variation in sequencing of questionnaire modules; this feature can be exploited to dilute and redistribute end-of-instrument nonresponse of the poorest readers. Finally, electronic instruments largely replace paper documents with their attendant security risks.

2.2 Base-Year Questionnaires

Content of the base-year questionnaires is summarized below. Hardcopy specifications of the electronic questionnaires appear as appendix A. Simplified hardcopy versions (lacking routing logic) can be viewed on the NCES HSLS:09 website (http://nces.ed.gov/surveys/hsls09/questionnaires.asp).

2.2.1 Student

The student questionnaire was primarily self-administered using a computer during in-school sessions. If a student was unable to participate during the in-school sessions, a telephone interview was conducted using the same survey instrument with only the addition of interviewer instructions.

The student interview began and ended with questions that collected names, addresses, and phone numbers of people who would know how to locate the student for future rounds of the study. *Section A* collected this information for parents while *Section I* collected this information for a relative and a close friend.

The first substantive section of the student interview, *Section B*, asked for the 9th-grader's demographic information including sex, race/ethnicity, and birth date. Students were also asked to indicate their native language; those who learned a foreign language first were asked how frequently they currently speak that language with their mother and friends.

The next section, *Section C*, collected information on the 9th-grader's recent school experiences. Students were asked to indicate the school they attended in the previous school year

(2008–09) and their grade level at that time. The 9th-graders also reported their involvement in various mathematics and science activities since the beginning of the previous school year. Finally, the students identified the mathematics and science courses they took in the 8th grade and the final grade they earned in each.

Section D gathered data on self-efficacy in mathematics and identification as a mathematics person. In addition, a series of questions was posed about the mathematics course the 9th-grader was taking in the fall of 2009 and the teacher of that course. The name of the teacher that the school linked to the student was preloaded into the questionnaire. The student could either confirm that the teacher listed was his or her teacher or type in the name of another mathematics teacher if the name provided was incorrect. *Section E* repeated all of the same questions as *Section D*, but pertained to science instead of mathematics.

Section F included questions on attitudes about school, mathematics, and science. Other questions focused on whom the student talks to about education, career plans, and personal problems; friends' attitudes about school and related behaviors; and programs in which the student had participated such as Upward Bound or MESA (Mathematics, Engineering, Science Achievement). Students were also asked to compare and evaluate males' and females' ability in mathematics, science, and English and language arts. This question was repeated on the parent and teacher questionnaires.

Section G focused on high school, career, and college plans. Specifically, students were asked about their intentions to take further mathematics and science courses, if they had a career or college plan and who helped them create it, and their plans to take standardized college placement exams. In conclusion, they were asked how sure they were that they would graduate from high school.

The final substantive section, *Section H*, collected data on educational expectations, plans for the year after high school, college plans, estimates of the cost of college, and the student's expected occupation at age 30.

Students were randomly assigned to one of two groups which determined the order in which these sections were administered. Half of the students completed the sections in alphabetical order from *Section A* to *Section I*. The other half were administered sections in the following order: A, B, C, E, D, H, G, F, I. *Sections F* and *H* were swapped to balance item nonresponse for students who were unable to complete the entire questionnaire in the full-length in-school session. Similarly, *Sections D* and *E* were reordered to ensure that when the in-school session was shortened roughly the same number of students would be administered the questions in each section.

2.2.2 Parent

Data collection staff asked that the parent or guardian most familiar with the 9th-grader's school situation and experience complete the parent questionnaire. Guided by this definition of

the preferred respondent, the parent identified either him- or herself as the survey respondent or another individual. In rare instances, a guardian such as a grandparent responded.

Parents had the option of self-administering the questionnaire via the web or completing a telephone interview. Some 60.5 percent of parent interviews were administered by interviewers on the telephone. When development of the English version was complete, the questions, response options, prompts for critical items, messages that warned of inconsistent or invalid responses, help text, and navigation buttons were translated into Spanish. Bilingual interviewers were trained to administer the Spanish version of the questionnaire over the telephone. They were able to toggle between the English and Spanish versions as needed.

There were seven sections of the parent interview. *Section A* collected information about the residents of the 9th-grader's household including the presence of parents or guardians in the household, their relationship to the 9th-grader, and their marital status. The total number of adult residents and minor residents were also collected. The parent was also asked how much of the time the 9th-grader lived in their household and with whom and when he or she lived elsewhere. Finally, questions pertaining to siblings included the number of older siblings and whether any siblings had attended the 9th-grader's high school within the last 5 years.

Sections B and *C* collected data on the parents or guardians in the household. Typically the respondent was a parent or a partner of a parent. In these cases, the first series of questions (P1 series) pertains to the respondent and the second series of questions (P2 series) pertains to the respondent's resident spouse or partner, if applicable. In a small number of instances, the respondent was a guardian such as a grandparent or other adult relative. These respondents were asked if one or both of the 9th-grader's parents (i.e., biological, adoptive, step- or foster parents) lived in the household. If neither parent lived in the household, the first series of questions referred to the respondent and the second series referred to his or her resident spouse or partner, if applicable. If one parent lived in the household, the first series of questions applied to the respondent and the second series applied to the resident parent (in this case, the respondent is P1 and the resident parent is P2). If both parents were living in the household, the first series of questions pertained to the first parent identified by the respondent and the second series pertained to the second parent. In this last very rare scenario, no data about the respondent's education or occupation were collected, and the actual respondent would not be labeled as P1 or P2.

Section B collected data on race and ethnicity, immigration status, and language use. Race/ethnicity and immigration status were collected for both parents if there were two parents in the household. Parents were asked for the country in which the student was born, when he or she came to the United States if born elsewhere, and in what grade he or she was placed upon arrival. In addition, we learned whether the student had ever been or was currently enrolled in a program for English language learners.

The next section, *Section C*, gathered information on the socioeconomic status of the 9th-grader's parents. Each parent's educational attainment, employment status, and current or most recent occupation was collected. Household income and home ownership were also ascertained.

Section D focused on the student's educational history including skipping or repeating grades, changing schools, dropout episodes, and suspensions and expulsions. In addition, data were collected on disabilities, special education services, enrollment in honors courses, and the frequency of contact from the school about problematic behavior, attendance, or performance.

Section E measured parents' involvement in the 9th-grader's education and learning. Questions pertained to school selection, participation in school meetings and events, and helping with homework. In addition, parents were asked about activities the 9th-grader had engaged in outside of school and with a family member. Parents were also asked to compare and evaluate males' and females' ability in mathematics, science, and English and language arts.

Questions in *Section F* pertained to the 9th-grader's plans and preparations for postsecondary education. Parents were asked how far in school they hoped their 9th-grader would go, how far they anticipated they would actually go, and if they had spoken with someone knowledgeable about the requirement for admission to a postsecondary institution. If postsecondary education was a goal, parents were asked further questions such as what type of postsecondary institution the 9th-grader was most likely to attend first, when this education would begin, how much they estimated a postsecondary education would cost, whether they planned to help pay for this education, and how they have prepared financially.

The final section of the interview, *Section G*, collected contact information for parents, relatives, and friends who can locate the 9th-grader in subsequent rounds of the study.

There were two abbreviated versions of the parent questionnaire. The primary abbreviated instrument, a modified version of the web/computer-assisted telephone interview (CATI) instrument, included a subset of the critical items from each section of the full-length interview. A secondary two-page paper instrument was used for the most reluctant or difficult-to-reach parents. This brief questionnaire asked how the respondent and another parent/guardian were related to the 9th-grader, data which help construct the family structure composite variable. It also collected data on parents' education level, occupation, and income for constructing the socioeconomic status measure. See chapter 4 for further detail on parent data collection.

2.2.3 Teacher

All teachers who had an HSLS:09 student in his or her mathematics or science course were eligible for the teacher questionnaire. The school identified the teachers and courses in which an HSLS:09 student was enrolled. At the beginning of the questionnaire, teachers were presented with this list and asked to confirm each of the courses as one that they taught. The teacher would later be asked to report on each of the confirmed courses. If the teacher indicated that none of the listed courses were ones which he or she taught, he or she was routed to a screen

which collected up to five course titles (a limit of five courses was set to avoid overburdening respondents).

After this introduction, the teacher questionnaire had four sections. *Section A* collected background information on the respondent, including demographic characteristics, educational history, certification, and teaching history. This section was completed by both mathematics and science teachers. The abbreviated teacher interview concluded at the end of *Section A*.

Section B was administered to mathematics teachers only. It asked respondents to evaluate mathematics teachers and the mathematics department in their school. It also asked these teachers how mathematics teaching assignments are made. A series of questions was asked about each course the teacher confirmed at the beginning of the interview. First, the teacher was asked to classify the course using a prescribed set of course titles (e.g., algebra I, geometry). Then the teacher assessed the achievement level and preparedness of students in the course and reported on the use of small groups in class and his or her emphasis on various course objectives. *Section C* included all of the aforementioned questions in *Section B*, but were asked of science teachers and pertained to science education in their school.

The final section of the teacher questionnaire, *Section D*, was administered to both mathematics and science teachers. It covered a range of topics including evaluations of the school's principal and the school's faculty. Other questions pertained to the prevalence of various problems at the school and limitations on their teaching. Respondents' beliefs about the influence of a student's home environment on their ability to be effective teachers were measured as were their beliefs about how males' and females' mathematics and science abilities compare.

It should be remembered that the teacher data supply contextual information for students, who in turn constitute the unit of analysis. The teacher sample is not representative of teachers in the school. The design of this component does not provide a standalone analysis sample of teachers, but instead permits specific teacher characteristics and practices to be related directly to the learning context and educational outcomes of sampled students.

2.2.4 School Administrator

The school administrator questionnaire consisted of five sections. The first four asked factual questions about the school; it could be completed by the principal or another knowledgeable individual on the school's staff. The school administrator was the only appropriate respondent for the final section, however, because it asked background and subjective questions. Different login credentials were issued to school administrators and their designees such that school administrators were able to access the entire questionnaire, while designees were able to access only the first four parts. In an effort to reduce the burden of reporting detailed statistics, respondents were instructed that informed estimates were acceptable.

Section A collected data on a range of topics. Information on the school's characteristics includes grade span, control (public or private), type (e.g., charter, magnet, single sex, religious), academic calendar, and course scheduling. This section also gathered information on average daily attendance, policy on informing parents of student absences, and transferring students to alternative schools. Another series of questions focused on schools identified as in need of improvement based on Adequate Yearly Progress requirements of No Child Left Behind. *Section A* concluded with questions about efforts the school had made to increase students' interest in mathematics and science and to help struggling students.

Section B gathered information on the student body, including their racial makeup, the percentage of 9th-grade students who were repeating 9th grade, the percentage of the 2008–09 9th-grade class that returned to the school for the 2009–10 academic year, and the pursuits of the 2009 senior class. This section also determined the student enrollment expressed as a percentage of capacity (e.g., 110 percent filled) and the percentage of the student body enrolled in various programs such as a dropout prevention program or Advanced Placement courses.

Section C collected information on the school's faculty, with particular emphasis on mathematics and science teachers. Respondents reported the number of full- and part-time teachers in mathematics, science, and all other subjects. The number of mathematics and science teachers certified by the state to teach in their respective subject areas was also collected. In addition, there was a series of questions about vacancies in the mathematics and science departments and efforts to fill them. The percentage of teachers absent on an average day was also collected.

Section D collected data on the mathematics and science curriculum. Requested information included the mathematics and science courses offered on- and off-site, whether completion of particular mathematics or sciences courses is required to graduate, whether these required courses are the same as or more advanced than state requirements, and whether students are placed in different algebra I courses based on ability.

The final section, *Section E*, included questions about the school administrator's background and his or her evaluation of the school's problems. Requested information included the administrator's demographic characteristics, educational and occupational history including years of experience as a school administrator and teacher, and certification. The school administrator was also asked to report the number of work hours spent each week on various tasks and activities. Finally, the school administrator was asked to evaluate the school's challenges.

The abbreviated version of the web/CATI instrument included all of the critical items in the full-length instrument. These questions were only drawn from the first three sections of the interview so a designee could complete the abbreviated instrument.

2.2.5 Counselor

The counselor questionnaire had four sections. *Section A* collected the total number of full- and part-time counselors on staff, the number certified as high school counselors, and the average caseload per counselor. Other questions in the first section ascertained the way in which counselors are assigned to students, the goals emphasized by the counseling program, and how the respondent allocates his or her work hours to delivering various services. Additional areas of inquiry were how counselors and the school as a whole assisted 8th-grade students' transition into 9th grade and the school's use of career and education plans.

Section B focused on programs and services offered to students. Some of these questions pertained to enrichment courses, assistance for struggling students, dropout prevention programs, encouragement of the pursuit of mathematics and science education and employment, and assistance with the transition from high school to college or the workforce. Other topics included the use of mathematics competency tests and options for failing students.

Section C collected data on criteria used to place 9th-graders and upperclassmen in mathematics and science courses. *Section D,* the final section, collected background information on the school counselor including how he or she entered the counseling profession, how many years he or she had served as a counselor, and his or her educational history. Respondents were also asked for their evaluation of the school's principal, teachers, and counselors.

Data users are reminded that the head counselor at each school was asked to complete the questionnaire, reporting on the counseling services, program placement, and transitioning practices of their schools. Consequently, the respondents do not constitute a standalone nationally representative sample of high school counselors (or 9th-grade counselors). For this reason, the counselor-specific information in Section D should be viewed as methodological information about the HSLS:09 counselor sample, and not as the source of estimates of the characteristics of the population; that is, the data elicited by these questions cannot be generalized to the nation's high school counselors. Nor are the counselors necessarily the current counselors of the 9th-graders in the HSLS:09 base-year sample (some of the counselors deal with entirely different grades).

2.2.6 Rules for Defining Completed Interviews

A completed case was defined as a respondent having reached a certain place in the questionnaire. However, it should be noted that because of the nature of the web survey, respondents had the ability to answer or skip any item. The completeness of data therefore varies across respondents. For this reason, in addition to requiring that a certain place in the questionnaire should be reached, it was also stipulated that a certain critical mass of questions (for all questionnaires, generally at least 15 items[9]) should be answered. The point reached

[9] In rare instances where information of key analytical value was provided, this criterion was relaxed.

necessary for inclusion on the data file reflected a dual requirement—evidence of respondent seriousness in responding to the survey, and data of substantive value.

Student. The student interview comprised nine sections, two of which (A and I) do not appear on the data files:

A—Future locating information concerning parents

B—Basic demographic information (age, sex, race/ethnicity, etc.)

C—Recent school experiences

D—Mathematics self-efficacy and other social cognitive scales, teacher link

E—Science self-efficacy and other social cognitive scales, teacher link

F—Attitudes about school, mathematics, and science

G—High school, college, and career plans

H—Plans for the year after high school, perceptions of college costs

I—Future locating information concerning relative or close friend

A student survey was counted as complete if the end of *Section C* was reached and a critical mass of questions (normally 15) was answered. However, rare cases that showed irrational patterns of response (akin to pattern marking on the assessment) were not counted as complete.

Parent. The parent interview consisted of seven sections:

A—Family

B—Family's origin and language use

C—Family education and occupation

D—Previous educational experiences

E—Parent's involvement

F—9th-grader's future

G—Locating

The abbreviated instrument included selected items from all sections.

Parents who did not complete the full interview were nevertheless deemed respondents if they reached all questions through immigration status in *Section B* (P1USYR2). However, cases were also counted as respondents (that is, as complete) if any valid interpretable socioeconomic status data (e.g., family income, parental educational attainment, or parental occupation) were provided (this occurred particularly in the parent pencil-and-paper interview).

Teacher. The teacher survey consisted of four sections:

A—Background

B—Mathematics department and instruction (mathematics teachers only)

C—Science department and instruction (science teachers only)

D—Beliefs about teaching and school

The abbreviated interview comprised *Section A* only. Teachers who did not finish the questionnaire but provided educational histories with the exception of coursework in *Section A* and had data for at least 15 items were deemed respondents.

Administrator. The school administrator survey consisted of five sections:

A—School characteristics

B—Student population

C—School's teachers

D—Courses offered

E—Goals and background

The abbreviated instrument included selected items from *Sections A, B,* and *C*.

Respondents to the full-length or abbreviated interview who reached questions through A1REPEATG9, the last question in *Section B* of the abbreviated instrument and who answered at least 15 questions were deemed respondents.

Counselor. There was no abbreviated instrument for counselors. The counselor survey consisted of four sections:

A—Staffing and practices

B—Programs

C—Mathematics and science placement

D—Opinions and background

Counselors who finished *Section A* (that is, reached the last item) with responses for at least 15 items but did not complete the entire interview were deemed respondents.

2.3 HSLS:09 Mathematics Assessment of Algebraic Reasoning

This section describes the development and format of the HSLS:09 mathematics assessment of algebraic reasoning, the scoring procedures, and the types of scores used, along with summary statistics. The purpose of the HSLS:09 assessment battery is to provide a measure at two time points of student achievement in algebra for a cohort of grade 9 students—during the first part of their 9th-grade year (fall term of the 2009–10 school year) and again in spring 2012 when most of the cohort will be in the second semester of their 11th-grade year.

2.3.1.1 Mathematics Advisory Panel

The initial draft of the algebraic reasoning framework and each of the proposed field-test items were developed by staff at the American Institutes of Research with support of and review by John Dossey, emeritus professor of mathematics at Illinois State University, who served as a project consultant. A Mathematics Advisory Panel reviewed, refined, and validated the framework and reviewed and approved each proposed item. The panel comprised the following individuals:

- Hyman Bass, Professor of Mathematics, University of Michigan
- Katherine Halvorsen, Professor of Mathematics and Statistics, Smith College
- Joan Leitzel, President Emeritus, University of New Hampshire, and Professor of Mathematics (retired), Ohio State University
- Mark Saul, Mathematics Teacher (retired), Bronxville High School, New York
- Ann Shannon, Mathematics Education Consultant, Oakland, California

2.3.1.2 Algebraic Reasoning Framework

The item development process began with the development of a set of test and item specifications that described the importance of algebra and defined the domain of algebraic reasoning for the Mathematics Assessment of HSLS:09. This task entailed designing an assessment of student understanding, and growth in understanding, of key algebraic knowledge and skills in algebra as a measure of mathematical preparation for the study of science, preparation for further study within the mathematical sciences and statistics, and preparation for the requisite skills and expectations of the workplace. Accordingly, the framework was designed to assess a cross-section of understandings representative of the major domains of algebra and the key processes of algebra.

The test and item specifications describe six domains of algebraic content and four algebraic processes:

- Algebraic Content Domains:
  - The language of algebra
  - Proportional relationships and change
  - Linear equations, inequalities, and functions
  - Nonlinear equations, inequalities, and functions
  - Systems of equations
  - Sequences and recursive relationships
- Algebraic Processes:

- Demonstrating algebraic skills
- Using representations of algebraic ideas
- Performing algebraic reasoning
- Solving algebraic problems

Each item was coded to one of the Algebraic Content Domains and one of the Algebraic Processes.

2.3.1.3 Two-Stage Computer-Delivered Implementation

The HSLS:09 mathematics assessment was administered by computer, using a two-stage design wherein each student completed a Stage 1 "router test" and then a Stage 2 test designated as "low," "moderate," or "high" that was assigned on the basis of Stage 1 performance. Table 1 shows this design:

- Each student took a common 15-item Stage 1 router test that consisted of 4 grade 9 items and 11 grades 9 and 11 items (current plans are to use some or all of these 11 items on the first follow-up grade 11 router).
- On the basis of Stage 1 performance, each student was routed to a low, moderate, or high Stage 2 test, each consisting of 25 items drawn from the grade 9 and the grades 9 and 11 pools.
- Students were only aware that they were taking a 40-item test.
- For linking purposes, 12 items were common to both the high and moderate Stage 2 tests and 5 items were common to both the low and moderate Stage 2 tests (in addition, the 12 items common to both the high and moderate Stage 2 tests are expected to be used on the grade 11 test).

Table 1. HSLS:09 Mathematics Assessment grade-9 main study design: 2009

Items at stage 1			Items at stage 2			Items per student		
Unique	Across grades	Stage 2 level	Unique	Across grades	Across stages	Total	Stage 1	Stage 2
4	11							
		High	13	12	0	40	15	25
		Moderate	8	12	5	40	15	25
		Low	20	0	5	40	15	25

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

The computer-delivered design included an online scientific calculator and allowed students to skip and return to items within each stage and to identify items for review within each stage before submitting their answers as finished.

The 73 unique items comprising the Stage-1 router and Stage-2 test forms were selected from the field-test pool of 264 unique items, some designed for only grade 9 students, some for grades 9 and 11 students, and some for only grade 11 students. The selection of items was based on the following criteria:

- The entire pool of 73 items needed to represent a balance across the six content domains and the four algebraic processes.
- The average difficulty of the 15 items allocated to the Stage 1 router test and to each set of 25 items on the Stage 2 tests was preset as follows on the basis of the difficulty parameter of the IRT model (i.e., b-parameter) obtained using the field-test data:
  - Stage 1, router average difficulty = 0.6
  - Stage 2, low test average difficulty < –0.4
  - Stage 2, moderate test average difficulty = 0.6
  - Stage 2, high test average difficulty > 1.6

Additionally, students were assigned to the three Stage 2 tests on the basis of their Stage 1 router performance so that, based on indications from field-test results, approximately 25 percent of students would be routed to the high form, 50 percent to the moderate form, and 25 percent to the low form.

One item on the Stage 2 high test was eliminated from the analysis on the basis of very weak item statistics,[10] leaving a pool of 72 items for scoring and analysis.

2.3.1.4 Allocation of Second-Stage Forms

A total of 20,781 students had complete assessment data. Table 2 shows the breakdown by form, and supplies number of students, and weighted and unweighted percent of students.[11]

[10] Some 73 items were employed in the main study assessment, but one item was subsequently dropped, leaving a pool of 72 unique items. The dropped item (Q240) had poor item-total correlation (adjusted biserial correlation = 0.07) and the examination of the IRT item fit graphs showed that it did not fit the IRT model used in this study.

[11] Throughout this document, weighted and unweighted estimates are reported. The unweighted estimates pertain to the sample and the weighted estimates to the specified target population. Weighted estimates reflect the fact that students (and schools) have different selection probabilities, hence their weights vary. For example, groups that were over-sampled relative to their proportion in the population (e.g., Asians, private school students) will generally have smaller weights (i.e., generalize to fewer members of the population).

Table 2. Number and percentage of HSLS:09 Mathematics Assessment test-takers by form: 2009

Category	Number	Percent	
		Unweighted	Weighted
Total	20,781	100.0	100.0
Second-stage form[1]			
Low	4,356	21.0	24.3
Moderate	10,070	48.6	48.8
High	6,283	30.3	26.9

[1] Seventy-two students did not reach Stage 2 and were not included in the total for percentages.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

2.3.2 Scoring Procedures

The assessment data were examined for possible indicators of lack of motivation to answer questions to the best of the student's ability. Examples of possible indicators are missing responses and pattern marking (e.g., all answers were "A" or "ABCDABCDABCD…"). As a result, of the 20,956 students who took the assessment, 175 (< 1 percent) test records were discarded from the analysis sample for the following reasons:

- A total of 108 records were deleted for attempting (i.e., selecting one of the four response options) fewer than six items.
- A total of 67 records was deleted for pattern marking (64 cases for selecting the same answer options to more than 10 consecutive items, 2 cases for having the repeating "ABCDABCDABCD…" pattern throughout Stage 2 test and most of the router test, and 1 case owing to other response pattern marking).

Classical item analyses were then conducted to provide information on item performance. The classical item statistics including p+ value, adjusted item-test biserial correlations, omit rate, distractor statistics, and Differential Item Functioning (DIF) statistics were computed and reviewed. One item was flagged for potential DIF but no bias was found after further expert review of the item wording and content. The p+ value for each of the items is presented in appendix B.

The scores used to describe students' performance on the mathematics assessment are based on IRT[12] (Hambleton and Swaminathan 1985). The IRT model uses patterns of correct, incorrect, and omitted responses to obtain ability estimates that are comparable across the low-, moderate-, and high-difficulty test forms. One of the assumptions under an IRT model is unidimensionality of the test items. To verify that the items met that assumption, confirmatory

[12] Readers are reminded that technical terms are defined in a Glossary (appendix C).

factor analysis (CFA) was conducted based on each test form.[13] The model fit indices obtained from the CFA analyses suggested that the items were unidimensional within each form.

Specifically, the IRT three-parameter logistic (3PL) model was used to calibrate the test items and estimate a student's ability. The 3PL model is a mathematical model for estimating the probability that a person will respond correctly to an item. This probability is given as a function of one parameter characterizing the proficiency of a given student and three parameters characterizing the properties of a given item—the item's difficulty, discriminating ability, and a guessing factor. The IRT model accounts for the three characteristics of each test question in estimating a student's ability. The item parameters for each of the items are presented in appendix B. BILOG-MG (Zimowski et al. 2003) was used in carrying out item calibration and student ability estimation. During item calibration, separate ability priors based on performance on the router test were used for each of the three sub-populations taking the different second-stage tests (i.e., low-, moderate- and high-forms). The Bayesian estimation procedure was applied in estimating student proficiency.

IRT scoring has several advantages over traditional raw number-right scoring. First, IRT uses the overall response pattern of right and wrong answers to estimate ability and therefore can account for the guessing factor—a low-ability student guessing several difficult items correctly. Specifically, if answers on several easy items are wrong, a correct difficult item is assumed, in effect, to have been guessed. Second, unlike in raw number-right scoring, where omitted (skipped) responses are treated as incorrect answers, IRT procedures treat the omitted responses as not administered and use the pattern of responses to estimate the probability of correct responses for all test questions. Therefore, omitted items are less likely to cause distortion of scores as long as enough items have been answered right and wrong to establish a consistent pattern. Finally, IRT scoring makes it possible to compare scores obtained from test forms of different difficulty, such as HSLS:09. The common items present in the routing test and in overlapping Stage 2 forms allow test scores to be placed on the same scale. Looking ahead to the plans for the HSLS:09 first follow-up survey, IRT procedures will be used to estimate longitudinal gains in achievement over time by using common items present in both the grade 9 and grade 11 forms.

2.3.3 Score Descriptions and Summary Statistics

Several different types of scores are used in HSLS:09 to describe students' performance on algebra, all derived from the IRT model. Specifically, the IRT model uses information obtained from all students' response patterns of right and wrong answers as well as characteristics of the assessment items to compute a student ability estimate, theta. This theta

[13] It would be ideal to conduct the CFA based on the pool of all 72 items. However, because of the test design of this study, many item pairs had no common observations and therefore their covariance could not be computed. The resultant large number of missing covariances would lead to unreliable results if the CFA were based on the pool of all 72 items. Therefore, the CFA was conducted based on the data for each of the following three 40-item tests: Router + Low second-stage form; Router + Moderate second-stage form; and Router + High second-stage form.

(ability) estimate is the basis for all other types of scores derived thereafter. On the data file, users will find the following scores:

- Theta and the standard error of measurement of theta
- Estimated number-right scores
- Standardized scores (T-scores)
- Quintile scores
- Proficiency probability scores

Details of the scores are described below. The choice of the most appropriate score for analysis purposes should be driven by the context in which it is to be used.

2.3.3.1 Theta (Ability) Estimate and Standard Error of Measurement of Theta

Theta scores estimate ability in a particular domain. The theta scores are on the same metric as the IRT item-level difficulty parameters. Therefore, the theta scores may be less intuitively interpretable than a score such as the estimated number-right, or T-score. However, the theta scores tend to be more normally distributed than estimated number-right scores, because they are not dependent on the item difficulty parameters of the items within the scale score set. The standard error of measurement (SEM) of theta represents the precision of the IRT theta. The smaller the SEM is, the greater the precision of measurement will be.

The theta ability scores provide a summary measure of achievement useful for correlational analysis with status variables, such as demographics, school type, or behavioral measures, and may be used in multivariate models as well. When longitudinal data become available with the HSLS:09 first follow-up, theta scores can also be used to measure achievement growth over time.

2.3.3.2 Estimated Number-Right Scores

The estimated number-right score is an overall, criterion-referenced measure of achievement at a point in time. The criterion is the set of skills defined by the HSLS:09 framework and represented by the 72 items in the HSLS:09 mathematics item pool. The estimated number-right score is an estimate of the number of items that students would have answered correctly had they responded to all 72 items in the item pool. The ability estimates and item parameters derived from the IRT calibration can be used to calculate each student's probability of a correct answer for each item in the pool. These probabilities are summed over the total number of items in the item pool (72) to produce the IRT-estimated number-right score; therefore, the score has a potential range of 0 to 72. Table 3 presents the variable name, description, and summary statistics for the IRT-estimated number-right scores.

Table 3. Various types of scores from HSLS:09 Mathematics Assessment, by variable: 2009

Variable	Description	Weighted mean	Weighted standard deviation	Range
X1TXMRTH	HSLS:09 base-year mathematics theta score	−0.07	0.97	−2.6–3.0
XTXMSCR	HSLS:09 base-year mathematics IRT-estimated number-right score	38.85	11.91	15.9–69.9
X1TXMTSCOR	HSLS:09 base-year mathematics standardized score (T-score)	50	10	24.3–81.8
X1TXMQUINT	HSLS:09 base-year mathematics quintile	—	—	1–5

— Not available.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

The IRT-estimated number-right scores are useful in identifying cross-sectional differences among subgroups in overall achievement level (see *HSLS:09 Base Year First Look Report* (Ingels et al. 2011) for an illustration of the cross-sectional use of a variety of mathematics scores). Similar to the theta ability scores above, they also provide a summary measure of achievement useful for correlational analysis with status variables, such as demographics, school type, or behavioral measures, and may be used in multivariate models as well.

When data are available from the HSLS:09 follow-up study, which is designed to be vertically linked to the base-year study, these scores, like the theta scores, may also be used as longitudinal measures of overall growth when an aggregated measure is preferred.[14] When a disaggregated measure is desired, to measure and compare gains made at different points on the score scale (that is, to target a hierarchy of specific sets of skills), the probability of proficiency scores as discussed below may be preferred in longitudinal analysis.

2.3.3.3 Standardized Scores (T-scores)

The standardized scores (T-scores) provide a norm-referenced measurement of achievement, that is, an estimate of achievement relative to the HSLS:09 student population (i.e., fall 2009 grade 9 students) as a whole. They provide overall measures of status at a point in time compared with those of peers, as distinguished from the criterion-referenced scores, which represent status with respect to achievement on a particular criterion set of test items. The norm-referenced standardized scores do not answer the question, What skills do students have? but rather, How do they compare to their peers?

The standardized T-score is a transformation of the IRT theta (ability) estimate, rescaled to a familiar metric with a mean of 50 and a standard deviation of 10. The transformation

[14] For examples of the use of an IRT-based score (estimated number-right) within similarly designed NCES longitudinal studies (ECLS-K and ELS:2002), see Guarino et al. (2006) and Bozick and Ingels (2008). The two NCES reports also illustrate both principal approaches to measuring achievement gain within a regression framework: use of gain scores as the dependent variable (Guarino et al.) versus use of follow-up scores as a covariate (Bozick and Ingels).

facilitates comparisons in standard deviation units. For example, an individual with a T-score of 75 (or a subgroup with a mean of 75) has performed 2.5 standard deviations above the national average for 9th-graders, whereas a score of 40 corresponds to 1 standard deviation below the norm. These numbers do not indicate whether students have mastered a particular algebraic skill or concept, but rather what their standing is relative to that of others. The HSLS:09 T-scores are documented in table 3, which also presents the summary statistics of the other types of scores discussed in the sections below.

2.3.3.4 Mathematics Quintile

The mathematics quintile is a norm-referenced measure of achievement. The quintile score divides the weighted (population estimate) achievement distributions into five equal groups based on the mathematics standardized scores. Quintile 1 corresponds to the lowest achieving one-fifth of the population, quintile 5 the highest. To determine the quintile cut-points, the weighted distribution of the standardized scores was divided at the 20th, 40th, 60th, and 80th percentiles. Cut-points were matched to unrounded standardized scores.

Mathematics quintiles are convenient normative scores for the user who wants to focus on an analysis of background or process variables separately for students at different achievement levels. For example, one might want to compare the school experiences or educational aspirations of students in the lowest quintile with those of students in the highest quintile group. Table 3 contains the variable name, description, mean, and ranges for the quintile scores.

2.3.3.5 Probability of Proficiency Scores

The mathematics proficiency probability scores are criterion referenced and are based on clusters of items that mark five levels on the mathematics scale developed in HSLS:09:

- **Level 1: Algebraic expressions.** Students able to answer questions such as these have an understanding of algebraic basics, including evaluating simple algebraic expressions and translating between verbal and symbolic representations of expressions.
- **Level 2: Multiplicative and proportional thinking.** Students able to answer questions such as these have an understanding of proportions and multiplicative situations and can solve proportional situation word problems, find the percent of a number, and identify equivalent algebraic expressions for multiplicative situations.
- **Level 3: Algebraic equivalents.** Students able to answer questions such as these have an understanding of algebraic equivalents and can link equivalent tabular and symbolic representations of linear equations, identify equivalent lines, and find the sum of variable expressions.
- **Level 4: Systems of equations.** Students able to answer questions such as these have an understanding of systems of linear equations and can solve such systems

algebraically and graphically and characterize the lines (parallel, intersecting, collinear) represented by a system of linear equations.

- **Level 5: Linear functions.** Students able to answer questions such as these have an understanding of linear functions, can find and use slopes and intercepts of lines, and can use functional notation.

The levels are hierarchical in the sense that mastery of a higher level typically implies proficiency at the lower levels. The HSLS:09 proficiency probabilities are IRT-derived estimates and are computed using IRT-estimated item parameters. The probability of proficiency for a given student at a given level is calculated as the probability of getting correct at least three of the four items in a given cluster marking a proficiency level (the probability of a student getting at least three items correct out of four is expressed as the sum of (1) the probability of getting all four items correct and (2) the probability of getting any three items correct). Although clusters of four items anchor each mastery level, the probability of proficiency is a continuous score that does not depend on a student answering the actual items in each of the clusters but rather on the probability of a correct answer on these items given the overall pattern of response on the items completed.

Under the HSLS:09 two-stage adaptive assessment design, with different forms keyed to different ability levels, not all students received all items. Nevertheless, the IRT model permits proficiency probabilities to be estimated, even for those students who were not administered a particular proficiency/mastery cluster. The probability of proficiency scores are summarized in table 4.

Table 4. HSLS:09 algebra probability of proficiency scores, by variable: 2009

Variable	Description	Mathematical definition	Range	Weighted mean	Weighted standard deviation
X1TXMPROF1	HSLS:09 proficiency probability score: Level 1	Algebraic expressions	0–1	0.85	0.27
X1TXMPROF2	HSLS:09 proficiency probability score: Level 2	Multiplicative and proportional thinking	0–1	0.59	0.36
X1TXMPROF3	HSLS:09 proficiency probability score: Level 3	Algebraic equivalents	0–1	0.41	0.36
X1TXMPROF4	HSLS:09 proficiency probability score: Level 4	Systems of equations	0–1	0.19	0.23
X1TXMPROF5	HSLS:09 proficiency probability score: Level 5	Linear functions	0–1	0.09	0.11

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Probability of proficiency scores may be used in a number of ways.[15] They may be used to locate the achievement of HSLS:09 sample members and subgroups at various behaviorally defined skill levels. The mean of a proficiency probability score aggregated over a subgroup of students is analogous to an estimate of the percentage of students in the subgroup who have displayed mastery of the particular skill. Because the range of the scores is 0 to 1, means can be expressed in percentage form. For example, the weighted mean for mastery of mathematics level 1 in HSLS:09 is 0.85, which is equivalent to saying that 85 percent of the grade 9 students had achieved mastery at this level (algebraic expressions). When HSLS:09 first follow-up (2012) data become available, the proficiency scores can be used to measure gain. The proficiency probabilities are particularly appropriate for relating specific processes to changes that occur at different points along the score scale. For example, two groups may have similar gains, but for one group, gain may take place at an upper skill level, and for the other, at a lower skill level. For those who gain at the higher skill level, there may be an association between their gains and curriculum exposure, such as taking advanced mathematics classes.

2.3.4 Psychometric Properties of the Test

All items in the HSLS:09 mathematics assessment item pool were field tested. The field test was designed to provide information on item and test characteristics to ascertain the effectiveness of each item, develop a pool of main study items, and inform the placement of items on the main study test forms. Information about the psychometric properties of the items that were field tested, the setting of difficulty levels, differential item functioning, and the IRT scaling procedures are provided in the base-year field test report (Ingels et al. 2010).

The classical definition of reliability is the ratio of the true score variance to the observed score variance, which is the sum of the true scores variance and the error variance. In an IRT context, the true scores are the unobservable theta values that are estimated with a specified standard error from item response patterns. In HSLS:09, where Bayesian estimation procedures were applied, the estimate of the error variance was computed as the mean of the variances of the posterior distributions of ability for each test-taker in the sample. The true score variance is estimated by the variance of the Bayesian theta scores (ability estimates) in the whole sample (see Bock and Mislevy 1982 for more information on Bayesian estimation). The reliability is therefore the true score variance divided by the sum of the true score variance and the error variance (i.e., total variance). The IRT-estimated reliability of the HSLS:09 test was 0.92 after sample weights were applied. This reliability is a function of the variance of repeated estimates of the IRT ability parameter (within variance), compared with the variability of the sample as a whole. This 0.92 reliability applies to all scale scores derived from the IRT estimation including the probability of proficiency scores. Imputed test scores were not included in the reliability estimation.

[15] See Bozick and Ingels (2008) for an illustration of the use of probability proficiencies in a similar longitudinal study, ELS:2002. For further discussion of the nonequivalence of scale score points and consequent need (if achievement gain is to be fully interpreted) for multiple criterion-referenced proficiency levels that mark distinct learning milestones, see Rock (2007).

2.4 Linkage With Prior NCES Studies

2.4.1 Questionnaire Linkage With Prior NCES Studies

HSLS:09 data do not directly support certain kinds of cross-cohort comparison that were possible in earlier NCES Secondary Longitudinal Studies. Specifically, the study was not designed to facilitate intercohort time-lag comparisons. In this kind of comparison, same-grade persons of different cohorts are used to provide a time series for comparison—say, high school seniors in 1972, 1980, 1992, and 2004. Comparison is possible because each group is similarly defined (12th-graders) and because, by design, a core of questions has been repeated over time so that it is common to all the cohorts. Although in HSLS:09 there are some questionnaire items that are shared with some of the earlier studies, consistency of measures was not emphasized. (Nor is cross-cohort comparability a characteristic of the assessment. See section 2.4.2 below.) Moreover and more importantly, the in-school grade cohorts of HSLS:09—fall-term 9th-graders and spring-term 11th-graders—correspond to none of the prior cohorts, which represented spring-term 8th-, 10th-, or 12th-graders.

Nonetheless, three kinds of comparisons can be made between HSLS:09 and the prior secondary school cohorts: (1) the planned postsecondary measurement points are the same (2 years out of high school, and 8 years out of high school) across HSLS:09, ELS:2002, and NELS:88; (2) coursetaking can be compared between HSLS:09 and HS&B, NELS:88, and ELS:2002, based on the continuous data for grades 9 through 12 that are supplied by high school transcripts; and (3) because HSLS:09 models the same transition—from adolescence in the high school years to young adulthood, as marked by educational attainment, work and career, and family formation—the design answers the same basic questions as the predecessor studies. It supports longitudinal comparative analysis across the cohorts. All of the studies are based on essentially similar sample designs, and provide nationally representative data across public and private schools and support similar or the same race/ethnicity domains. Despite differences in emphasis, all of the studies draw content from the same or similar theoretical constructs (e.g., achievement growth, school effectiveness, social capital, social attainment, human capital). In essence, all of the studies including HSLS:09 address, in a manner inviting historical comparison, questions such as the following:

- What steps do high school students take to attend a 4-year (or 2-year) college?
- What are the medium-term outcomes of not completing high school in the traditional way (or at all)?
- How, when, and why do students enroll in postsecondary education?
- What kind of transition do the non–college-bound make into the labor market?
- Did those high school students who expected to complete a postsecondary qualification actually do so?

- What is the relationship between high school curriculum and experience and sub-baccalaureate and baccalaureate attainment?
- How has the percentage of recent graduates from a given cohort who enter the workforce in various fields changed over the past years?

2.4.2 Assessment Linkage With Prior NCES Studies

Differences in the content and scaling of the HSLS:09 and prior tests administered in the study series severely limit the possibility of comparisons. The HSLS:09 assessment measures a critical strand of mathematics—algebraic reasoning. Apart from a handful of National Assessment of Educational Progress (NAEP) items, there are no common items that link the HSLS:09 base year test to earlier mathematics assessments. In addition, the prior frameworks were different, and, in particular, broader, so it would not seem that the various tests measure precisely the same thing. Finally, the testing points—fall of 9th grade and spring of 11th grade—are not shared with the prior longitudinal studies, Program for International Student Assessment (PISA), or NAEP. Therefore, even a weak linkage, such as a concordance, would seem inadvisable to implement.

Chapter 3. Sample Design

3.1 Base-Year Sample Design Overview

Details of the complex design and resulting sample for the High School Longitudinal Study of 2009 (HSLS:09) base-year study are provided in this chapter. Section 3.2 pertains to the stratified random selection of schools; section 3.3 documents the selection of students within schools; and section 3.4 describes the selection of contextual samples.

3.2 Selection of School Sample

Survey responses and mathematics assessment scores for HSLS:09 were collected through a stratified, two-stage random sample design with primary sampling units defined as schools selected at the first stage and students randomly selected from the sampled schools within the second stage. A total of 944 schools out of 1,889 eligible schools participated in the base-year study resulting in a 55.5 percent weighted response rate (50.0 percent unweighted).[16] The details are described in the following sections.

3.2.1 Target Population

The HSLS:09 base-year main study included one target population for each of the two sample design stages—schools and students within schools. The target population for schools, units selected in the first stage of sampling, was defined as regular public schools, including public charter schools, and private schools in the 50 United States and the District of Columbia providing instruction to students in both the 9th and 11th grades.

Schools excluded from this definition (*study-ineligible schools*) include those that met any of the following criteria:[17]

- Bureau of Indian Affairs (BIA) schools;
- Special education schools for students with disabilities;
- Career technical education (CTE) schools that do not enroll students directly;
- Department of Defense (DoD) schools located outside the United States (OCONUS);
- Schools without both a 9th and 11th grade;
- Schools not in operation during the fall of 2009;

[16] The American Association for Public Opinion Research (AAPOR) response rate definition RR6 (http://www.aapor.org/Standard_Definitions/1818.htm) was used in the calculations. The weighted response rate includes weights defined by expression (2) multiplied by expression (3) in appendix D. Additional details are provided in chapter 6.

[17] With this definition, approximately 8.9 percent of public-school ninth-grade students on the Common Core of Data were excluded from the HSLS:09 target population in the base-year study because they attended a study-ineligible school. The corresponding percentage excluded from the private-school student population was slightly lower at 5.3 percent.

- Juvenile correction/detention facilities;
- Other schools that address disciplinary issues but do not enroll students directly;
- Ungraded schools (i.e., no metric to define students as being in the ninth grade);
- Schools that only offer testing services for home-schooled students; and
- Schools that do not require students to attend daily classes at their facility.

3.2.2 School Sampling Frame

The HSLS:09 sample schools were selected from two National Center for Education Statistics (NCES) files. The primary sample of regular public and public charter schools was selected from the 2005–06 Common Core of Data (CCD).[18] The private schools were sampled from the 2005–06 Private School Universe Survey (PSS).[19]

Every attempt was made to identify and exclude study-ineligible schools using data on the NCES files prior to sampling. The following is a complete list of criteria used to exclude schools from the sampling frame and to exclude schools postsampling from the study:

- *BIA schools*. These schools were located using Federal Information Processing Standards (FIPS) code = 59 (not an official U.S. FIPS code).
- *Special education schools*. Schools were classified as ineligible for the study if the NCES school type indicator was set to "special education." Additional schools were excluded if the school name included words such as "blind," "unsighted," "deaf," or "impaired."
- *Ineligible CTE schools*. Public schools were excluded from sampling if the school type was set to "vocational" and total enrollment size listed on the CCD for the school was zero.
- *OCONUS DoD schools*. These schools (Department of Defense schools outside the continental United States) were identified using FIPS code = 58 (not an official U.S. FIPS code).
- *Schools without both a 9th and 11th grade*. Indicators to identify the lowest and highest grades of instruction were examined to identify schools without both 9th and 11th grades.
- *Not in operation during the fall of 2009*. Closed public schools were identified using the operational status code on the CCD. Closed private schools could not be determined prior to sampling.
- *Juvenile correction/detention facilities*. Schools with names containing the words "detention," "correctional," or "jail" were excluded from the sampling frame.
- *Duplicates.* One record was randomly chosen for those few schools with multiple entries on the corresponding NCES file. Duplicates were identified using school

[18] http://nces.ed.gov/ccd/
[19] http://nces.ed.gov/surveys/pss/

name, location address, and administrator name in combination with information obtained from the Internet.

- *Ungraded schools*. If the lowest and highest grade indicators were both "UG" or "00," the school was classified as ungraded.

If the ninth-grade enrollment count was missing, the information was imputed using the median enrollment count for the corresponding sampling stratum. Enrollment counts were imputed for 41 public school records (0.20 percent) and 237 private school records (3.21 percent) prior to sampling. Sampling frame counts (*schools on frame*) and the number of study-eligible schools (*eligible schools*) is provided in table 5 by school type, region, and locale.[20]

Table 5. School sampling-frame eligibility status and number sampled by sampling stratum

	Schools on frame[1]		Eligible schools[2]		Sampled schools[3]	
School sampling stratum	n	Percent[4]	n	Percent[5]	n	Percent[6]
Total	29,547	100.0	27,293	92.4	1,973	7.2
School type						
Public	22,304	75.5	20,505	91.9	1,550	7.6
Private	7,243	24.5	6,788	93.7	423	6.2
Catholic	1,209	4.1	1,199	99.2	198	16.5
Other private	6,034	20.4	5,589	92.6	225	4.0
Region						
Northeast	4,536	15.4	4,395	96.9	357	8.1
Midwest	7,701	26.1	7,178	93.2	493	6.9
South	10,306	34.9	9,632	93.5	729	7.6
West	7,004	23.7	6,088	79.0	394	6.5
Locale						
City	7,384	25.0	6,787	91.9	667	9.8
Suburban	6,889	23.3	6,390	92.8	715	11.2
Town	4,323	14.6	3,868	89.5	204	5.3
Rural	10,951	37.1	10,248	93.6	387	3.8

[1] Counts of schools listed in the table are from the 2007–08 CCD and 2007–08 PSS. These files were available from NCES at the time the school-level analysis weights were constructed (see chapter 6) and most closely reflect the target population under study. As discussed in section 3.2.2, the HSLS:09 school sample was randomly selected from the 2005–06 CCD and 2005–06 PSS, and supplemented with a sample of new schools from the 2006–07 CCD and 2007–08 PSS.
[2] Some schools were classified as ineligible for the study based on sampling frame information. See the discussion at the beginning of section 3.2.2.
[3] A large sample was selected for HSLS:09 to ensure a sufficient number of participating schools for the analytic objectives. As discussed at the end of section 3.2.5, only a portion of the sample was recruited for the study and some hold-sample cases were never released.
[4] Unweighted percent is based on overall total within column. Percentages may not sum to 100 because of rounding.
[5] Unweighted percent is based on the number listed on the sampling frame within each row of the table.
[6] Unweighted percent is based on the eligible number of schools within each row of the table.
NOTE: CCD = Common Core of Data. NCES = National Center for Education Statistics. PSS = Private School Universe Survey.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

[20] School locale is also referred to as "urbanicity".

Even though HSLS:09 was selected from the most recent NCES files available at the time of sampling (2005–06 CCD for public schools and 2005–06 PSS for private schools), the information contained in the lists was more than 2 years old. To maximize coverage of the intended target populations, random samples of new schools on the 2006–07 CCD and 2007–08 PSS were drawn after the start of school recruitment to supplement the original sample. New schools were identified by (1) eliminating known ineligibles from the new NCES files using the criteria listed above, and (2) merging the "cleaned" NCES files by the respective NCES IDs and separately by school name and location address. All new schools isolated with this process were again compared with the original sampling frames to ensure that they were not previously eligible for the study. Schools were classified as study-ineligible per information on the NCES files for both the original sample and new sample of schools and excluded from the sampling frame. Some sample schools were later reclassified as study-ineligible based on updated information obtained in the field during recruiting.

3.2.3 First-Stage Sample Design

A stratified probability proportional to size (PPS) sample of schools was selected for HSLS:09 (table 5) with the goal of producing national estimates on characteristics associated with, for example, high school success and family influences in education choices. Within each first-stage stratum, samples were selected using Chromy's sequential probability with minimum replacement sampling algorithm (Chromy 1981). The composite measure of size (*mos*) used in the sampling procedure was calculated as a linear combination of student counts multiplied by the desired overall sampling rates within race/ethnicity. Details of the sample design are found in appendix D; the probabilities of selection are discussed in chapter 6 as they relate to the analysis weights.

A total of 48 mutually exclusive first-stage sampling strata were created for HSLS:09. The strata were defined by cross-classification of three variables:

- School type or sector (public, private–Catholic, private–other);
- Region of the United States (Northeast, Midwest, South, West); and
- Locale (city, suburban, town, rural).

All study-eligible schools on the CCD were given a *school type* classification of public. A distinction between regular public and public charter schools was not made for the purposes of sampling. School type on the PSS was determined by whether the religious orientation/affiliation variable was set to "Roman Catholic." All non-Catholic PSS private schools were classified in the private–other category.

Within school type, the eligible schools were classified into four *regions* of the United States for the second stratification variable. The following assignments were made based on the FIPS state code associated with the physical location of the school:

- Northeast (CT, MA, ME, NH, NJ, NY, PA, RI, VT);
- Midwest (IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, WI);
- South (AL, AR, DC, DE, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, WV);
- West (AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA, WY).

The third stratification variable identified the *locale* (i.e., metropolitan area) derived from an 8-level variable on the 2005–06 NCES files for the original sample of schools and from a 12-level variable on the 2006–07 CCD and 2007–08 PSS for the sample of new schools. Table 6 displays the mapping from HSLS:09 locale (X1LOCALE) to the NCES variables.

Table 6. Mapping between HSLS:09 locale and the variables included on the NCES sampling frame files

HSLS:09 Locale (X1LOCALE)	Levels of locale on NCES files	
	2005–06 NCES files[1]	Later NCES files[2]
City	Large or mid-size city	City—large, midsize, small
Suburban	Urban fringe of large or mid-size city	Suburb—large, midsize, small
Town	Town—large or small	Town—fringe, distant, remote
Rural	Rural—outside/inside a core-based statistical area	Rural—fringe, distant, remote

[1] The initial sample of schools was drawn from the 2005–06 CCD and 2005–06 PSS. The locale variables used for sampling were LOCALE05 (CCD) and LOCALE (PSS). Details on the definition of locale can be found in, for example, the 2005–06 PSS codebook (http://nces.ed.gov/surveys/pss/pdf/codebook_0506.pdf).
[2] The sample of HSLS:09 new schools was randomly selected from the 2006–07 CCD and 2007–08 PSS. The locale variables used for sampling were ULOCAL06 (CCD) and ULOCALE (PSS). The 12-category variable is also located on the 2007–08 CCD (ULOCAL08), the file used to adjust the public-school analysis weights (see chapter 6). Details on the definition of locale can be found in, for example, the 2006–07 CCD codebook (http://nces.ed.gov/ccd/pdf/psu061cgen.pdf).
NOTE: CCD = Common Core of Data. NCES = National Center for Education Statistics. PSS = Private School Universe Survey.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Prior to sample selection, the frame was additionally sorted to ensure a representative distribution across the United States and size of school. These implicit strata were formed within the (explicit) sampling strata by cross-classifying Census division by state and the composite *mos* used in the PPS sampling (see appendix D). The nine U.S. Census divisions were defined as follows:

- New England/Middle Atlantic (CT, MA, ME, NH, NJ, NY, PA, RI, VT);
- East North Central (IL, IN, MI, OH, WI);
- West North Central (IA, KS, MN, MO, ND, NE, SD);
- South Atlantic (DC, DE, FL, GA, MD, NC, SC, VA, WV);
- East South Central (AL, KY, MS, TN);
- West South Central (AR, LA, OK, TX);
- Mountain (AZ, CO, ID, MT, NM, NV, UT, WY); and
- Pacific (AK, CA, HI, OR, WA).

The national design called for the selection of a sufficient sample to yield 800 eligible, participating schools—600 public schools, 100 Catholic schools, and 100 private–other schools. The proportion of schools dictated by the HSLS:09 national design was similar for public and private schools—2.9 percent (=600/20,505) and 2.9 percent (=200/6,788), respectively (table 5). However, the design called for the oversampling of private–Catholic schools (8.3 percent = 100×100/1,199) in comparison with the other private schools (1.8 percent = 100×100/5,589).

The overall school sample size was allocated to the sampling strata in proportion to the relative number of ninth-grade students within the strata. As detailed in section 3.2.5, a sample of schools in excess of 800 was selected for HSLS:09 to accommodate sample loss associated with (1) schools newly classified as ineligible during the recruitment phase of the study, and (2) anticipated rates that school administrators would decline student participation in the voluntary survey.

The initial HSLS:09 base-year study sample was selected from the complete list of eligible schools identified from the 2005–06 CCD and 2005–06 PSS. After the base-year sample was drawn, schools were selected from the remainder for the HSLS:09 field test conducted in fall 2008. As noted above, a small sample of new schools, "born" after the selection of the initial sample, was randomly selected from eligible records on the 2006–07 CCD and 2007–08 PSS to enhance the coverage of the target population.

3.2.4 Augmented-Sample States

After the national design was developed and the sample selected, additional funds were provided by the National Science Foundation (NSF) for HSLS:09 to obtain a state-representative sample of *public schools* for 10 states.[21] The states were identified for the NSF augmentation only if they met the following five criteria: (1) existence of an in-state longitudinal recordkeeping system; (2) willingness to work with NCES, NSF, and RTI to emphasize the importance of school participation; (3) ability to merge state administrative data with HSLS:09; (4) presence of explicit guidelines to deal with issues of confidentiality; and (5) sufficient numbers, with limited or no oversampling, of study-eligible public schools to support the analytic objectives. Results from a power analysis determined that at least 40 participating public schools per state would be sufficient to meet the precision criteria set for the national design (see section 3.3.2).

Two of the 10 states had adequate sample previously selected for the national design and required no further action. The sample for the remaining eight states was drawn using a Keyfitz procedure (Keyfitz 1951) (1) to maximize the retention of public schools selected initially, (2) to minimize overlap with the sample selected for the 2009 Program for International Student Assessment, and (3) for certain states, to minimize the overlap with the HSLS:09 field test schools.

[21] Identification of the augmented-sample states is available only through the HSLS:09 restricted-use data file.

The original design was developed to produce precise national estimates by allocating the sample across the United States relative to the distribution of ninth-grade students. The same criteria were used for the eight states within the four-category locale variable.

3.2.5 School Sample Size

The primary unit of analysis for HSLS:09 is the student. Power calculations were computed based on precision constraints placed on key student estimates to determine the minimum number of participating students by race/ethnicity required for the analytic objectives (see section 3.3.2).[22] Burden was minimized and workload equalized by specifying an average of 25 sampled students per school. From this analysis, 800 participating schools were specified for the national sample design, 600 public and 200 private schools. The size of the supplemental national sample of new schools to increase coverage of the target population (section 3.2.3) was determined by comparing the relative sizes of the student population on the original sampling frames (2005–06 CCD and 2005–06 PSS) with the sampling frame of new schools.

The same power analysis, conducted for the 10 augmented-sample states, determined that a minimum of 40 public schools per state would be sufficient to produce precise state-level estimates for key student characteristics. Combined with the analysis results from the national design, the final goals for the HSLS:09 participating public schools was increased from 600 to 744.

The analytic sample size determined through the power calculations was inflated to compensate for the anticipated sample loss associated with newly identified ineligible schools and with school administrators who decline participation. A 96 percent school eligibility rate was assumed based on prior experience. Among the eligible schools, a school response rate of 70 percent was initially targeted for the study.

An additional sample, known as the hold sample, was selected to guard against depressed school eligibility and response rates. Within the complete sample, simple random samples of schools were selected to form approximately four groups (release pools) within the sampling strata for targeted release to the field. This practice ensured that a representative sample would be released for the study while limiting the release of unnecessary sample that would exceed the specified goals. The release pools subsequent to the first group were released based on actual and projected respondent yield and on results from periodic nonresponse bias analyses using the sampling frame information.

By the end of data collection, 1,973 schools were sampled and released for the base-year study (table 5). This number included a total of 96 new schools (4.9 percent of 1,973) sampled from the 2006–07 CCD and 2007–08 PSS.

[22] Because the student is the primary unit of analysis, there were no requirements for the school estimates. The school sample size was determined based on the total number of students and the average per school dictated by the power analysis.

3.2.6 School Eligibility

Every attempt was made to eliminate study-ineligible schools from the sampling frames prior to selecting the HSLS:09 schools (see section 3.2.1). However, during the recruitment phase of the study 84 schools (= 1,973 − 1,889) were identified as ineligible (table 7) and eliminated from the study. Updated information was obtained through contacts at school districts or dioceses, administrators from the sampled schools, or from website information when no other data sources were available. As shown in table 8, 32 of the 84 schools (38.1 percent) were found to be schools that do not provide instruction to both 9th- and 11th-grade students, or schools that do not designate students in a particular grade.

Table 7. Postsampling eligibility and response status for schools by sampling stratum

	Sampled schools[1]		Eligible schools		Responding schools	
School sampling stratum	n	Percent[2]	n	Percent[3]	n	Percent[4]
Total	1,973	100.0	1,889	95.7	944	50.0
School type						
Public	1,550	78.6	1,495	96.5	767	51.3
Private	423	21.4	394	93.1	177	44.9
Catholic	198	10.0	194	98.0	102	52.6
Other private	225	11.4	200	88.9	75	37.5
Region						
Northeast	357	18.1	340	95.2	149	43.8
Midwest	493	25.0	474	96.1	251	53.0
South	729	36.9	702	96.3	380	54.1
West	394	20.0	373	94.7	164	44.0
Locale						
City	667	33.8	626	93.9	272	43.5
Suburban	715	36.2	693	96.9	335	48.3
Town	204	10.3	198	97.1	117	59.1
Rural	387	19.6	372	96.1	220	59.1

[1] Final set released for HSLS:09 that were randomly selected from a larger sample of schools drawn from the eligible sampling frame.
[2] Unweighted percent is based on overall total within column. Percentages may not sum to 100 because of rounding.
[3] Unweighted percent is based on the number sampled within each row of the table.
[4] Unweighted percent is based on the eligible number of schools within each row of the table.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 8. Classification for schools identified as ineligible during recruitment phase

Description of study ineligibility	Sampled schools	
	n	Percent[1]
Total	84	100.0
No 9th or 11th grade, or grade-less school	32	38.1
Specialized instruction, school does not award high school diplomas	20	23.8
Testing facility, no on-site instruction	10	11.9
School closed	15	17.9
Other[2]	7	8.3

[1] Unweighted percent is based on overall total number of ineligible schools. Percentages may not sum to 100 because of rounding.
[2] The "other" category includes juvenile correction facilities, duplicate schools identified after the sample of schools were selected, and schools that serve only foreign-exchange students.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

3.3 Selection of Student Sample

School administrators for 944 HSLS:09 sample schools granted permission for in-school data collection of student questionnaire responses and tests to assess ability in mathematics. Of the 26,305 students sampled within these schools, 25,206 students were found to be eligible for the study. Of these, 24,658 ninth-graders were found to be capable of completing the questionnaire, while 548 were found to be questionnaire-incapable. A total of 21,444 questionnaire-capable, study-eligible students completed at least the base-year questionnaire (85.1 percent and 85.7 percent unweighted and weighted response rate, respectively).[23] Additional information on the second-stage sample design is detailed in the following sections.

3.3.1 Target Population

The target population for the HSLS:09 sample schools was defined in section 3.2.1. The corresponding target population for students, selected in the second stage of the HSLS:09 sample design, was defined to include all ninth-grade students who attended the study-eligible schools in the fall 2009 time period.

All students who were initially included on the enrollment lists but transferred to a different school prior to in-school data collection were classified as ineligible and dropped from HSLS:09. Additionally, all foreign exchange students were excluded from participation. Sample students who were absent on the date(s) of in-school data collection but still enrolled in the school remained eligible for the study (see chapter 4 for additional details).

3.3.2 Student Sample Sizes

The HSLS:09 student sample size was calculated to satisfy a set of precision constraints for the base year and subsequent waves of the longitudinal study. Prior to the power calculations, the following sample design assumptions were set based on prior experience:

[23] The AAPOR response rate definition RR6 was used for the calculations. The student base weight is described in chapter 6.

- the maximum design effect for the key student estimates would be no larger than 2.0; and
- the maximum correlation for estimates from two waves of the study would be no larger than 0.6.

Sample sizes were determined with two-tailed statistical tests at a 0.05 significance level and 80 percent power to:

- produce relative standard errors no larger than 2.5 and 10 percent for estimated means and proportions, respectively, within a single wave of the study; and
- detect a 5 and 15 percentage point change in key estimated means and proportions, respectively, across the study waves.

The population proportion included in the power calculations was 0.3. For the analysis of population means, a value of 50 with standard deviation of 15 was used to determine the sample size. The results from the power analysis are shown in table 9 by school and student characteristics.

Table 9. Minimum respondent sample sizes from power calculations by school and student characteristics

	Total		Student sampling strata			
School sampling strata	n	Percent[1]	Hispanic	Asian	Black	Other
Total	19,053	100.0	2,026	1,899	2,039	13,089
School type						
Public	14,289	75.0	1,519	1,431	1,528	9,811
Private	4,764	25.0	507	468	511	3,278
Catholic	2,382	12.5	254	233	256	1,639
Other private	2,382	12.5	253	235	255	1,639
Region						
Northeast	3,430	18.0	364	339	367	2,360
Midwest	4,787	25.1	510	478	512	3,287
South	7,096	37.2	754	709	759	4,874
West	3,740	19.6	398	373	401	2,568
Locale						
City	6,408	33.6	681	640	685	4,402
Suburban	6,964	36.6	738	691	743	4,792
Town	2,134	11.2	228	212	231	1,463
Rural	3,547	18.6	379	356	380	2,432

[1] Unweighted percent is based on overall total within column. Percentages may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

The sampling rates for Asian ninth-graders by first-stage sampling stratum were increased based on the power analysis. The rates for the remaining three race/ethnicity groups (sampling strata) were deemed sufficient given the projected number of completes with the average number of students sampled per school.

The number of responding students determined through the power calculations was inflated to compensate for the anticipated rates of ineligibility (section 3.3.5) and nonresponse. A total sample of 26,305 students was randomly selected from the 944 participating schools for an average of 28.3 and 26.1 students sampled per public school and private school, respectively (table 10).

Table 10. Student enrollment list counts, total number sampled, and average sampled by sample design characteristics

	Frame list counts		Enrollment list counts		Sampled students[1]		Average sampled per school[1]
School sampling stratum	n	Percent[2]	n	Percent[2]	n	Percent[3]	
Total	4,197,724	100.0	309,360	100.0	26,305	8.5	27.9
School type							
Public	3,899,775	92.9	287,873	93.1	21,689	7.5	28.3
Private	297,949	7.1	21,487	6.9	4,616	21.5	26.1
Catholic	153,224	3.7	17,101	5.5	2,857	16.7	28.0
Other private	144,725	3.4	4,386	1.4	1,759	40.1	23.5
Region							
Northeast	731,058	17.4	44,011	14.2	4,182	9.5	28.1
Midwest	927,756	22.1	69,670	22.5	6,959	10.0	27.7
South	1,578,559	37.6	129,614	41.9	10,618	8.2	27.9
West	960,351	22.9	66,065	21.4	4,546	6.9	27.7
Locale							
City	1,338,549	31.9	97,612	31.6	7,607	7.8	28.0
Suburban	1,399,615	33.3	131,337	42.5	9,551	7.3	28.5
Town	492,894	11.7	23,979	7.8	3,062	12.8	26.2
Rural	966,666	23.0	56,432	18.2	6,085	10.8	27.7

[1] Student information from the 944 HSLS:09 participating schools.
[2] Unweighted percent is based on overall total within column. Percentages may not sum to 100 because of rounding.
[3] Unweighted percent is based on the number listed on the school-provided enrollment lists within each row of the table.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

3.3.3 Student Sampling Frames

3.3.3.1 Specifications for Enrollment Lists

A school coordinator at each HSLS:09 sample school was asked to provide a listing (electronic if possible) of all ninth-grade students currently enrolled containing the following information:

- unique student ID number (from school or district);
- name (first, middle initial, last, suffix);
- sex;
- month and year of birth;
- race/ethnicity (Hispanic, Asian, Black/African American, White, Native Hawaiian/other Pacific Islander, American Indian/Alaska Native, and Other);[24] and
- presence of an Individualized Education Program (IEP) for the student (Yes, No).

The race/ethnicity information was required to sample students within their respective categories (i.e., sampling strata). Variables such as sex and IEP status in addition to race/ethnicity were needed because past experience has shown them to be important for weighting adjustments. Information was also requested for the student's ninth-grade science and mathematics teachers (section 3.4.3) and the name of one or more parent(s) or guardian(s) (section 3.4.4).

A request was made for the electronic file to be provided either as a Microsoft Excel file or a comma-delimited text file. The school coordinators submitted electronic enrollment lists through an NCES-HSLS:09 secure website or by e-mail (in encrypted form). If an electronic file was not feasible, the school coordinator was asked to provide a hard copy by secure facsimile (fax) or by Federal Express. All enrollment lists, regardless of format, were accepted from the schools and processed (table 11). However, every effort was made to facilitate the receipt of uniformly formatted electronic files from as many schools as possible to maximize efficiency and consistency with standardized quality assurance procedures.

3.3.3.2 Quality Assurance Checks

Quality assurance (QA) checks were performed on all enrollment lists regardless of the format in which they were received prior to selecting the student sample. The initial QA procedure quickly identified any student enrollment list that was inadequate for sampling so that new information could be obtained and processed well before in-school data collection commenced. Lists failed this QA check if

[24] The race/ethnicity categories presented here are those approved by the U.S. Office of Management and Budget.

Table 11. Mode of delivery for HSLS:09 sample school ninth-grade enrollment lists

Mode of delivery	Count[1]	Percent[2]
Total	944	100.0
NCES-HSLS:09 website	846	89.6
E-mail	73	7.7
Fax	21	2.2
Overnight express delivery	4	0.4

[1] Enrollment list information from the 944 HSLS:09 participating schools.
[2] Unweighted percent is based on the total number of participating schools. Percentages may not sum to 100 because of rounding.
NOTE: NCES = National Center for Education Statistics.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

- the information was illegible (e.g., poor-quality fax); or
- the race/ethnicity information used to create the second-stage strata was missing or incomplete.

After the list passed initial QA, the count of ninth-grade students was compared against the (NCES) sampling frames to verify that the complete list of students was provided. Student counts for public schools were compared with the CCD information in total and by race/ethnicity. The PSS file did not contain counts by the race/ethnicity strata; the distribution by race/ethnicity on the frame was assumed to be the same as the distribution calculated from the current enrollment list. The list failed the second QA check if either the overall count or any of the race/ethnicity counts tabulated from the enrollment lists differed from the sampling frame counts by ± 25 percent. Two exceptions to this rule were (1) if the enrollment counts differed from the frame counts in absolute value by no more than 25 students, or (2) if the enrollment count for Hispanic or Asian students was zero and the frame count was less than five. Student sampling commenced only with those enrollment lists that passed the QA checks.

School coordinators with an enrollment list that failed any QA check were recontacted by a school recruiter to verify their understanding of the data request, to resolve the discrepancies, and, if appropriate, to obtain a replacement list. Results from this conversation can be grouped into four result categories listed below.

- Student sampling continued for lists with sufficient sampling information that were verified as being correct by the school coordinator.
- The QA procedures were implemented on the new enrollment lists received from the coordinator, followed by student sampling.
- If the coordinator declined to provide updated information such as race/ethnicity but the remaining information was sufficient, then student sampling was initiated using steps described in the next section.
- Otherwise, updated information was not provided.

Every attempt was made to use the information provided without placing additional burden on the school coordinator. However, if adequate information was not obtained for the ninth-grade

population to enable student sample selection, then the school was reclassified as nonparticipating.

3.3.4 Second-Stage Sample Design

Students were randomly selected from the enrollment lists within days of receipt and verification of the quality of the sampling information. These lists were requested and processed a few months to a few weeks prior to the date of in-school data collection so that the sampling information would be most current. A stratified systematic sample was drawn from the enrollment lists where the strata were equivalent to four categories of race/ethnicity—Hispanic, Asian, Black, and Other. The overall sampling rates for Asian students were inflated to ensure sufficient size for analysis.

On average, approximately 28 ninth-grade students were selected from each participating school (table 10). Twenty was used as a minimum sample size for schools with sufficient population to meet the overall sample size goals. A maximum of 38 sample students was set to limit burden on the in-school data collection. If requested by the school administrator, all ninth-grade students were included in the study (certainty sample) as long as the count did not exceed 50.[25]

The student sampling rates were developed in conjunction with the original sampling frame information prior to receipt of updated enrollment lists. For most schools, the rates and not the student sample sizes remained fixed for the following reasons:

- to facilitate sampling students on a flow basis as student lists were received; and
- to maintain the desired overall equal (unconditional) probabilities of selection by race/ethnicity used to set the school-level selection probabilities.[26]

Exceptions to this rule included:

- schools where the administrator requested a census (i.e., certainty selection of all students);
- sizeable differences between the frame information and the current overall enrollment counts; and
- large deviations in the percent distribution by race/ethnicity calculated from the enrollment lists in comparison with the sampling frame.

The resulting sample size was compared to the expected sample derived prior to enrollment list processing. If the actual overall sample size was less than the expected size by more than five students, the information was reviewed by senior statistical staff to (1) verify the QA procedures for the enrollment lists, (2) determine whether additional information should be requested from

[25] The maximum size of 50 was set to ensure that no school sample size would be excessively large relative to the other HSLS:09 student samples. No student sample size exceeded 49.

[26] The unconditional probability of selection for a student is defined by the school's selection probability multiplied by the student's selection probability within the school conditional on the school being randomly selected for the study.

the school coordinator, and, if necessary (3) adjust the student sampling rates given changes to the student population within the school to minimize the variation in the resulting sampling weights. For example, students were sampled using the default ("other" race/ethnicity category) sampling rates for schools where the coordinator declined to provide student race/ethnicity data. In general, this resulted in sample sizes that were too small; this overall rate was then adjusted to reflect a sample size closer to the expected number of sampled students originally set for the school.

3.3.5 Student Eligibility and Exclusions

All fall-term ninth-grade students attending a study-eligible school, excluding foreign-exchange students, were eligible for HSLS:09. Once sampled, students were classified into three categories: study ineligible, study eligible but questionnaire incapable, and study eligible.

The students' study status was classified as ineligible if they left the school (e.g., transferred to another school, dropped out of school) between the time the student sample was drawn and the date of in-school data collection. As shown in table 12, less than 5 percent of the sample was found to be ineligible and removed from this and subsequent waves of the study. Students were classified as study eligible (95.8 percent) unless information to the contrary was obtained.

Table 12. Distribution of HSLS:09 sampled students by study eligibility status

Study eligibility status	Count[1]	Percent[2]
Total	26,305	100.0
Eligible	25,206	95.8
Ineligible	1,099	4.2

[1] Sample counts for students selected from 944 HSLS:09 participating schools.
[2] Unweighted percent is based on the total number of sampled students, Percentages may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Approximately 2.2 percent of the eligible students (table 13), however, had limitations that precluded their participation in the in-school data collection sessions. These included physical limitations (e.g., sight impaired), cognitive disabilities, or limited English proficiency. However, contextual information for these and all participating students was collected from teachers and parents (sections 3.4.3 and 3.4.4, respectively, and their school-level data were available from the administrator and counselor surveys).[27] The questionnaire-capability status for all students will be reassessed at every wave of the study.

[27] The contextual data for all questionnaire-incapable sampled students were included only on the HSLS:09 restricted-use data file as part of the disclosure treatment (see section 7.4).

Table 13. Distribution of HSLS:09 study-eligible students by capability

Study capability status	Count[1]	Percent[2]
Total	25,206	100.0
Eligible—questionnaire capable	24,658	97.8
Eligible—questionnaire incapable	548	2.2
Physical limitations	38	0.2
Cognitive disabilities	303	1.2
Limited English proficiency	207	0.8

[1] Sample counts for study-eligible students selected from 944 HSLS:09 participating schools.
[2] Unweighted percent is based on the total number of study-eligible students, Percentages may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Information recorded in the student's IEP was used as the basis for exclusion from one or both components of the in-school data collection. Following procedures administered in the Education Longitudinal Study of 2002 (ELS:2002), if the IEP specifically recommended against assessments, then the student was excused from the HSLS:09 mathematics assessment. If the IEP stated that assessments were permitted but only with accommodations, then every attempt was made to facilitate the mathematics assessment provided that the school had the necessary accommodations. Participation in the questionnaire portion of the student survey was accommodated when possible. However, 548 study-eligible sampled students were excused from in-school data collection because of physical, mental, or emotional limitations (table 13). Most of the questionnaire-incapable students were excused based on limited cognitive abilities (303 students out of 548 or 55.3 percent).

The suggested criterion for exclusion based on English-language proficiency followed the criteria used for ELS:2002 and other NCES studies. Students were classified as questionnaire (and assessment) capable if they received academic instruction primarily in English for at least 3 years. Those with fewer years of English-language instruction were judged on an individual basis by a school official. Less than 1 percent of the students sampled for the HSLS:09 base-year study were excused from in-school data collection because of limited English proficiency (table 13).

Several accommodations were made to ensure that all sampled students had adequate means during the group administration to complete the student questionnaire and mathematics assessment (e.g., after-school data collection, multiple test days). The accommodations specific to each sampled student requiring assistance included:

- alternative questionnaire presentation (e.g., read aloud by HSLS:09 data collection personnel instead of self-administered computerized questionnaire);
- alternative questionnaire responses (e.g., recorded by school HSLS:09 data collection personnel instead of self-recorded);
- alternative setting for data collection (e.g., single-person administration instead of group administration with other sampled students); and

- alternative length of time allocated for completion of the test and survey (e.g., additional time provided to participate instead of set time within a group setting).

Additional information on the accommodations is discussed in chapter 4. Among the sampled questionnaire-incapable students, only 6.9 percent (38 out of 548) were excused from in-school data collection because of physical limitations (table 13).

3.4 Selection of Contextual Samples

In addition to survey responses collected from the sampled students, contextual information was gathered on the school, the classroom, and the home to provide researchers with a full picture of the student's academic life and home life. The sources for the contextual data are discussed below.

3.4.1 Administrator Survey

The school administrator (e.g., principal) was initially contacted by school recruiters to gain cooperation for HSLS:09. In addition to the request for in-school data collection, the school administrator was asked to complete a survey on topics such as school characteristics (e.g., disciplinary problems), student population (e.g., distribution by race/ethnicity), and teachers (e.g., difficulty in filling vacancies). Because the school administrator for every sample school was selected for the study, the administrator's selection probability was equivalent to the selection probability for the school. Additional details on the administrator questionnaire are found in section 2.2.4.

3.4.2 Counselor Survey

The lead ninth-grade counselor for the HSLS:09 sample school was contacted to complete the counselor questionnaire on behalf of the counseling staff. The purpose of this study component was to provide contextual information on issues such as the advertised counseling goals for the school. If the lead counselor was unavailable, a request for information was then given to another counselor who was knowledgeable about any counseling practices specific to the ninth-grade class at the school. Because the participating school counselor provided general information for the entire school, the counselor's selection probability was equivalent to the selection probability for the school.

3.4.3 Science and Mathematics Teacher Surveys

Student enrollment lists provided by the school coordinator included all ninth-grade students currently enrolled and contact information for one or more parents/guardians and details of all mathematics and science courses taken by the student in the fall of 2009. The course information requested from the school coordinators for each ninth-grade student included the following items for both subject areas:

- name of the teacher;
- teacher's e-mail address (if available);
- course title; and
- period or section number of the course.

School coordinators were instructed to include the teacher contact information on the enrollment list used for HSLS:09 student sampling. However, some coordinators chose to wait until after students were selected for HSLS:09 to submit separate teacher lists only for the HSLS:09 sampled students.

As with the enrollment list QA procedures discussed in section 3.3.3.2, the teacher information was examined on a flow basis to determine whether the following elements were included:

- a unique link between the student and the teacher(s);
- the teacher's last name (at a minimum);
- a subject-specific course name for each teacher; and
- an indication that the student was not scheduled to take either a science or mathematics course.

Initially, if the list did not contain all items listed above, then the list failed the QA process and the school coordinator was recontacted to obtain the updated information. Later in the data collection window, the final two QA checks were relaxed provided that the teacher could be uniquely identified (e.g., only one ninth-grade mathematics teacher at the school). A total of 921 of the 944 schools (97.6 percent) provided teacher information in time to request and obtain teacher survey responses.

The HSLS:09 design did not include a random sample of ninth-grade science and mathematics teachers from all those listed at the school. This sampling procedure would have likely resulted in the selection of teachers without links to the sampled students, and thus contextual information less useful for the study. Only teachers linked to students sampled for the HSLS:09 base-year study were identified for the science and mathematics teacher survey. If students were assigned to multiple science or mathematics courses, then one teacher within each subject was randomly chosen for the survey. As shown in table 14, a total of 4,804 science teachers and 5,710 mathematics teachers were contacted to participate in the study.

Table 14. Teachers identified for the HSLS:09 by subject area, school type, region, and locale

School sampling characteristics	Course subject area[1]					
	Science			Mathematics		
	Count	Percent[2]	Average per school[3]	Count	Percent[2]	Average per school[3]
Total	4,804	100.0	5.2	5,710	100.0	6.2
School type						
Public	4,336	90.3	5.8	5,119	89.6	6.9
Private	468	9.7	2.7	591	10.4	3.4
Catholic	314	6.5	3.1	385	6.7	3.9
Other private	154	3.2	2.1	206	3.6	2.8
Region						
Northeast	793	16.5	5.5	918	16.1	6.4
Midwest	1,207	25.1	4.9	1,429	25.0	5.8
South	1,924	40.0	5.2	2,230	39.1	6.0
West	880	18.3	5.6	1,133	19.8	7.2
Locale						
City	1,442	30.0	5.5	1,714	30.0	6.5
Suburban	1,939	40.4	5.9	2,359	41.3	7.2
Town	452	9.4	4.0	524	9.2	4.7
Rural	971	20.2	4.5	1,113	19.5	5.1

[1] Teacher was provided by 921 of the 944 HSLS:09 participating schools.
[2] Unweighted percent by school subject. Percentages may not sum to 100 because of rounding.
[3] Average number of teachers included in HSLS:09 for 921 of the 944 participating schools that provided teacher information.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

3.4.4 Parent Survey

Contextual information on the student's home life was collected from one parent or guardian. Therefore, the probability of selection for the parent was identical to the probability associated with his or her ninth-grade child.

As with the teacher information, contact information for parent/guardian was obtained from the school-provided lists either combined with the student data or included in a separate file. The requested information included the following items:

- name;
- complete home mailing address;
- all available 10-digit telephone numbers (e.g., home, work, and cell); and
- any e-mail address.

Parent lists failed the QA checks if there was no direct link with the student or if the mailing address was missing. Additionally, lists were submitted for a detailed review if more than 5 percent of the student and parent last names differed to verify the school-level match process.

Contact letters were addressed to the first parent/guardian listed for the student if more than one parent name was provided. However, study materials specifically requested that the parent/guardian in the household who was most knowledgeable about the sampled student complete the survey. For records with no parent name, contact letters were addressed to the "parent/guardian of" the sampled student to minimize the parent list rejection rate and the associated burden on the school coordinators.

Chapter 4. Data Collection Methodology and Results

4.1 Introduction

Chapter 4 summarizes the data collection procedures implemented for the base year of the High School Longitudinal Study of 2009 (HSLS:09). The school recruitment process and student data collection procedures are discussed, as are the sources of student contextual data (collected from parents, school administrators, school counselors, and teachers). Results from each data source are summarized in table 15 with details provided throughout the chapter. Figure 4 provides a list of frequently used acronyms found in this chapter.

Table 15. Summary of HSLS:09 base-year response rates: 2009

Instrument	Eligible	Participated	Weighted percent	Unweighted percent
School	1,889	944	55.5	50.0
School administrator[1]	944	888	94.9	94.1
School counselor[1]	944	852	91.3	90.3
Student questionnaire[2, 3]	25,206	21,444	85.7	85.1
Student assessment[2, 3]	25,206	20,781	83.0	82.4
Parent questionnaire[2]	25,206	16,995	67.5	67.4
School administrator[2]	25,206	23,800	94.5	94.4
School counselor[2]	25,206	22,790	90.0	90.4
Teacher questionnaire				
Mathematics teacher[4]	23,621	17,882	71.9	75.7
Science teacher[5]	22,597	16,269	70.2	72.0

[1] Uses the school base weight.
[2] Uses the student base weight.
[3] Among questionnaire-capable students (n = 24,658), some 21,444 completed the student questionnaire, and 20,781 completed the mathematics assessment. Thus 87.0 percent (unweighted) completed the student interview or 87.4 percent weighted. Similarly, 84.3 percent (unweighted) completed a mathematics assessment or 84.7 percent weighted.
[4] Uses the student base weight. Results reflect students who were enrolled in a mathematics course.
[5] Uses the student base weight. Results reflect students who were enrolled in a science course.
NOTE: All percentages are based on the row under consideration.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Figure 4. Frequently used data collection acronyms: 2009

CATI	*Computer-Assisted Telephone Interview*
FS	*Field Supervisor*
HDA	*Help Desk Agent*
IC	*Institutional Contactor*
QC meeting	*Quality Circle Meeting*
QCS	*Quality Control Supervisor*
SA	*Session Administrator*
SAA	*Session Administrator Assistant*
SC	*School Coordinator*
TI	*Telephone Interviewer*

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

4.2 Data Collection Methodology

This section documents the data collection methods employed for the HSLS:09 base-year study, including school recruitment, list collection, student data collection, parent data collection, and staff data collection. Recruitment of school districts and schools began a year before data collection activities commenced. In-school data collection comprised a student questionnaire and mathematics assessment. The out-of-school data collection comprised parent and school staff (school administrator, teacher, and school counselor) questionnaires. Students who did not participate in the in-school session were contacted to complete the questionnaire outside of school. Table 16 shows the start and end dates of major HSLS:09 activities.

Table 16. Start and end dates for major HSLS:09 activities: 2009

Activity	Start date	End date
School recruitment	September 2008	January 2010
Training of field staff	August 2009	September 2009
In-school data collection (student)[1]	September 2009	February 2010
Out-of-school data collection (parent, student, school staff)	September 2009	May 2010

[1] Students who were contacted out of school were contacted through April 2010.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

4.2.1 School Recruitment Overview

Pre-recruitment activities for school districts and schools began with the solicitation of study endorsements and a courtesy notification to the states. Obtaining cooperation from school districts, dioceses, and schools followed. Once schools agreed to participate, the recruitment team worked with schools to set up study logistics for the student sessions and to facilitate list collection. This section describes the processes used to recruit schools for HSLS:09.

4.2.1.1 Endorsements

Endorsements from nationally recognized organizations are often instrumental in legitimizing research studies to district and school staff and encouraging their participation. Prior to the start of the field test, RTI identified organizations likely to be influential to various groups asked to participate in the study (school administrators, school counselors, teachers, students, and parents). HSLS:09 was endorsed by 30 organizations, listed in figure 5.

Figure 5. Endorsing organizations: 2009

American Association of School Administrators	National Center for Improving Science Education/WestED
American Counseling Association	National Christian School Association
American Federation of Teachers	National Coalition of Girls' Schools
Association of Boarding Schools	National Council for Private School Accreditation
Association of Christian Schools International	National Council of Teachers of Mathematics
Association of Christian Teachers and Schools	National Education Association
Council for American Private Education	National Independent Private Schools Association
Council of Chief State School Officers	National PTA
Evangelical Lutheran Church in America	National School Board Association
Islamic School League of America	National Science Teachers Association
Jesuit Secondary Education Association	North American Division of Seventh-Day Adventists
Jewish Education Service of North America	Solomon Schechter Day School Association/United Synagogue of Conservative Judaism
Lutheran Church-Missouri Synod	United States Conference of Catholic Bishops
National Association of Independent Schools	Wisconsin Evangelical Lutheran Synod
National Association of Secondary School Principals	
National Catholic Educational Association, Department of Secondary Schools	

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

To facilitate recruiting and refusal conversion efforts and to garner support from private and Catholic schools, two endorsing organizations provided additional assistance. The National Catholic Educational Association (NCEA) and National Association of Independent Schools (NAIS) both contacted member schools to encourage participation. RTI secured affidavits of nondisclosure from NAIS and NCEA staff to ensure compliance with contractual security and confidentiality requirements.

NCEA sent a letter to Catholic schools to encourage participation in HSLS:09. Catholic schools that had agreed to participate received a letter encouraging their persistence in the study in the form of working with RTI to complete data collection logistics and set test dates.

NAIS took an active role in HSLS:09 recruiting efforts. NAIS staff who signed the confidentiality affidavit were provided a list of schools in the HSLS:09 sample that are NAIS members. Working from this list, NAIS staff sent e-mails and made phone calls to answer questions, respond to concerns about participating, and encourage NAIS member schools to participate.

4.2.1.2 School Recruitment

Before school recruitment began, the Chief State School Officer (CSSO) from each state was notified that the High School Longitudinal Study of 2009 would be conducted in districts and schools in his or her state. Each CSSO received an information package containing a lead letter from the National Center for Education Statistics (NCES) and a study brochure. The packages were sent by overnight express delivery so that it would be possible to track receipt of the information.

No follow-up was performed at the state level. Several states did call requesting more information about the study. When asked, the state officials were provided with the number of schools and districts selected from their state, but for reasons of confidentiality no districts or schools were named. For those states requesting a list of schools sampled from their state, an authorized representative was required to sign a nondisclosure affidavit before receiving the electronic list through secure means.

Recruitment commenced with public school districts at the same time the state notification was sent. An information package was sent to the superintendent of each district and diocese containing sampled schools. The package contained a lead letter from NCES and a study brochure. Several days after sending the information package, the superintendents were contacted by telephone by the study recruiting team. During the call, it was confirmed that the package had been received and it was determined who had been given responsibility for approving the study for the district or diocese. The district approver was then contacted to answer any questions and to gain permission to contact the sampled schools. Research proposals were prepared for 71 districts per their request. A generic research proposal was also available on the HSLS:09 website for those districts not requiring a customized proposal. Seventeen of the 71 district research applications were documented as refusals by research departments, 2 districts never responded to the application request and were coded as refusals, and 51 applications were approved.

As discussed in section 3.2.5, schools were released in four groups (release pools) to ensure a representative sample within design strata while limiting release of excess sample until such time as it was deemed necessary. There were 1,287 districts and dioceses containing eligible sampled schools; permission to proceed to the school level was received from 1,042 of them (81 percent). The districts and dioceses which granted permission to proceed contained 1,400 eligible schools, out of the 1,658 eligible schools affiliated with districts and dioceses (84 percent). Other eligible schools were not affiliated with districts or dioceses. For public and Catholic schools, school-level contact commenced upon receipt of district or diocesan approval. The 231 non-Catholic private schools sampled were contacted directly because it was not necessary to wait for higher approvals.

As at the state and district levels, each school received an informational package. The package was addressed to the principal and contained a lead letter from NCES and a study

brochure. The package also contained a district endorsement letter or district approval letter if provided by the district. Several days after sending the informational package, the recruiting team contacted the principals by telephone. During the call, receipt of the package was confirmed and it was determined who had been given responsibility for approving the study for the school. The recruiting team then spoke with the principal or designee to answer any questions about the study and to provide an overview of the various data collection activities.

Sampled school districts and public schools within 10 states received a slightly different treatment. The 10 states were identified for an augmentation (supported by the National Science Foundation) to allow for state-representative estimates associated with public school students in selected states (state sample information is documented in materials available for restricted data use license holders). If the state did not already have enough public schools sampled to yield participation of a sufficient number of schools (ideally 40 or more participating schools) to generate representative state data with a reasonable level of precision, additional schools were sampled from these states to achieve the desired yield. Sampled school districts and schools from these states were informed that administrative records may be collected from these states to supplement the data collected from schools and students. Letters to the states, districts, and schools contained a paragraph explaining this component of the study. The informational materials also included a flyer explaining how the state-representative data might be used. The CSSOs from these 10 states were contacted upon receipt of their informational package to confirm receipt and answer questions. Sampled school districts and schools in these states were otherwise contacted in the same way as the other school districts and schools, but the recruitment team was prepared to answer questions about the state representative data and how they would be used.

4.2.1.3 Study Logistics

Upon gaining school approval, recruiters identified a school coordinator (SC) at each school to serve as a point of contact and to provide logistical information. Once the SC was identified, materials were sent outlining the tasks for which he or she was responsible. The SC was responsible for scheduling the in-school sessions for data collection and identifying the appropriate staff members to complete the school administrator questionnaire and school counselor questionnaire. Unless already determined at the district level, the SC was also responsible for working with school personnel to specify the type of parental permission required for the in-school student sessions: explicit (active) consent or implicit (passive) consent. Examples of explicit and implicit consent forms may be found in appendix E.

In addition, the materials also presented questions to determine the feasibility of using school computer labs for the student session. To conduct the session on school computers, RTI developed a customized version of the Linux operating system, called Sojourn, to facilitate computer-based data collection, address concerns about data security, and ensure system compatibility across schools. Sojourn was launched on school computers via CD-ROM or USB

flash drive and created a secure link between the computer and the NCES survey site. Because Sojourn bypassed the computer's host system, it ensured that key loggers, viruses, and other malicious code did not track or record student-provided data or interfere with the host computer. Sojourn also allowed for a high degree of interoperability with hardware that used any of the x86 family of processors and therefore had little dependence on the make and model of a school's computers. The SC was asked to grant permission (or work with the person able to grant permission at the school or district) to use Sojourn on the school's computers and to answer questions to assess the compatibility of the computer's network with using Sojourn to administer the questionnaire and assessment.

In the fall of 2009, instructions were sent to the SC to prepare the student enrollment list from which the ninth-grade students would be sampled. For each student on the enrollment list, the SC was asked to provide the student's sex, race/ethnicity, and month and year of birth. Schools also were asked to provide parent contact information, and the course name, section number, and teacher name for each student's mathematics and science courses. List upload instructions offered the SC an option to upload all requested information at one time or to send the ninth-grade enrollment list initially and provide the parent and teacher information for only sampled students. Recruiters monitored receipt of the lists from the schools and continued to prompt for parent and teacher lists throughout the data collection period. Session administrators (SAs), whose responsibility was to conduct the in-school sessions, continued to request any outstanding parent and teacher lists after they made initial contact with the schools. RTI received student lists from each of the 944 participating schools. Parent lists were received from 910 schools (96 percent) and teacher lists were received from 921 schools (98 percent).

4.2.1.4 Refusals

HSLS:09 was largely successful in meeting its ambitious school recruitment goals. Nevertheless, extra effort was required to realize the sample targets. Compared to the past NCES high school longitudinal studies, schools and school districts declined to participate in HSLS:09 at a higher rate, and an unusually large number of schools rescinded their participation after agreeing to take part in the study. Table 17 provides the number of school participants and refusals, the number of schools that rescinded their participation, and the final status of these schools.

The most common objections from both districts and schools were concerns about staff burden, loss of instructional time, and overtesting of students. Table 18 provides a count of the reasons final refusal schools gave for refusing to participate. Note that a school may have given multiple reasons for refusing participation or rescinding initial approval.

Table 17. Participation and status of eligible schools: 2009

HSLS:09 school sample	Number
Eligible schools	1,889
Participating schools	944
Refusing schools	945
Schools that rescinded their participation	197
Conversion to final agreement	44
Conversion to final refusal	153

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 18. Reasons for refusal: 2009

Refusal reason	Refusal totals	Percent of refusals	Schools that rescinded participation totals	Percent of refusals
General refusal				
Don't want to participate	294	31.1	44	4.7
Voluntary/don't have to	103	10.9	15	1.6
No benefit to schools/districts/students	29	3.1	4	0.4
Gatekeeper	29	3.1	1	0.1
Other	191	20.2	50	5.3
No reason given	185	19.6	18	1.9
Student time concerns				
Too many other studies/grants/initiatives	207	21.9	18	1.9
Overtested/too many tests	185	19.6	18	1.9
Disrupts instructional time	180	19.0	25	2.6
Not meeting AYP (NCLB)	22	2.3	6	0.6
School circumstances				
Time/too busy/can't take on one more thing	383	40.5	73	7.7
Short staffed	107	11.3	35	3.7
School/district budget issues	94	9.9	19	2.0
Construction in school	24	2.5	4	0.4
Study burden				
Providing student list information	23	2.4	28	3.0

NOTE: Reasons for refusal are not mutually exclusive. AYP = Adequate Yearly Progress. NCLB = No Child Left Behind.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Participation was further hindered by an influenza pandemic and an economic downturn, which often led to cutbacks in school staff and resources. To address these concerns, flexible scheduling options were offered to the schools. Student data collection took place in schools from early September 2009 through the end of February 2010. Telephone follow-up occurred through April 2010 to facilitate participation of students who were unable to participate during the in-school sessions.

Although most schools participated according to the full study protocol, some schools required special accommodations to participate. The accommodations were offered to schools as needed to secure participation and to address specific concerns raised by schools about their participation in HSLS:09. The accommodations afforded schools the ability to participate under more favorable circumstances while not resulting in any loss of data. Table 19 shows accommodations available to schools to help obtain school participation. Although some schools accepted the offer of an accommodation and participated in the study, others felt that the accommodation was not necessary and participated according to the full study protocol. Still others felt that the accommodation did not offset their concern about participating and declined to participate in the study.

Table 19. Accommodations offered to schools: 2009

Accommodation	Accepted
Split sessions	12
Before-/after-school sessions	61
Assistance with lists	6
Assistance with preparations	11
Supply food to students (lunch/breakfast)	68
School-level results	109
Extended data collection window (January/February 2010)	29

NOTE: Some schools were offered multiple accommodations.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Designed to reduce study burden for hesitant schools, various component reductions were offered as a refusal conversion tool. Component reductions typically resulted in a loss of data and therefore were offered judiciously in an attempt to alleviate specific concerns raised by schools that would otherwise refuse to participate in the study. The number of schools that accepted each component reduction is shown in table 20. For example, schools that were unable or unwilling to allow students to complete a 90-minute session were offered a 60-minute session or a 45-minute session. Rather than dropping an entire component of the student session (either the student questionnaire or assessment), a reduction in the time allotted for each component was allocated on the computer. To accommodate the shortened time for administrative activities, login information was distributed to students while the session administrator read the informed consent script.

Table 20. Component reductions for converted initial refusal schools: 2009

Component reduction	Accepted
60-minute session	18
45-minute session	7
Abbreviated administrator questionnaire[1]	3
Drop counselor questionnaire	2
Drop teacher questionnaire	7
Drop parent questionnaire	3

[1] Three schools accepted this component reduction as a condition of participation. Within participating schools, to improve response rates for the administrator questionnaire, all administrators who had not completed their interview were also offered this option near the end of data collection. In total, some 79 abbreviated administrator questionnaires were completed.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

As with the accommodations, some schools accepted the offer of a component reduction and participated in the study; others felt that the component reduction was not necessary and participated according to the full study protocol. Still others felt that the component reduction did not offset their concern about participating and declined to participate in the study.

4.2.1.5 In-Person Refusal Conversion Visits

The majority of recruitment contacts were conducted by telephone and e-mail. However, a subset of the schools that initially declined to participate or were difficult to reach were contacted in person to solicit participation in the study. A training was conducted with experienced professional field staff to facilitate site visits to the schools to explain the study fully, address any concerns, and work to obtain the school's participation. Of the 139 schools targeted for in-person refusal conversion visits, 47 schools were converted and participated in the study, and 92 remained refusals.

4.2.2 Student Data Collection

Student data collection was conducted in 944 high schools from September 8, 2009, through February 26, 2010, with telephone follow-up continuing through April 18, 2010. Trained SAs conducted the in-school student sessions, which comprised a computerized questionnaire and mathematics assessment at the school.

4.2.2.1 Training

In August 2009, approximately 230 SAs were trained to conduct in-school student sessions. Prior to the training, each field supervisor (FS) and SA was asked to read his or her manual and complete a home study activity. The training included lectures and hands-on activities designed to prepare the staff to prepare for and conduct the in-school student sessions, distribute and track the parental consent forms, determine student eligibility, gain cooperation of students and parents, oversee the sessions, pay honoraria, report on session results, and perform administrative duties. The SA training agenda is shown in figure 6. Before commencing work on the study, each SA was required to pass a series of certification assessments to demonstrate

mastery in his or her job duties from understanding basic information about the study to performing specific aspects of his or her job duties. In addition to attending the SA training, 16 FSs had an additional 8 hours of supervisor training.

Figure 6. Session administrator training agenda: 2009

Day 1	Day 2	Day 3	Day 4
Welcome, Introductions, Objectives	Recruiting Schools	Student Script	Administrative Procedures
Purpose and Background of the Study	Enrollment List Collection	Entering Student Tracking Form Data	Review: Start to Finish
SA Responsibilities	Managing School Assignments	Student Questionnaire (with Round Robin Demo)	Q&A
Demo of CD, Thumb Drive, and Discussion of Laptops	Consent Types	Student Assessment	Certification
Respondents' Rights	Session Administration Logistics	Parent and Staff Questionnaires	Training Evaluation
Confidentiality and Data Security	Working with the School Coordinator	Contacting Parents	Distribution of Assignments
	Introduction to Laptop	Reporting to Field Supervisor	
	Laptop Security	Nonresponse Follow-up	
	Case Management System	Dealing with Disruptive Students and Problems at School	
	Sojourn "Bootable" CD and Flash Drive	Honoraria and Incentives	
	Using School Computers with Sojourn vs. Laptops	E-mail	
	Eligibility and Exclusions	Transmission	
	Student Tracking Form		

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

SAs recruited, hired, and trained session administrator assistants (SAAs) to help during the in-school sessions, as needed. The SAA was responsible for helping set up the school computers and monitoring the student sessions. SAAs were most often used to assist with the SA's first assigned school, when five or more laptop computers had to be carried into the school and required monitoring, and when schools split the students into multiple computer labs for concurrent sessions.

Field supervisors conducted weekly calls with SAs to provide refresher training as needed, report on lessons learned in the field, brainstorm solutions to challenges experienced at schools, and share strategies that had resulted in successful in-school sessions.

4.2.2.2 Parental Permission, Student Eligibility and Capability, and Student Accommodations

Preparation for the student sessions commenced approximately 3 weeks prior to the first scheduled student session at a school, when the SC received parental permission forms and the list of students sampled. The SA and SC distributed the permission forms, tracked the return of permission forms, confirmed the eligibility and capability of sampled students, and determined

whether any sampled students needed special accommodations to participate in the study. Students were deemed incapable to participate if they had a physical or cognitive disability or a language barrier that precluded them from participation in the base-year data collection.

Based on school or district requirements, schools chose to use either explicit parent permission or implicit parental permission. The use of explicit parent permission mandated that the student had a signed parental permission form to participate in the study. With implicit parental permission, students only returned the form if they did not have parental permission to participate in the study. Explicit permission forms were used in 190 participating schools (20 percent), while implicit parental permission forms were used in 754 participating schools (80 percent). The consent forms were two-sided, with English on the front and Spanish on the back. Consent forms were translated into other languages upon request from the district or school.

SAs worked closely with SCs to achieve the highest possible student participation rates. One week prior to the day of the initial student session, a second consent form was sent home with students who had not yet returned an explicit permission form. If schools were willing to provide contact information, parents from explicit permission schools were contacted to ask whether they had questions about the study and to encourage parents to sign and return permission forms. Parents who refused to allow their student to participate were contacted to alleviate concerns or answer questions. Regardless of permission type, and when contact information had been provided to the SA, parents were contacted prior to the session to ask that they remind students to attend the session. Table 21 shows participating schools by consent type and table 22 shows student response rates by consent type.

Table 21. Participating schools by consent type: 2009

Permission type	Number of schools	Unweighted percent
Total	944	100.0
Explicit permission	190	20.1
Implicit permission	754	79.9

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 22. Student response rate by consent type: 2009

Permission type	Number of questionnaire capable students[1]	Student respondents	Unweighted percent
Total	24,658	21,444	87.0
Explicit permission	4,997	3,534	70.7
Implicit permission	19,661	17,910	91.1

[1] Questionnaire-incapable students (not included here) are those sampled ninth-graders who were excluded from questionnaire and assessment participation because of a physical or cognitive disability, or because of a language barrier.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

HSLS:09 was designed to include as many sampled ninth-graders as could be validly assessed or surveyed. The SA collaborated with the SC to determine the eligibility and capability status of each sampled student. To achieve the most accurate and up-to-date student information, list collection and sample selection occurred early in the school year. A little more than 1,000 sampled students were no longer enrolled at the high school on the day of the student session, likely because they were on the ninth-grade roster at the start of the school year but never attended the school, or attended at the time of rostering but had left the given school (e.g., transferred) prior to the student session. Another 94 sampled students reflected sampling errors; that is, they were determined to be ineligible because they were not in ninth grade, despite their inclusion on the school-provided enrollment list. Students in these situations were coded as study-ineligible.

Students who were unable to participate directly because of a physical or cognitive disability were regarded as eligible sample members for whom only contextual data would be collected (school administrator, counselor, teacher, and parent reports). Some students with disabilities were capable of completing the questionnaire or assessment, and did so. A student with a physical or cognitive disability was allowed to participate if, according to the school, that student was capable of participating in other standardized tests. Students who were categorized as English language learners, meaning they had completed fewer than 3 years of English language instruction and did not have sufficient proficiency in English to participate, were also excluded from direct participation. Ninth-graders unable to participate in the base year because of cognitive or physical disabilities or language barriers may potentially be included in future rounds of the study, because their status may change. A total of 548 sampled students—about 2 percent of the eligible sample—were identified as questionnaire-incapable because of physical or cognitive disability or owing to a language barrier. These cases appear only on the restricted-use file. Table 23 shows the eligibility and questionnaire incapability rates of the student sample.

Special accommodations were provided to students who could not otherwise participate. For example, students with learning disabilities or a visual impairment could have someone read the questionnaire aloud to them. Students who were assisted by a reader were only eligible to take the questionnaire; the mathematics assessment could not be read to a student because of the

nature of the questions (e.g., interpretation of graphs and charts). Sign language interpreters, if provided by the school, were permitted to sign the testing instructions to students with hearing impairments. Students were given extra time on the questionnaire, the assessment, or both, if they had an Individualized Education Program that made such a stipulation. A total of 456 students (2.1 percent of the 21,444 student participants) required accommodations to participate. Table 24 shows the number and specific accommodations provided for the students who participated with an accommodation.

Table 23. Student eligibility and questionnaire incapability rates: 2009

Eligibility	Number	Unweighted percent
Total student sample	26,305	100.0
Eligible	25,206	95.8
Questionnaire capable	24,658	93.7
Questionnaire incapable	548	2.2
Questionnaire incapable—physical disability	38	0.1
Questionnaire incapable—cognitive disability	303	1.2
Questionnaire incapable—limited English proficiency	207	0.8
Ineligible	1,099	4.2
Ineligible—wrong grade	94	0.4
Ineligible—no longer enrolled	1,005	3.8

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 24. Accommodations for participating students: 2009

Accommodation	Number	Percent
Total students requiring accommodations	456	100.0
Extra time on test	214	46.9
Extra time on questionnaire	7	1.5
Extra time on test and questionnaire	160	35.1
Other accommodations	75	16.4

NOTE: "Other accommodations" includes instructions in American Sign Language and questions read to student.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

4.2.2.3 Testing Modes

In-school sessions were conducted on school computers or laptop PCs provided by the project. The feasibility of using school computers was determined during the recruitment phase prior to data collection. When school computers were used, Sojourn facilitated the computer-based data collection.

Each SA was provided with five laptops to be used by students. Laptops were not connected to the Internet while in the schools. Rather, student responses were stored directly on the laptop in encrypted files and the SAs securely transmitted the data after each in-school

session. SAs brought the laptops to supplement the school's computer lab, thus ensuring that there were enough computers for all sampled students or to have a set of backup computers in case they were needed. This minimized the number of makeup sessions required to collect data from all of the sampled students. Project laptops were also used when schools did not allow the study to be conducted on school computers or when there were too few available school computers. By design, students who used school computers had an identical testing experience to those who used project-provided laptop computers.

Two schools did not allow any in-school sessions. In those schools, student interviews were conducted via computer-assisted telephone interviewing (CATI) or were self-administered on the Web. The CATI and web administrations only included the questionnaire portion of the session.

Eighty-four percent of the participating high schools conducted the student sessions on school computers using Sojourn. Project laptop computers were exclusively used in 16 percent of the schools. Fifty percent of participating schools used a combination of Sojourn and project laptops. The combination of Sojourn and project laptops was often used when school computer labs had fewer functional computers than the number of students sampled at the school, and the laptops supplemented the school computers. Eighteen high schools used a custom version of Sojourn to address unique network configurations that were not already included on the standard version. Table 25 shows the number and percentage of schools by the session administration mode and table 26 shows the number and percentage of schools and students who used each of the testing modes, respectively. Among those students who completed the questionnaire, 96.9 percent also completed the mathematics assessment. The remaining students completed only the interview and not the assessment.

Table 25. School participation by test mode: 2009

	Number	Percent
Total	944	100.0
Sojourn/web	317	33.6
Project laptop	152	16.1
Combination Sojourn and project laptops	473	50.1
Computer-assisted telephone/web interview[1]	2	0.2

[1] Only includes schools that did not allow in-school student sessions.
NOTE: Percentages may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 26. Student completions by test mode: 2009

	Number	Percent
Total	21,444	100.0
In-school		
Sojourn/Web	15,913	74.2
Project laptop	5,088	23.7
Out-of-school		
Computer-assisted telephone interview	414	1.9
Self-administered web interview	29	0.1

NOTE: Percentages may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

4.2.2.4 Conducting the Sessions

SAs arrived at least 1 hour before each session to prepare for the session, including setting up the computers. Prior to the start of each session, the SA checked each name against the student tracking form and handed each student an index card with his or her unique user ID and password. Students used these credentials to log in to the computerized questionnaire and assessment. The SA read a script to the group of students to inform them about the study, that their participation was important but voluntary, and to provide instructions. During the session, the SA monitored the room, answered questions, solved technical problems, and generally kept the students on task. SAs could not help the students with mathematics problems, but could provide general guidance on how to navigate the screens.

Students were allotted 35 minutes to complete the questionnaire. After 35 minutes (or upon completion of the survey if completed in less than 35 minutes), they automatically transitioned to the 40-minute mathematics assessment. If the student completed all the items on the assessment before 40 minutes elapsed, but had not yet completed all the items on the questionnaire, he or she automatically cycled back to the questionnaire to answer any remaining questions. This feature was used by 3,177 students who responded to at least one questionnaire item after completing the assessment. Of those who cycled back to work on the student questionnaire, 95 percent ultimately completed the interview.

Students received an educational “goody bag” as a token of appreciation at the completion of the session. Goody bags included a drawstring backpack filled with a pack of colored gel pens, a ruler with pictures of the presidents on one side and state capitals on the other, a water bottle, and a zip lock wallet. Once the goody bags were distributed and the students were dismissed, the SA packed up the equipment, cleaned the room, and scheduled or confirmed makeup session(s). In some cases, schools did not permit the SA to conduct a makeup session. Makeup sessions were conducted at 561 schools (59 percent). Of the 21,444 student

participants, 18,319 participated in their school during the initial session, 2,682 participated during a makeup session, 414 were surveyed via CATI, and 29 participated via the Web.

At the end of the first session, the SA paid the IT coordinator a $50 honorarium for testing the Sojourn CD and configuring the school's network, if necessary, to enable the computerized session. Once all activities including makeup sessions were completed at the school, the SC honorarium was paid. The SC received a base honorarium of $100 and an additional $25 for achieving an 85 percent student participation rate or an additional $50 for achieving a 92 percent student participation rate.

4.2.3 Parent Data Collection

One parent of each sampled student was asked to complete a 30-minute questionnaire. Parents were asked to have the parent most knowledgeable about the sampled student's education be the person to complete the questionnaire. The parent questionnaire could be self-administered on the Web or completed with a professional interviewer via CATI. Additionally, to mitigate nonresponse among parents, a paper-and-pencil questionnaire containing critical questionnaire items was sent to nonresponding parents near the end of data collection.

4.2.3.1 Training of Interview Data Collection Staff

The HSLS:09 parent data collection staff included quality control supervisors (QCSs), help desk agents (HDAs), telephone interviewers (TIs), and intensive-tracing staff. Prior to beginning work on HSLS:09, all staff completed a comprehensive training regimen. Training topics included confidentiality requirements and security procedures, an overview of the HSLS:09 study, frequently asked questions, and procedures for case management. TIs were trained to administer both the parent and student questionnaires by reviewing the instruments and learning how to navigate the occupation and major coding applications. Each trainee was required to pass certification assessments associated with the instruments, CATI case management system, and frequently asked questions.

4.2.3.2 Contacting and Interviewing

The parents of sampled students were sent letters to announce the start of data collection. HSLS:09 parent data collection began with a 3-week self-administered, web-only early data collection period. After the early data collection period, interviewers called sample members to complete the interview over the telephone. The self-administered web interview remained available to sample members until the end of data collection. Sample members who had not completed their interview received mail and e-mail reminders approximately every 3 weeks. Parents had the option to complete web and CATI interviews in English or Spanish. Parents for whom contact information was received late in the data collection period had their early data collection period reduced, such that outbound CATI calls began earlier to expedite the process.

In response to lower-than-desired parent response rates, an incentive experiment was implemented about 3 weeks prior to the end of data collection. Parents were inducted into the experiment upon reaching one of three thresholds: (1) the sample member refused to participate but was not coded a final refusal; (2) 15 or more calls had been placed to the sample member, or (3) the sample member had an address but no phone number was found after all intensive tracing processes had been exhausted. If a case qualified for multiple groups and treatments, the priority order was refusals, 15+ calls, then tracing dead-ends. Sample members were assigned an incentive treatment of $0, $10, or $20, with parents from the same school receiving the same incentive treatment. Refusal cases were offered an abbreviated version of the questionnaire, which took approximately 17 minutes. Unsuccessful tracing cases were offered a two-page hardcopy questionnaire which contained only the most critical parent items. Approximately 43 percent of parents who were offered $20 completed, while approximately 38 percent of those who were offered $10 completed an interview, as did 39 percent of parents offered nothing. At 47 percent, the highest percentage of completed interviews was seen by parents who were offered $20 and who had been included in the experiment based on the fact that they had received more than 15 CATI calls.

One week before the end of the data collection, a final mailing was sent to all nonresponding parents asking them to complete the interview. The mailing included the hardcopy questionnaire and a stamped business reply envelope as an alternate mode of completing the survey. Sample members were also informed that they could complete either an abbreviated or a standard interview on the Web or over the telephone. If the parent was eligible for an incentive, he or she was informed that the incentive was only offered for the completion of the web or CATI interview. For those opting to complete the brief paper-and-pencil interview, no incentive was provided. Table 27 shows the outcomes of the incentive experiment.

4.2.3.3 Parent Interview Outcomes by Mode

HSLS:09 data collection allowed for parents to complete a web interview themselves or to respond to a telephone interviewer who input parent responses online. As previously discussed, parents of student respondents who had not completed a parent survey received a paper-and-pencil interview survey in the mail 1 week before the end of the data collection outbound calling period. As seen in table 28, approximately 39 percent of all HSLS:09 completed parent interviews were self-administered, including self-administered web and paper-and-pencil interviews. Sixty-one percent of parent interviews were completed via CATI.

Statistically significant differences in completion mode were seen in terms of the language of the respondent and the type of consent form used for the in-school session. Significantly more sample members completed a self-administered interview in English (41 percent) than in Spanish (7 percent; $z = 5.62$, $p < .01$). The percentage of parents who completed a self-administered interview was higher for explicit consent schools (44 percent) than for implicit consent schools (38 percent; $z = 3.66$, $p < .01$).

Table 27. Summary of parent incentive experiment results: 2009

Incentive	Eligible for incentive	Responded	Percent	Web/CATI response	Web/CATI RR	Paper response	PAPI RR	Proportion Web/CATI	Proportion PAPI
All incentive groups									
Total	7,682	3,041	39.6	2,231	29.0	810	10.5	73.4	26.6
$0	2,561	993	38.8	659	25.7	334	13.0	66.4	33.6
$10	2,589	971	37.5	719	27.8	252	9.7	74.0	26.0
$20	2,532	1,077	42.5	853	33.7	224	8.8	79.2	20.8
Refusal conversion									
Total	1,400	361	25.8	248	17.7	113	8.1	68.7	31.3
$0	454	113	24.9	65	14.3	48	10.6	57.5	42.5
$10	466	110	23.6	82	17.6	28	6.0	74.5	25.5
$20	480	138	28.8	101	21.0	37	7.7	73.2	26.8
Fifteen or more calls									
Total	5,898	2,604	44.2	1,971	33.4	633	10.7	75.7	24.3
$0	1,968	856	43.5	592	30.1	264	13.4	69.2	30.8
$10	1,991	831	41.7	635	31.9	196	9.8	76.4	23.6
$20	1,939	917	47.3	744	38.4	173	8.9	81.1	18.9
Dead-end tracing									
Total	384	76	19.8	12	3.1	64	16.7	15.8	84.2
$0	139	24	17.3	2	1.4	22	15.8	8.3	91.7
$10	132	30	22.7	2	1.5	28	21.2	6.7	93.3
$20	113	22	19.5	8	7.1	14	12.4	36.4	63.6
Final mailing									
Total	3,210	1,182	36.8	436	13.6	746	23.2	36.9	63.1
$0	1,102	427	38.7	115	10.4	312	28.3	26.9	73.1
$10	1,100	367	33.4	143	13.0	224	20.4	39.0	61.0
$20	1,008	388	38.5	178	17.7	210	20.8	45.9	54.1

NOTE: Percentages may not sum to 100 because of rounding. All percentages are based on the number of sample members within the row under consideration. If a case qualified for multiple groups, the priority order was refusals, 15+ calls, then tracing dead-ends. CATI = computer-assisted telephone interview. PAPI = paper-and-pencil interview. RR = response rate.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 28. Parent interview mode, by interview form, language, and consent type: 2009

	Total completed interviews	Mode of completion			
		Self-administered		Interviewer-administered	
		Number	Percent	Number	Percent
Total	16,995	6,702	39.4	10,293	60.6
Interview form					
Standard interview	15,985	5,813	36.4	10,172	63.6
Abbreviated interview	202	81	40.1	121	59.9
Paper-and-pencil interview	808	808	100.0	†	†
Interview language					
English	16,059	6,636	41.3	9,423	58.7
Spanish	936	66	7.1	870	92.9
In-school consent type					
Explicit permission	3,155	1,382	43.8	1,773	56.2
Implicit permission	13,840	5,320	38.4	8,520	61.6

† Not applicable
NOTE: All percentages are unweighted and based on the number of parents within the row under consideration.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09) Base Year.

4.2.3.4 Locating and Interviewing Outcomes

Locating nonresponding sample members is an integral part of a successful CATI data collection. Tracing activities on HSLS:09 were initiated after all of the contacting information for a case had been exhausted. The first step in the HSLS:09 tracing process was to send the unlocated cases en masse to a company called Accurint for batch tracing. Cases that were returned from Accurint with new information were sent back to production. Those for which new information was not provided from Accurint were sent to RTI's Tracing Services for intensive interactive tracing, which consists of database searches and pursuing leads associated with contact information supplied by the school or gathered during data collection attempts in an effort to obtain current contact information. Approximately 1 month prior to the end of the data collection outbound calling period, 973 unlocated cases were sent back for additional intensive interactive tracing. Of the 25,206 parents of eligible ninth-graders, more than 13 percent required at least some level of intensive interactive tracing, as shown in table 29.

Table 29. Parent cases requiring intensive tracing, by interview completeness, language, and in-school consent type: 2009

		Cases requiring intensive tracing	
	Total	Number	Percent
Total	25,206	3,401	13.5
Not interviewed	8,211	1,975	24.1
Interviewed	16,995	1,426	8.4
Interview completeness[1]			
Standard interview	15,985	1,251	7.8
Abbreviated interview	202	16	7.9
Paper-and-pencil interview	808	159	19.7
Interview language[1]			
English	16,059	1,319	8.2
Spanish	936	107	11.4
In-school consent type[1]			
Explicit permission	3,155	317	10.0
Implicit notification	13,840	1,109	8.0

[1] Includes completed interviews for parents of responding students.
NOTE: All percentages are unweighted and based on the number of parents within the row under consideration.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Locate and response rates for cases sent to tracing are presented in table 30. A total of 2,005 cases were sent to Accurint for batch tracing of which 78 percent were either returned with new information or confirmed existing information. Of those returned with new or confirmed information, 24 percent ultimately completed an interview. Interactive intensive tracing yielded new information for approximately 58 percent of the cases traced. Thirty percent of the cases for which new information was provided ultimately completed an interview. As expected, the locate rate for cases that received additional intensive tracing was substantially lower, at 29 percent. Of the cases that were given additional time in intensive tracing, the response rate was less than 10 percent.

Table 30. Locate and response rates for parent cases, by tracing efforts: 2009

		Located[1]		Located and interviewed[2]	
	Total	Number	Percent	Number	Percent
Accurint batch tracing	2,005	1,563	78.0	488	24.3
Intensive interactive tracing	2,780	1,618	58.2	824	29.6
Additional tracing	973	283	29.1	92	9.5

[1]Provided new information or confirmed existing information.
[2]Percentage interviewed is based on the number of cases located.
NOTE: The totals for tracing sources are not mutually exclusive (thus, for example, a given case may have received more than one treatment). All percentages are unweighted and based on the number of cases within the row under consideration.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

4.2.3.5 Parent and Outside-School Student CATI and Web Contacting and Interviewing Effort

Telephone Interviewer Hours. The CATI component of the HSLS:09 data collection required considerable effort on the part of TIs. QCSs, HDAs, and TIs averaged 3.11 hours per completed CATI interview. Time per completed case includes locating and contacting sample members, prompting sample members to complete interviews, reviewing call history, scheduling callbacks, entering detailed comments or suggestions to assist with reaching and interviewing sample members, and responding to incoming help desk calls. The standard HSLS:09 parent interview took approximately 31 minutes to administer in CATI.

Number of Calls. The number of calls required to secure a completed HSLS:09 parent interview varied across aspects such as abbreviated versus full interview and parental consent type. Table 31 presents the average number of calls by sample member subcategories.

Parents who completed an HSLS:09 interview received approximately 16 calls; however, parents who did not complete an interview received an average of 32 calls, $t(11951) = 39.55$, $p < .0001$. Significant differences in call counts were also found among cases based on the mode of administration. Parents who received telephone follow-ups and completed a self-administered web interview were called approximately 22 times, while those who completed a CATI interview received approximately 15 calls, $t(8157.5) = 18.68$, $p < .0001$. The number of calls was also associated with interview form. Paper-and-pencil (PAPI) interviews were called an average of approximately 61 times. In contrast, abbreviated interviews were called 29 times and standard interviews were called approximately 14 times, $F(2, 16992) = 2324.28$, $p < .0001$.

Student Web/CATI Interviewing. Student sample members who did not participate in the in-school session were contacted via CATI. Student nonparticipation was a result of the student being absent from school or engaged in a conflicting activity on the in-school test day(s), or unwillingness of some schools to offer a makeup session. For CATI cases that required a student interview, TIs first contacted the parent to obtain verbal permission for the student to participate in a telephone interview. Once permission had been granted, the student was contacted directly. As with the parent interviews, students were provided background on

HSLS:09 and read the informed consent text prior to administering the interview over the telephone.

Table 31. Number of calls to parent sample members, by interview mode, completeness, language, consent type, and student response status: 2009

	Number of cases	Number of calls	Average calls per case
Total	25,206	531,424	21.1
Not interviewed	8,211	259,523	31.6
Interviewed	16,995	271,901	16.0
By mode			
Self-administered—no telephone follow-up	1,335	†	†
Self-administered—with telephone follow-up	5,352	120,058	22.4
Interviewer-administered	10,308	151,843	14.7
Interview form			
Full interview	15,985	216,939	13.6
Abbreviated interview	202	5,888	29.1
Paper-and-pencil interview	808	49,074	60.7
Interview language			
English	16,059	256,045	15.9
Spanish	936	15,856	16.9
In-school parental permission type			
Explicit permission	2,155	48,494	22.5
Implicit permission	13,840	223,407	16.1

† Not applicable
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Although the CATI option was the preferred method of interviewing students, a web option was provided to students when requested. A CATI student interview took approximately 42 minutes to complete, while a self-administered web interview took approximately 30 minutes to complete. Of the 21,444 completed student interviews, 414 were completed via CATI and 29 were completed via self-administered web interview out of school.

4.2.3.6 Parent Data Collection Quality Control Procedures

Several methodologies were employed to ensure that high-quality data were collected. These include live interview monitoring, a help desk, and regular Quality Circle (QC) meetings.

Live Interview Monitoring. RTI project staff conducted audio and visual monitoring for quality assurance purposes. Live interview monitoring provided call center supervisory staff with a means to oversee TIs in real time to ensure that they were following scripts, coding responses accurately, and maintaining a professional demeanor with respondents. Help desk and CATI activities were monitored for approximately 3,417 hours. The monitoring hours represent

approximately 9.6 percent of the cumulative interviewing hours (including activities other than conducting interviews, as listed in section 4.2.3.5).

Help Desk. HSLS:09 employed a help desk to assist sample members who had difficulties accessing the web interview, to answer questions about the study, and to supply passwords or study IDs. Sample members who needed assistance with the web instrument could reach the help desk via a toll-free telephone number or by e-mail. The help desk opened on September 8, 2009, after the initial contact letter had been mailed.

The primary reason for which sample members called the help desk was to request a new password or their study ID (91 percent). Sample members also called to ask questions about the study (1 percent) and for assistance disabling their web browser's pop-up blocker (3 percent). In cases where an HDA was unable to resolve a call within 5 minutes, the HDA reminded the sample member that he or she could complete the interview over the telephone. Each call to the help desk was entered into a custom web-based help desk application. In addition to documenting all calls to the help desk, the help desk application provided a means to:

- verify a sample member's identity;
- provide study ID and password information to allow a sample member to access the web interview;
- unlock cases that had been locked out of the web interview; and
- follow up with calls that were not resolved immediately.

Also contained within the help desk application was a report which allowed project staff to track the number and types of help desk calls.

Quality Circle Meetings. QC meetings were vital for ensuring that project staff, call center supervisory staff, HDAs, and TIs were communicating regularly about study progress, remedies to common problems, and general administrative tasks. These meetings were conducted weekly and provided a forum for discussing instrument issues, gaining cooperation of gatekeepers, identifying the most knowledgeable parent, keeping the interviewers motivated for meeting study goals, and acquiring feedback on data collection issues. QC meeting notes were posted in the CATI system so call center staff were able to review the most up-to-date information. Below is a list of topics that were discussed during HSLS:09 QC meetings:

- interview questions and responses;
- problem sheet submissions and resolutions;
- leaving detailed case comments;
- help desk operations;
- refusal aversion and conversion strategies; and
- methods of gaining cooperation from gatekeepers.

4.2.4 Staff Data Collection

In addition to the student and parent questionnaires, one school administrator, one school counselor, and the mathematics and science teachers of each sampled student were asked to complete a 30-minute questionnaire. Each staff questionnaire was available on the Web or via CATI.

4.2.4.1 Administrator Survey

School administrators were asked to report on the administration and policies at their schools. At the time that the schools were recruited, the SC was asked to designate an individual at the school to be responsible for completing the school administrator survey. A lead letter and a study brochure were sent to the person responsible for completing the school administrator survey. The letter provided instructions on how to access the web-based survey and how to complete the survey by telephone with one of RTI's Institutional Contactors (ICs).

The school administrator survey was most frequently completed entirely by the school principal, but any knowledgeable school staff member could complete the first three sections of the instrument. The principal was explicitly asked to complete the last section of the questionnaire. The survey was divided into four sections. The first three sections requested factual information about the school's characteristics and environment, mathematics and science teacher qualifications, mathematics and science programs, and programs offered to assist students at risk of failure in mathematics and science. These sections could be completed by the principal or a designee who was knowledgeable about this information. The final section asked for judgmental evaluations about the school climate, and was designed to be completed by the principal only. Separate login credentials were provided for the school administrator and the designee, when applicable.

The school administrator survey took, on average across all (standard and abbreviated) administrator survey respondents, 41 minutes. The standard school administrator survey took on average 44 minutes to complete. The online interview averaged approximately 45 minutes to complete, while CATI interviews averaged 37 minutes. The longer self-administration time may be a result of stop and start patterns and multitasking by the respondents.

An abbreviated version of the school administrator survey was offered to nonresponding administrators approximately 4 weeks prior to the end of data collection. The abbreviated administrator survey asked questions about the school's characteristics, student population, and teachers. A school administrator or designee could complete the abbreviated version in an average of 23 minutes. The self-administered abbreviated interview was completed in an average of 24 minutes, while the abbreviated CATI interview took approximately 20 minutes to complete.

ICs prompted school administrators to complete surveys by telephone and e-mail through April 2010. Reminder letters were sent approximately 3 weeks apart and automated reminder e-mail messages were sent approximately 3 days after a hardcopy letter was sent.

4.2.4.2 Counselor Survey

At the time that the schools were recruited, the SC was asked to designate an individual at the school to be responsible for completing the counselor survey. Although the head or senior counselor was preferred, this individual could be any counselor fully knowledgeable about school policies and practices addressing students' needs in the transition to high school. A lead letter and a study brochure were sent to the counselor responsible for completing the school counselor survey. The letter provided instructions on how to access the web-based survey and how to complete the survey by telephone with an IC.

The counselor survey covered such topics as:

- student placement into classes;
- counselor resources available to the students within the school;
- graduation requirements; and
- college preparation programs offered at the school.

The school counselor survey took about half an hour to complete. An abbreviated version of the counselor survey was not offered. As with the administrator instrument, the counselor survey was offered online or over the telephone. The online interview averaged approximately 29 minutes and the telephone interview averaged about 33 minutes to complete.

Prompting for school counselor surveys was done by the ICs, via telephone and e-mail through April 2010. Reminder letters were sent approximately 3 weeks apart and automated reminder e-mail messages were sent approximately 3 days after a hardcopy letter was sent.

4.2.4.3 Teacher Survey

At the time that the ninth-grade student enrollment list was requested, the SC was also asked to provide mathematics and science teacher information for each student, including teacher name, course name, course section or period number, teacher telephone number, and teacher e-mail address. In many cases, schools elected to provide the teacher information after the student sample was drawn, to limit the information to teachers of sampled students only. More detail on the teacher list collection process can be found in section 4.2.1.3.

A lead letter and a study brochure were sent to each teacher to ask that they complete their teacher interview. The letter provided instructions on how to access the web-based questionnaire and how to complete the survey by telephone with an IC. The teacher list specified the course(s) for which the teachers were asked to respond, but did not identify the students participating in HSLS:09 from those classes. If it was determined during prompting calls or by

e-mail communication that a particular teacher had not taught the specific mathematics or science course, then an attempt to identify the student's correct teacher was made. Teachers were coded as ineligible if it was determined that they did not teach the specified mathematics or science course.

Mathematics and science teachers of sampled ninth-grade students were asked to complete a teacher survey that covered topics such as the following:

- teacher interaction with students;
- teacher background and experience in teaching profession; and
- teacher preparedness to teach subject areas.

Although a number of classroom-level items, specific to the classrooms of particular HSLS:09 students, were asked, no teacher ratings of individual students were obtained. For confidentiality reasons, student names were never shared with teachers.

The standard version of the HSLS:09 teacher survey took approximately 26 minutes to complete. Web-based teacher interviews were completed in an average of 26 minutes while telephone interviews were completed in approximately 27 minutes. An abbreviated version of the teacher survey was offered to nonresponding teachers approximately 2 weeks prior to the end of data collection. The abbreviated survey asked questions about the teacher's background and teaching experience, and could be completed in 10 minutes, with online interviews averaging 10 minutes and telephone interviews averaging approximately 9 minutes. If allowed by their school or district, all responding teachers received a check for $25 for completing the survey.

Beginning in early February 2010, the ICs requested the assistance of the SCs to help prompt for the completion of the teacher surveys. Prompting telephone calls were made to nonresponding teachers through April 2010. Reminder letters were sent approximately 3 weeks apart and automated reminder e-mail messages were sent approximately 3 days after a hardcopy letter was sent.

4.2.4.4 Nonresponding School Survey

In an effort to determine the characteristics of schools that did not participate in HSLS:09, such schools (or their associated districts) were asked to complete a web-based school characteristics questionnaire for nonresponding schools. This questionnaire gathered information about basic characteristics of the refusing schools, which were also collected in the school administrator questionnaire for participating schools. Respondents had the option of completing the questionnaire online, via telephone, or on hard copy. Letters were mailed to schools or districts with instructions on how to access the survey online and were followed up by telephone and e-mail as needed. Among the 945 nonresponding eligible sample schools, a total of 623 completed questionnaires (66 percent) were received. Of the respondents, 544 surveys were completed online (87 percent) and an additional 79 surveys were completed by telephone (13

percent). Information from this questionnaire is not available on the HSLS:09 base-year data files; the information was used to make nonresponse adjustments to the school weights.

4.3 Data Collection Results: Response and Participation Rates

Response rates for the student and contextual questionnaires are provided in this section. Table 32 reviews the school sample sizes among specific sampling strata and participation yield by school type and locale. The target number of schools was achieved, despite a depressed response rate. Among the states targeted for state representative estimates, targets were achieved in 9 of the 10 states. State-level estimates with a slightly lower level of precision are still possible for the remaining state.

Table 32. HSLS:09 school sample size and participation yield by type and locale

	Eligible	Target	Participating schools
Total	1,889	944	944
School type			
Public	1,495	744	767
Total private	394	200	177
Catholic	194	100	102
Other private	200	100	75
Locale			
City	626	308	272
Suburban	693	344	335
Town	198	103	117
Rural	372	189	220
Region			
Northeast	340	161	149
Midwest	474	235	251
South	702	364	380
West	373	184	164
Total for state representation	888	409	454

NOTE: Information concerning the states that have state-representative data is provided in documentation for the restricted-use files.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

A total of 944 high schools participated in the HSLS:09 data collection. A total of 26,305 students were sampled from these schools, for an average of 28 students per school, with 25,206 eligible. Of 25,206 eligible sampled ninth-graders, 21,444 were questionnaire-completers, 548 were questionnaire-incapable, and 3,214 were nonrespondents. Contextual data for questionnaire-incapable students can be found only on the restricted-use file. The overall student unweighted response rate was 85 percent; 21,444 students participated out of 25,206 who were

eligible and capable of completing the questionnaire. As seen in table 33, response rates based on school type were consistent, from approximately 85 percent to 87 percent.

Table 33. Student response rates by school type: 2009

School type	Eligible students	Student participants		
		Number	Weighted percent[1]	Unweighted percent
Total	25,206	21,444	85.7	85.1
School type				
Public	20,658	17,511	85.6	84.8
Total private	4,548	3,933	86.8	86.5
Catholic	2,819	2,444	87.2	86.7
Other private	1,729	1,489	86.4	86.1

[1] Weighted percentages use the student base weight.
NOTE: All percentages are based on the number of students within the row under consideration.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 34 presents response rates based on student characteristics (sex and race/ethnicity). Sex and race/ethnicity data generally are available for respondents and nonrespondents alike, because the school (in addition to the student and parent questionnaires) was a source for such information. Unweighted response rates based on racial categories ranged from 89.6 percent of American Indian/Alaska Native students to 40.8 percent of students who were another race, more than one race, or for whom race was missing.

Table 34. Student response rates by student characteristics: 2009

Sample member characteristics	Eligible students	Student participants		
		Number	Weighted percent[1]	Unweighted percent
Total	25,206	21,444	85.7	85.1
Sex				
Male	12,885	10,887	85.0	84.5
Female	12,321	10,557	86.4	85.7
Race/ethnicity				
American Indian/Alaska Native	249	223	87.1	89.6
Asian/Pacific Islander	2,576	2,144	86.2	83.2
Black or African American	3,115	2,684	86.8	86.2
Hispanic	3,958	3,516	88.6	88.8
White	14,702	12,630	86.2	85.9
Other race, more than one race, or missing value	606	247	34.4	40.8

[1] Weighted percentages use the student base weight.
NOTE: The variables used for sex and race/ethnicity are not presented on the main data file. To produce response rate calculations for all 25,206 eligible cases, information on sex and race/ethnicity relied on sampling frame variables that are not presented on the main data file.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 35 shows the student interview mode of response by school type. The mode of response varied slightly by school type.

Table 35. Student interview mode of response, by school type: 2009

		Mode of completion					
		School computers		Project laptop		Out of school[1]	
	Number complete	Number	Percent of total	Number	Percent of total	Number	Percent of total
Total	21,444	15,913	74.2	5,088	23.7	443	2.1
School type							
Public	17,511	12,995	74.2	4,119	23.5	397	2.3
Private	3,933	2,918	74.2	969	24.6	46	1.2
Catholic	2,444	1,905	77.9	505	20.7	34	1.4
Other private	1,489	1,013	68.0	464	31.2	12	0.8

[1] Includes cases completed via computer-assisted telephone interview and self-administered web.
NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 36 shows parent response rates by school type, while table 37 shows parent response by student demographic characteristics.

Table 36. Parent response rates by school type: 2009

		Parent participants		
School type	Eligible	Number	Weighted percent[1]	Unweighted percent
Total	25,206	16,995	67.5	67.4
School type				
Public	20,658	13,664	67.0	66.1
Total private	4,548	3,331	74.2	73.2
Catholic	2,819	2,115	75.7	75.0
Other private	1,729	1,216	72.4	70.3

[1] Weighted percentages use the student base weight.
NOTE: All percentages are based on the number of students within the row under consideration.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 37. Parent response rates by student characteristics: 2009

Student characteristics	Eligible	Parent participants		
		Number	Weighted percent[1]	Unweighted percent
Total	25,206	16,995	67.5	67.4
Sex				
Male	12,885	8,564	66.8	66.5
Female	12,321	8,431	68.2	68.4
Race/ethnicity				
American Indian/Alaska Native	249	173	74.6	69.5
Asian/Pacific Islander	2,576	1,664	66.2	64.6
Black or African American	3,115	1,979	64.2	63.5
Hispanic	3,958	2,707	68.6	68.4
White	14,702	10,283	69.6	69.9
Other race, more than one race, or missing value	606	189	26.0	31.2

[1] Weighted percentages use the student base weight.
NOTE: All percentages are based on the number of students within the row under consideration. The variables used for sex and race/ethnicity are not presented on the main data file. To produce response rate calculations for all 25,206 eligible cases, information on sex and race/ethnicity relied on sampling frame variables that are not presented on the main data file.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 38 summarizes the parent data collection participation by interview form (standard, abbreviated, PAPI), language, and school consent type. About 10 percent of parents responded in the early data collection period, with the remainder responding after the early data collection period ended. Of the 16,995 completed parent interviews, approximately 94 percent were standard interviews (including partial interviews), 1 percent were abbreviated interviews, and 5 percent were paper-and-pencil interviews. Differences in participation were also attributed to consent type used by the students' schools. Sixty-two percent of parents of students at explicit consent schools completed a parent interview, while approximately 69 percent of parents of students at implicit consent schools completed an interview, z=7.36, p <.01.

Tables 39 through 42 show mathematics and science teacher response rates by school type and student characteristics. Tables 43 through 47 shows administrator and counselor response rates at the student level by school type and student characteristics.

The response rate for completed mathematics teacher surveys was 76 percent (unweighted) for all eligible students enrolled in a mathematics class. Table 39 relates students' availability of mathematics teacher data to school type, while table 40 relates availability of mathematics teacher data by student characteristics.

Table 38. Parent interview response phases, by interview form, language, and consent type: 2009

				Data collection phase			
				Early response phase[2]		Production phase	
	Eligible parents[1]	Total completed interviews	Percent of eligible[1]	Number	Percent	Number	Percent
Total	25,206	16,995	67.4	1,630	9.6	15,365	90.4
Interview form							
Full interview	†	15,984	†	1,627	10.2	14,357	89.8
Abbreviated interview	†	202	†	†	†	202	100.0
Paper-and-pencil interview	†	808	†	3	0.4	805	99.6
Interview language							
English	24,240	16,059	66.3	1,609	10.0	14,450	90.0
Spanish	966	936	96.9	21	2.2	915	97.8
In-school parental permission type							
Explicit permission	5,090	3,155	62.0	317	10.0	2,838	90.0
Implicit permission	20,116	13,840	68.8	1,313	9.5	12,527	90.5

† Not applicable.
[1] Interview completeness was determined after data collection; therefore, all parents are eligible within these sub-categories.
[2] Abbreviated interviews were only offered during the production phase.
NOTE: Detail may not sum to totals because of rounding. Percentages based on the number of eligible parents and total number of completed interviews within the row under consideration.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 39. Students' mathematics teacher participation rates by school type: 2009

		Students with data from participating mathematics teacher		
School type	Eligible	Number	Weighted percent[1]	Unweighted percent
Total	23,621	17,882	71.9	75.7
School type				
Public	19,267	14,357	71.5	74.5
Total private	4,354	3,525	76.6	81.0
Catholic	2,717	2,229	78.7	82.0
Other private	1,637	1,296	74.3	79.2

[1] Weighted percentages use the student base weight.
NOTE: All percentages are based on the number of students within the row under consideration. The eligible set of students comprises student participants who have a mathematics course.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 40. Students' mathematics teacher participation rates by student characteristics: 2009

Student characteristics	Eligible	Students with data from participating mathematics teacher		
		Number	Weighted percent[1]	Unweighted percent
Total	23,621	17,882	71.9	75.7
Sex				
Male	12,040	9,057	71.3	75.2
Female	11,581	8,825	72.4	76.2
Race/ethnicity				
American Indian/Alaska Native	233	177	74.5	76.0
Asian/Pacific Islander	2,360	1,748	63.2	74.1
Black or African American	2,908	2,020	62.9	69.5
Hispanic	3,770	2,794	68.0	74.1
White	13,883	10,842	76.7	78.1
Other race, more than one race, or missing value	467	301	63.1	64.5

[1] Weighted percentages use the student base weight.
NOTE: All percentages are based on the number of students within the row under consideration. The eligible set of students comprises student participants who have a mathematics course. The variables used for sex and race/ethnicity are not presented on the main data file. To produce response rate calculations for all 25,206 eligible cases, information on sex and race/ethnicity relied on sampling frame variables that are not presented on the main data file.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Completed science teacher surveys provide 72 percent (unweighted) response for all eligible students enrolled in a science class. Table 41 relates student availability of science teacher data to school type, while table 42 relates availability of science teacher data to student characteristics.

Table 41. Students' science teacher participation rates by school type: 2009

School type	Eligible	Students with data from participating science teacher		
		Number	Weighted percent[1]	Unweighted percent
Total	22,597	16,269	70.2	72.0
School type				
Public	18,430	13,078	70.1	71.0
Total private	4,167	3,191	71.2	76.6
Catholic	2,585	2,049	75.2	79.3
Other private	1,582	1,142	66.7	72.2

[1] Weighted percentages use the student base weight.
NOTE: All percentages are based on the number of students within the row under consideration. The eligible set of students comprises student participants who have a science course.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 42. Students' science teacher participation rates by student characteristics: 2009

Student characteristics	Eligible	Students with data from participating science teacher		
		Number	Weighted percent[1]	Unweighted percent
Total	22,597	16,269	70.2	72.0
Sex				
Male	11,524	8,258	69.7	71.7
Female	11,073	8,011	70.7	72.3
Race/ethnicity				
American Indian/Alaska Native	227	165	73.6	72.7
Asian/Pacific Islander	2,253	1,638	65.0	72.7
Black or African American	2,764	1,857	66.1	67.2
Hispanic	3,561	2,370	63.0	66.6
White	13,354	9,959	74.4	74.6
Other race, more than one race, or missing value	438	280	64.0	63.9

[1] Weighted percentages use the student base weight.
NOTE: All percentages are based on the number of students within the row under consideration. The eligible set of students comprises student participants who have a science course. The variables used for sex and race/ethnicity are not presented on the main data file. To produce response rate calculations for all 25,206 eligible cases, information on sex and race/ethnicity relied on sampling frame variables that are not presented on the main data file.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Completed school administrator surveys provide 94 percent (unweighted) student-level response of all eligible students. Table 43 relates student availability of administrator data to school type, while table 44 relates student availability of administrator data to student characteristics.

Table 43. Students' school administrator participation rates by school type: 2009

School type	Eligible	Students with data from participating administrator		
		Number	Weighted percent[1]	Unweighted percent
Total	25,206	23,800	94.5	94.4
School type				
Public	20,658	19,364	94.3	93.7
Total private	4,548	4,436	96.5	97.5
Catholic	2,819	2,771	98.4	98.3
Other private	1,729	1,665	94.5	96.3

[1] Weighted percentages use the student base weight.
NOTE: All percentages are based on the number of students within the row under consideration.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 44. Students' school administrator participation rates by student characteristics: 2009

Student characteristics	Eligible	Students with data from participating administrator		
		Number	Weighted percent[1]	Unweighted percent
Total	25,206	23,800	94.5	94.4
Sex				
Male	12,885	12,152	94.4	94.3
Female	12,321	11,648	94.6	94.5
Race/ethnicity				
American Indian/Alaska Native	249	236	95.6	94.8
Asian/Pacific Islander	2,576	2,417	93.2	93.8
Black or African American	3,115	2,837	89.6	91.1
Hispanic	3,958	3,759	94.5	95.0
White	14,702	13,974	95.8	95.0
Other race, more than one race, or missing value	606	577	96.3	95.2

[1] Weighted percentages use the student base weight.
NOTE: All percentages are based on the number of students within the row under consideration. The variables used for sex and race/ethnicity are not presented on the main data file. To produce response rate calculations for all 25,206 eligible cases, information on sex and race/ethnicity relied on sampling frame variables that are not presented on the main data file.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Completed school counselor surveys provide 90 percent (unweighted) response for all eligible students. Table 45 relates student availability of counselor data to school type while table 46 relates student availability of counselor data to student characteristics.

Table 45. Students' school counselor participation rates by school type: 2009

School type	Eligible	Students with data from participating counselor		
		Number	Weighted percent[1]	Unweighted percent
Total	25,206	22,790	90.0	90.4
School type				
Public	20,658	18,676	90.2	90.4
Total private	4,548	4,114	87.1	90.5
Catholic	2,819	2,693	96.0	95.5
Other private	1,729	1,421	77.2	82.2

[1] Weighted percentages use the student base weight.
NOTE: All percentages are based on the number of students within the row under consideration.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 46. Students' school counselor participation rates by student characteristics: 2009

Sample member characteristics	Eligible	Students with data from participating counselor		
		Number	Weighted percent[1]	Unweighted percent
Total	25,206	22,790	90.0	90.4
Sex				
Male	12,885	11,647	89.8	90.4
Female	12,321	11,143	90.2	90.4
Race/ethnicity				
American Indian/Alaska Native	249	236	97.4	94.8
Asian/Pacific Islander	2,576	2,293	88.9	89.0
Black or African American	3,115	2,820	89.8	90.5
Hispanic	3,958	3,528	88.9	89.1
White	14,702	13,414	91.2	91.2
Other race, more than one race, or missing value	606	499	70.3	82.3

[1] Weighted percentages use the student base weight.
NOTE: All percentages are based on the number of students within the row under consideration. The variables used for sex and race/ethnicity are not presented on the main data file. To produce response rate calculations for all 25,206 eligible cases, information on sex and race/ethnicity relied on sampling frame variables that are not presented on the main data file.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 47 shows response rates at the school level for the school components (school administrator, school counselor, teacher). A total of 888 school administrator surveys were completed. Of the responding administrators, 791 surveys were completed online (89 percent) and 97 surveys were completed by telephone (11 percent). Thirty-seven of the school administrator surveys (some 4.7 percent) were completed by a designee appointed by the school administrator. Seventy-nine administrators (9 percent) completed the abbreviated version of the survey. Less than 1 percent, or seven school administrators, refused to complete the survey. The remaining 49 administrators (6 percent) never responded to the request to complete the survey. The total unweighted response rate for the administrator survey was 94.1 percent.

Table 47. School administrator and counselor response rates: 2009

Instrument	Eligible	Participated	Weighted percent[1]	Unweighted percent
School administrator	944	888	94.9	94.1
School counselor	944	852	91.3	90.3

[1] Uses the school analysis weight.
NOTE: All percentages and based on the number of sample members within the row under consideration.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Of the 852 school counselor respondents, a total of 782 surveys were completed online (92 percent) and an additional 70 surveys were completed by telephone (8 percent). The total unweighted response rate for the school counselor survey was 90.3 percent. One percent or 10

school counselors refused to complete the survey. The remaining 82 school counselors (8.7 percent) never responded to the request to complete the survey.

Chapter 5.
Data Preparation and Processing

This chapter documents the automated systems, data processing, cleaning and editing activities of the High School Longitudinal Study of 2009 (HSLS:09) base year, including student-teacher data linkages. This chapter also deals with two special aspects of data preparation and processing: coding activities, and the construction and evaluation of psychological scales.

5.1 Overview of Systems Design, Development, and Testing

Most systems were designed during the field test with concern for the processes needed for the main study. The effort was to test systems in a smaller environment to reveal points in which improvements could be implemented on a larger scale. After the field test, improvements were implemented and checked in a test environment. The following systems were developed during the field test:

- School contacting system
- Case management/control system
- Sojourn Live CD to boot school PCs into a standard and secure environment for student in-school data collection
- Web-based student questionnaire application
- Web-based student assessment application
- Web-based parent questionnaire application
- Web-based school staff questionnaire applications
- Data-cleaning programs
- Web-based Integrated Management System
- Production reports
- Occupation, field of study, secondary-school, and postsecondary-institution coding applications

System development included the following phases: planning, design, development, testing, and execution and monitoring. Specifications were developed in word processing documents and flowchart applications and progress was tracked using Microsoft Project and Microsoft Excel. Specifications for questionnaires were designed in word processing documents and were updated to reflect what changed between the field test questionnaires and the full-scale questionnaires.

Between the field test and full-scale studies, systems and procedures were evaluated and the following functionalities were added to the full-scale operations:

- Computer-assisted telephone interview (CATI) for student questionnaires
- Data entry application for parent paper-and-pencil interview (PAPI) forms

5.2 Data Processing and File Preparation

All questionnaire data were stored in an SQL server database. CATI applications were used to obtain participation where web interviews could not be obtained; however, the data were stored in the same SQL server database. SQL data were exported nightly to SAS datasets. Cleaning programs were designed to partition the data into questionnaire datasets and methodological datasets and to apply variable names and labels.

Once questionnaire data were cleaned, the following editing steps were implemented:

- rule-based edits (changes that were made based on patterns in data);
- hard-coded edits based on changes recommended by a reviewer if respondents misunderstood the questionnaire (e.g., respondent was instructed to enter a percentage; however, there was strong evidence that the respondent entered a count rather than the percentage); and
- edits based on logical patterns in questionnaire (e.g., skip pattern relationships between gate and dependent questions).

All respondent records in the final data set were verified with the case management/control system to spot inconsistencies. For example, it was possible that data were collected for a sample member who later was set to a nonrespondent status. It would not be appropriate to include those data, and the case management/control system served as a safeguard to ensure data integrity. Furthermore, the data files served as a check to ensure that all respondent information was included in production reports.

Item documentation procedures were developed to capture variable and value labels for each item. Item wording for each question was also provided as part of the documentation. This information was loaded into a documentation database that could export final data file layouts and format statements used to produce formatted frequencies for review. The documentation database also had tools to produce final electronic codebook input files.

5.3 Data Cleaning and Editing for Web/CATI/PAPI

Questionnaire data were stored in a SQL database that was consistent across data collection modes for a particular questionnaire. The instrument used to administer the web survey was the same instrument as the CATI, and the questionnaire data were stored in the same SQL database. This ensured that skip patterns were consistent across applications. For parent data collection, an abbreviated hardcopy instrument was administered. The design of the abbreviated parent questionnaire was to pull key questions from the instrument that could later be data entered into the parent questionnaire database.

Editing programs were developed to output inconsistent items across logical patterns within the questionnaire. These items were reviewed, and rules were written to either correct previously answered (or unanswered) questions to match the dependent items or blank out subsequent items to stay consistent with previously answered items.

Programs were also developed to review consistencies across multiple sources of data and identify discrepancies that required further review and resolution. For example, the student's sex was obtained from the school and stored in his or her roster data; in addition, the student's sex was collected in the student interview and the parent interview. If any source was discrepant across multiple sources, the student's first name was reviewed to determine and store correct value.

5.3.1 Teacher Data

The teacher was administered a questionnaire that was split into two types of questions, (1) general teaching and (2) course-specific. The general teaching questions gathered demographics, departmental (mathematics or science) information, and the teacher's beliefs about teaching. The course-specific questions gathered information about each mathematics- and/or science- course that the teacher taught which was associated with sampled students. The courses were limited to those in which an HSLS:09-eligible student was enrolled; however, the teacher did not know who those sampled students were and was not asked specific questions about those students, only the courses. The general information can be linked to all HSLS:09-eligible students that the teacher taught. The course-specific information can be linked to all HSLS:09-eligible students who took that course. The student's data contain information about the mathematics teacher and the mathematics course taken as well as the science teacher and the science course taken.

5.3.1.1 Teacher Data Linkage to the Student

In HSLS:09, teachers were never given information as to the student sample membership. They were not asked to rate individual students nor confirm that a student was enrolled in one of their classes. In HSLS:09, the means for establishing a student-to-teacher linkage relied on the following information: (a) school provided information on the student's teacher and this was preloaded into the student survey; (b) in the student survey the student confirmed (or disconfirmed) the teacher; (c) if student disconfirmed, then student could provide a different teacher in the student survey; and/or (d) student indicated no mathematics or science class in the student survey.

The ideal match is when school provided information and student provided information agree, whether this be the teacher name or non-enrollment. In some cases, the student and school provided different information about the teacher. The variables X1TMLINK (Student to mathematics teacher link descriptor) and X1TSLINK (Student to science teacher link descriptor) were derived to indicate at which level the student and school agreed/disagreed. Below is a

description of the derivation of X1TMLINK and X1TSLINK with the values presented being the actual values on the data file.

1. **School and student-provided consistent information; teacher respondent to teacher survey**

   This is where the student survey data and the school records data agreed that the student was enrolled in a class and both sources agreed on the teacher. The teacher was a respondent on the teacher survey and these data were linked to the student.

2. **Student-provided information selected; teacher respondent to teacher survey**

   Student survey data and school records data disagreed. Student provided information on teacher and school provided different information on teacher. The teacher the student identified was a respondent to a teacher survey. Link made based on student provided information.

3. **School-provided information selected; teacher respondent to teacher survey**

   Student survey data on teacher were missing or inconsistent with school records data. Link made based on school provided information. The teacher that the school provided was a respondent and these data were linked to the student. (In this situation, any teacher that the student provided was a nonrespondent.)

8. **Teacher nonrespondent**

   Either student survey data or school records data indicated a teacher. However, the teacher indicated by either source was a nonrespondent. No linked data.

9. **Student not taking fall 2009 [mathematics/science] course**

   Both student survey data and school records data indicated that student was not enrolled in a course. Or, one of the sources was missing and the other indicated that student was not enrolled in a course.

Counts for each teacher linkage value (for both mathematics and science) are given in table 48.

Table 48. Teacher linkage counts by mathematics and science

Field name	Value	Label	Count[1]
X1TMLINK	1	Teacher respondent, school-, and student-provided information consistent	13,350
X1TMLINK	2	Teacher respondent, student-provided information selected	275
X1TMLINK	3	Teacher respondent, school-provided information selected	2,410
X1TMLINK	8	Teacher nonrespondent	4,938
X1TMLINK	9	Student not taking fall 2009 mathematics course	471
X1TSLINK	1	Teacher respondent, school-, and student-provided information consistent	11,809
X1TSLINK	2	Teacher respondent, student-provided information selected	251
X1TSLINK	3	Teacher respondent, school-provided information selected	2,569
X1TSLINK	8	Teacher nonrespondent	5.475
X1TSLINK	9	Student not taking fall 2009 science course	1,340

[1] Counts are representative of the restricted-use data file.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

5.3.1.2 Course Data Linkage to the Student

Again, in HSLS:09, teachers were never given information as to the student sample membership. They were not asked to confirm that a student was enrolled in one of their classes. In HSLS:09, the means for establishing a student-to-course linkage relied on the following information: (a) the school provided the name of the course and the section or period the course was taken by the student; (b) students were asked to confirm the name of the course taken; however, they were not asked to confirm the section or period of the course; and (c) within the teacher survey, the teacher confirmed teaching the course the school indicated and provided course level data on the course. Therefore, when linking the course to the student, the school-provided information was the source for the course linkage. The logic to link the course information generally defaulted to the school-provided course.

The variables X1TMCRSLINK (Student to mathematics course link descriptor) and X1TSCRSLINK (Student to science course link descriptor) were derived to indicate the strength of the course link based on what the school provided and what the student confirmed.

1. **School provided information on course enrollment; student confirmed enrollment; teacher provided course level data corresponding to that course**

   This is where X1TMLINK/X1TSLINK = 1 and the student confirmed enrollment in the associated course and could be linked using school records data to a course reported in the teacher questionnaire

2. **School provided information on course enrollment; student did not confirm enrollment in course; teacher reported on school-provided course**

This is where X1TMLINK/X1TSLINK = 1 or 3 and the student did not confirm enrollment in the associated course but could be linked using school records data to a course reported in the teacher questionnaire

8. **No student-teacher link**

   This is where X1TMLINK/X1TSLINK = 1, 2, 3, or 8 and either the teacher did not provide any course-level information for the school-specified course associated with the given student or the teacher was a nonrespondent. The extent to which this occurred varied by school characteristics, including school size, school type, region, and locale.[28]

9. **Not enrolled in course**

   This is where X1TMLINK/X1TSLINK = 9

Table 49 displays course linkage counts by mathematics and science.

Table 49. Course linkage counts by mathematics and science

Field name	Value	Label	Count[1]
X1TMCRSLINK	1	Teacher reported on school-provided course, student confirmed enrollment	8,842
X1TMCRSLINK	2	Teacher reported on school-provided course, student did not confirm enrollment	3,695
X1TMCRSLINK	8	No course-level information linked to student	8,436
X1TMCRSLINK	9	Student not taking fall 2009 mathematics course	471
X1TSCRSLINK	1	Teacher reported on school-provided course, student confirmed enrollment in course	6,976
X1TSCRSLINK	2	Teacher reported on school-provided course, student did not confirm enrollment in course	4,489
X1TSCRSLINK	8	No course-level information linked to student	8,639
X1TSCRSLINK	9	Student not taking fall 2009 science course	1,340

[1] Counts are representative of the restricted-use data file.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

To better understand how the link corresponds across teacher link information and course link information tables 50 and 51 provide a cross-tabulation of the teacher link indicator with the course link indicator. When there were school-provided teacher respondents (teacher-link = 1 or 3) but not course-level link (course-link = 8), the reasons fell into one of two categories:

- The school provided the teacher information and the course information; however, the teacher did not supply course-level information for the associated course.
- The school provided the teacher information but not course information at the time that the teacher responded to the survey. In these cases, schools first supplied the teacher name for the given students but not course information. In most of these

[28] The "no student-teacher link" value for X1TMCRSLINK and X1TSCRSLINK occurred at the highest rates for students associated with large schools (defined as having 300 or more ninth graders); public schools; schools in the West or Northeast regions; and schools in a city or suburb.

cases, course-level information was later received but only after teachers had responded.

Table 50. Mathematics teacher link by mathematics course link

	Mathematics course link				
Mathematics teacher link	1 Agreement	2 School information taken	8 No course link	9 Not enrolled	Total[1]
1: Agreement	8,842	1,800	2,708	0	13,350
2: Student information taken	0	0	275	0	275
3: School information taken	0	1,895	515	0	2,41
8: Teacher nonrespondent	0	0	4.938	0	4,938
9: Not enrolled	0	0	0	471	471

[1] Counts are representative of the restricted-use data file.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

Table 51. Science teacher link by science course link

	Science course link				
Science teacher link	1 Agreement	2 School information taken	8 No course link	9 Not enrolled	Total[1]
1: Agreement	6,976	2,491	2,342	0	11,809
2: Student information taken	0	0	251	0	251
3: School information taken	0	1,998	571	0	2,569
8: Teacher nonrespondent	0	0	5,475	0	5,475
9: Not enrolled	0	0	0	1,340	1,340

[1] Counts are representative of the restricted-use data file.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

5.4 Coding, Upcoding, Recoding, and Adjudication

The base year survey instruments collected data on respondents' occupations, major fields of study, postsecondary institutions, and secondary schools all of which required coding. All survey instruments, except the student instrument, included applications which allowed respondents or telephone interviewers to code text strings to widely used taxonomies. All text strings that were not coded during the interview were coded as part of data processing. Section 5.4 describes the types of data requiring coding, the coding applications, the coding process, quality control procedures, and measures of coding quality.

5.4.1 Major Field of Study Coding

School administrators, teachers, counselors, and parents identified the field of study for their most advanced postsecondary degree. If they had earned a master's degree or higher, they also reported the field of study for their bachelor's degree. Field of study was also collected in

the precise same manner (highest and bachelor's) for the parent respondent's spouse or partner. With the exception of the Spanish version of the parent interview, all of the instruments included a coding application that allowed online coding using the National Center for Education Statistics 2010 Classification of Instructional Programs (CIP) taxonomy. On the restricted-use data file, researchers will find both a 2-digit version and a 6-digit version of the CIP code for administrators' [A1HIMAJ2; A1HIMAJ6; A1BAMAJ2; A1BAMAJ6], mathematics teachers' [M1HIMAJ2; M1HIMAJ6; M1BAMAJ2; M1BAMAJ6], science teachers' [N1HIMAJ2; N1HIMAJ6; N1BAMAJ2; N1BAMAJ6], counselors' [C1HIMAJ2; C1HIMAJ6; C1BAMAJ2; C1BAMAJ6], and parents' [P1HIMAJ21; P1HIMAJ61; P1BAMAJ21; P1BAMAJ61; P1HIMAJ22; P1HIMAJ62; P1BAMAJ22; P1BAMAJ62] fields of study. Only the 2-digit versions of these variables appear on the public-use data file.

5.4.1.1 Major Field of Study Coding and Upcoding

To use the coding application, respondents or telephone interviewers first entered text to describe the field of study. A list of majors, customized based on the text string, was presented. The respondent or interviewer could choose one of the options listed, or choose "none of the above." If "none of the above" was selected, a two-tiered dropdown menu appeared. The first dropdown menu contained a general list of majors; the second was more specific and was dependent on the first. Interviewers were trained to use probing techniques to assist in the online coding process. Self-administered web respondents were provided supporting text on-screen. The instruments did not require a code to be selected for the interview to proceed.

Table 52 presents information on the number of major text strings collected during the survey process. There were 37,956 major text strings provided during the parent, school administrator, teacher and counselor interviews of which 97.1 percent (36,866) were coded during the interview (5).

Table 52. Major text strings: 2009

	Coded during interview		Not coded during interview	
	Number	Percent	Number	Percent
Overall	36,866	97.1	1,090	2.9
Parent 1				
Most advanced degree	7,292	95.7	324	4.3
Bachelor's degree on way to more advanced degree	5,220	98.9	60	1.1
Parent 2				
Most advanced degree	4,968	95.6	226	4.4
Bachelor's degree on way to more advanced degree	3,815	98.7	52	1.3
School Administrator				
Most advanced degree	625	96.0	26	4.0
Bachelor's degree on way to more advanced degree	554	97.0	17	3.0
Teacher				
Most advanced degree	6,534	96.7	221	3.3
Bachelor's degree on way to more advanced degree	6,512	98.2	122	1.8
Counselor				
Most advanced degree	701	97.0	22	3.0
Bachelor's degree on way to more advanced degree	645	97.0	20	3.0

NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

RTI's coding experts attempted to code all text strings that were not coded during the interview. This "upcoding" was completed using an application that used the same search function as the application in the instruments. The coding expert could assign a code or indicate that the text string was too vague to code.

5.4.1.2 Major Field of Study Coding Quality Control Procedures and Results

To evaluate the quality of the coding completed during the interview, a random sample of approximately 10 percent of the pairs of verbatim strings and codes was selected for recoding and analysis. To recode the selected majors, two RTI staff members worked with a coding application which used the same search function as the application in the instruments. These two coding experts evaluated text strings and assigned codes without knowledge of the codes that were selected during the interview. If the code selected differed from the code assigned during the interview, the coding expert was then shown both codes. The coding expert was instructed to only override the code selected during the interview if it was clearly incorrect. When a code was overridden, the new code was included on the data file in place of the original code. Text strings were designated uncodeable when they lacked sufficient clarity or specificity. Results of recoding were analyzed overall and by mode of interview administration (6). These results are

given in table 53. Overall, field of study codes were correct for 97.9 percent of cases reviewed; the original code was changed for 1.8 percent of the cases. Only 0.3 percent of the text strings were found to be too vague to code. The percentage of cases coded correctly in the random sample did not vary significantly by mode (z = 1.01).

Table 53. Expert coder results for major recoding, by mode of administration: 2009

	Original code was correct		Original code was changed		Too vague to code	
Mode of administration	Number	Percent	Number	Percent	Number	Percent
Overall	2,823	97.9	52	1.8	9	0.3
Web	1,843	98.1	30	1.6	6	0.3
CATI	980	97.5	22	2.2	3	0.3

NOTE: Detail may not sum to totals because of rounding. CATI = Computer assisted telephone interviewing.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

Majors that were unable to be coded during the interview (1,090 major field of study text strings were unable to be coded) were first upcoded by a coding expert. To ensure quality, all upcode attempts were then recoded by a second coding expert. When the second expert's result was different from the first expert's result, both results were displayed. The second coding expert could then agree with the first coder or override the first coder's result. When this process was complete, the results of the two coding experts were compared. They arrived at the same result for 84.7 percent of the upcoded text strings (table 54). This includes instances where both coding experts agreed that the text string was too vague to code. Disagreement occurred in 15.3 percent of the cases, either because two different codes were selected or because one coding expert thought the text string was too vague to code, but the other assigned a code. It is not surprising that there was a lower rate of agreement for upcoded majors as compared to majors coded during the interview (84.7 percent versus 97.9 percent). Text strings that are hard to code accurately are more likely to be left uncoded during the interview and require upcoding.

Table 54. Expert coder results for major upcoding: 2009

	Coders agreed		Coders disagreed	
	Number	Percent	Number	Percent
Major coding	923	84.7	167	15.3

NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

The majors that were the most difficult to code were those that were not coded during the interview and that were coded differently by the two expert coders. All instances in which the second coding expert overturned the first expert's result were reviewed in a spreadsheet and adjudicated by a third coding expert. The final result could be a code with various levels of specificity or an indication that the text string was too vague to code. The results of the

adjudication are presented in table 55. The final code assigned by the third coding expert for these most difficult cases was a specific (6-digit) code for 78.4 percent of these text strings, a general (2-digit) code for 8.4 percent, and a "too vague to code" designation for 13.2 percent.

Table 55. Results of adjudication of major upcoding: 2009

	Number	Percent
Total	167	100.0
Major		
Coded to 6-digit level	131	78.4
Coded to 2-digit level	14	8.4
Too vague to code	22	13.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

5.4.1.3 Major Field of Study Coding Final Results

After all upcoding, recoding, and adjudication was complete 99.7 percent of the major text strings on the restricted-use data file were coded to a 6-digit CIP code, 0.1 percent were coded to a 2-digit CIP code, and 0.2 percent were too vague to code (table 56). Four text strings were not majors; these were cleared from the data.

Table 56. Final major codes in data file: 2009

	Number	Percent
Total	37,956	100.0
Major		
Coded to 6-digit level	37,857	99.7
Coded to 2-digit level	21	0.1
Too vague to code	74	0.2
Not a major	4	0.0

NOTE: Figures are representative of the restricted-use data file. On the public-use data file majors coded to the 6-digit level are represented at the 2-digit level.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

5.4.2 Occupation Coding

The HSLS:09 full-scale parent instrument included tools that allowed online coding of literal responses of occupation based on version 13 of the Occupational Information Network (O*NET) taxonomy. Parents were asked to identify their own job and the job of their spouse or partner. For technical information on these variables, see appendix F.

On the restricted-use data file, researchers will find both a 2-digit version and a 6-digit version of the O*NET code for parents' occupations:

X1PAR1OCC2 [X1 Parent 1: Current/most recent occupation: 2-digit O*NET code]

X1PAR1OCC6 [X1 Parent 1: Current/most recent occupation: 6-digit O*NET code]

X1PAR2OCC2 [X1 Parent 2: Current/most recent occupation: 2-digit O*NET code]

X1PAR2OCC6 [X1 Parent 2: Current/most recent occupation: 6-digit O*NET code]

X1MOMOCC2 [X1 Mother/female guardian's current/most recent occupation: 2-digit O*NET code]

X1MOMOCC6 [X1 Mother/female guardian's current/most recent occupation: 6-digit O*NET code

X1DADOCC2 [X1 Father/male guardian's current/most recent occupation: 2-digit O*NET code]

X1DADOCC6 [X1 Father/male guardian's current/most recent occupation: 6-digit O*NET code]

Only the 2-digit versions of these variables appear on the public-use data file.

5.4.2.1 Occupation Coding and Upcoding

Coders first entered the job title and duties. Coders were presented with a customized list of occupations based on the text strings they entered. Coders could choose one of the options listed, or choose "none of the above." In the occupation coding application, selecting "none of the above" presented the coder with a set of three sequential dropdown menus, each with choices increasing in their level of specificity. The first dropdown menu contained a general list of occupations. The options presented in the second dropdown were dependent on the code selected in the first. Some selections from the second dropdown required coders to make a selection from a third even more detailed dropdown menu. Interviewers were trained to use probing techniques to assist in the online coding process. Self-administered web respondents were provided supporting text on screen. The instrument did not require a code to be selected for the interview to proceed.

There were 28,814 occupation text strings provided during the parent interview of which 87.0 percent were coded during the interview (table 57).

Coding experts also attempted to code all occupations that were not coded during the interview. This "upcoding" was completed using an application that used the same search function as the application in the parent instrument. The coding expert could assign a code or indicate that the text string was too vague to code.

For quality control purposes, a second coding expert evaluated all of these upcode attempts. See section 5.4.1.1 for a description of these procedures.

Table 57. Occupation text strings : 2009

	Coded during interview		Not coded during interview	
	Number	Percent	Number	Percent
Overall	25,081	87.0	3,733	13.0
Parent 1	14,142	87.2	2,083	12.8
Parent 2	10,939	86.9	1,650	13.1

NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

5.4.2.2 Occupation Coding Quality Control Procedures and Results

Similar to major field of study coding, coding experts evaluated the quality of coding that was completed during the interview by recoding a random sample of approximately 10 percent of the occupation text strings. To recode the selected occupations, two RTI staff members worked with a coding application which used the same search function as the application in the instruments. These two coding experts evaluated text strings and assigned codes without knowledge of the codes that were selected during the interview. If the code selected differed from the code assigned during the interview, the coding expert was then shown both codes. The coding expert was instructed to only override the code selected during the interview if it was clearly incorrect. When a code was overridden, the new code was included on the data file in place of the original code. Text strings were designated uncodeable when they lacked sufficient clarity or specificity. Results of the recoding of these occupations were analyzed overall and by mode of interview administration (table 58). Occupation codes were correct for 92.1 percent of cases reviewed (table 58); the original code was changed for 6.8 percent of the cases. Only 1.1 percent was deemed too vague to code (table 58). The percentage of cases coded correctly in the random sample did not vary significantly by mode of interview administration ($z = -0.6$).

Table 58. Expert coder results for parent occupation recoding, by mode of administration: 2009

	Original code was correct		Original code was changed		Too vague to code	
Mode of administration	Number	Percent	Number	Percent	Number	Percent
Parent occupation coding						
Overall	3,639	92.1	267	6.8	44	1.1
Web	1,304	92.1	92	6.5	20	1.4
CATI	2,335	92.1	175	6.9	24	0.9

NOTE: Detail may not sum to totals because of rounding. CATI = computer assisted telephone interviewing.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

The 3,733 major field of study text strings that were unable to be coded during the interview were first upcoded by a coding expert. To ensure quality, all upcode attempts were then recoded by a second coding expert. When the second expert's result was different from the first expert's result, both results were displayed. The second coding expert could then agree with

the first coder or override the first coder's result. When this process was complete, the results of the two coding experts were compared. The two coding experts arrived at the same result for 74.6 percent of the text strings (table 59). This includes instances where both coding experts agreed that the text string was too vague to code. Disagreement occurred in 25.4 percent of the cases either because two different codes were selected or because one coding expert thought the text string was too vague to code, but the other assigned a code. It is not surprising that there was a lower rate of agreement for upcoded occupations as compared to occupations coded during the interview (74.6 percent versus 92.2 percent). Text strings that are hard to code accurately are more likely to be left uncoded during the interview and require upcoding.

Table 59. Expert coder results for parent occupation upcoding: 2009

	Coders agreed		Coders disagreed	
Mode of administration	Number	Percent	Number	Percent
Parent occupation coding	2,783	74.6	950	25.4

NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

The occupations that were the most difficult to code were those that were not coded during the interview and that were coded differently by the two expert coders. All instances in which the second coding expert overturned the first expert's result were reviewed in a spreadsheet and adjudicated by a third coding expert. The final result could be a code with various levels of specificity or an indication that the text string was too vague to code. The results of the adjudication of these discrepancies are presented in table 60. The final code assigned by the third coding expert for these most difficult cases was a specific (6-digit) code for 35.0 percent of these occupations, a less specific (2-digit) code for 53.1 percent, and a "too vague to code" designation for 12.0 percent.

Table 60. Results of adjudication parent occupation upcoding: 2009

	Number	Percent
Total	950	100.0
Occupation		
Coded to 6-digit level	332	35.0
Coded to 2-digit level	504	53.1
Too vague to code	114	12.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

5.4.2.3 Occupation Coding Final Results

After all upcoding, recoding, and adjudication was complete, 97.0 percent of the occupation text strings on the restricted-use data file were coded to a 6-digit O*NET code; 1.8 percent were coded to a less specific 2-digit O*NET code, and 0.7 percent were too vague to

code (table 61). Less than one percent of the text strings indicated that the person was not working; these were cleared from the data file.

Table 61. Final occupation codes in data file[1]: 2009

	Number	Percent
Total	28,812	100.0
Occupation		
Coded to 6-digit level	27,929	96.9
Coded to 2-digit level	505	1.8
Too vague to code	199	0.7
Text string indicated not working	179	0.6

[1] Figures are representative of the restricted use data file. On the public-use data file occupations coded to the 6-digit level are represented at the 2-digit level.
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 Base Year.

5.4.3 Student Job at Age 30 Coding

The HSLS:09 full-scale student instrument asked 9th-graders to indicate what occupation they thought they would have when they were age 30. Students entered a job title, but were not asked to enter job duties. The 9th-graders also had the option of checking a box to indicate that they did not know. On the restricted-use data file, researchers will find both a 2-digit version and a 6-digit version of the O*NET code for students' job at age 30:

X1STU30OCC2 [X1 Student occupation at age 30: 2-digit O*NET code] and

X1STU30OCC6 [X1 Student occupation at age 30: 6-digit O*NET code].

Only the 2-digit version of this variable appears on the public-use data file. For technical information on these variables, see appendix F.

5.4.3.1 Student Job at Age 30 Coding Approach

Students were not asked to code their expected occupations so all job titles needed to be coded using the O*NET taxonomy. The text strings were provided to coding experts to be upcoded in the following manner. First, the most commonly listed text strings (appearing three or more times) were reduced to a single text string and coded by a coding expert. The same occupation coding application found in the parent interview (for a description see section 5.4.1.1) was used. The codes that were assigned were then applied to all duplicate occupations. These codes were then applied to similarly worded text strings (e.g., code for "lawyer" applied to "lawyer/attorney"). Any text strings that remained uncoded were coded using the parent occupation coding application. Finally, an independent coding expert reviewed all of the work in a spreadsheet.

5.4.3.2 Student Job at Age 30 Coding Results

About half of the responses (52.1 percent) could be upcoded to a 6-digit O*NET code, the most specific level (table 62); 17.9 percent were coded to a lesser level of specificity. Only 1.2 percent were too vague to code at all. However, about one-quarter of the responses were "don't know" (28.8 percent).

Table 62. Expert coder results for student job at age 30 upcoding[1]: 2009

Result	Number	Percent
Total	21,006	100.0
Coded to 6-digit level	10.946	52.1
Coded to 2-digit level	3,758	17.9
Too vague to code	246	1.2
Don't know	6,056	28.8

[1] Results limited to the 21,006 students who responded to the job-at-age-30 question. Figures are representative of the restricted use data file. On the public-use data file occupations coded to the 6-digit level are represented at the 2-digit level.
NOTE: O*NET = Occupational Information Network.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

5.4.4 Students' Previous Schools

Students who reported that they first enrolled in the HSLS:09 school in the fall of 2009 were asked to provide the name, city, and state of the school they attended in the previous academic year. As part of data processing, these schools were matched to the 2008–09 Common Core of Data (CCD) and the 2007–08 Private School Universe Survey (PSS).

Approximately three-quarters of students reported that they attended a different school in the previous academic year (76.1 percent), close to one-quarter attended the same school (22.6 percent), about 1 percent were homeschooled (0.9 percent), and less than 1 percent did not answer (0.4 percent). Of the 16,319 students who reported that they attended a different school, 98.0 percent named schools that were found in either CCD or PSS (table 63). These data are presented on the restricted-use data file as X1STUPRVSCHL [X1 School student attended last year (2008–09): 12-digit NCESID from CCD/PSS], the NCESID that corresponds to the school identified within the CCD or PSS. (Note that the HSLS:09 variables representing NCESID are restricted-use variables, and not available on the public-use file.) Among the uncodeables were schools in foreign countries and schools in the United States that were confirmed to exist, but were not represented in either the 2008–09 CCD or the 2007–08 PSS.

Table 63. Results of secondary school coding: 2009

Result	Number	Percent
Total	16,319	100.0
Coded to CCD or PSS	15,989	98.0
Uncodeable	267	1.6
No school name provided	63	0.4

NOTE: CCD = Common Core of Data. PSS = Private School Universe Survey.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

5.4.5 Teachers' Postsecondary Institutions

Teachers were asked to indicate the postsecondary institution from which they earned their bachelor's degree and their highest graduate-level degree. After teachers (or in some cases the telephone interviewer) typed in their institution's name, city, and state into the web survey, they could search an online look-up tool containing institutions from the 2006 Integrated Postsecondary Education Data System (IPEDS) for the appropriate match. When a match was not found, the respondent was asked to provide the institution's level (i.e., 4-year, 2-year, less-than-2-year) and control (i.e., public, private not-for-profit, private-for-profit). This information was later used to assist RTI staff in finding a match in IPEDS as part of data processing. Teachers named 14,097 institutions of which 88.5 percent were coded during the interview. Coding experts at RTI coded the remaining institutions during data processing. After all coding was complete, 97.0 percent (13,669) of the institutions were coded. About 2 percent were uncodeable postsecondary institutions (2.2 percent or 308) that were usually foreign or defunct; for these the institution's level and control as provided by the teacher is included on the data file. The remaining 0.9 percent (20) were not postsecondary institutions. The postsecondary institution IDs are presented on the restricted use data file for mathematics teachers [M1HIDEGIPEDS; M1BAIPEDS] and for science teachers [N1HIDEGIPEDS; N1BAIPEDS].

5.5 Construction of Select Student, Teacher, School Counselor, and School Administrator Scale Scores

Certain sets of items that appear in the student, teacher, counselor, and school administrator surveys were designed to be analyzed as psychological scales. The student survey includes, for example, questions related to self-identity and efficacy in science and mathematics. The teacher survey includes items such as academic expectations for students, administrator support, and collective responsibility. The school counselor and administrator surveys include perception of expectations and assessment of school climate, respectively.

Prior to constructing the scales, questionnaire responses were subjected to data cleaning procedures discussed previously. Questionnaire items were reverse coded (that is, positively-worded and negatively-worded items were coded to reflect the same direction on the construct) to equate larger scale values with positive attributes (e.g., higher levels of self-efficacy). Once

the data were finalized, the (weighted) reliability of the scale items was evaluated using Cronbach's Alpha. Weighted scales were then created only if the associated items had at least a 65 percent alpha level with SAS® *proc factor* and standardized to have mean zero and (weighted) standard deviation of one. As with many software packages, scales were set to missing if any of the scale items were missing. The scales, associated items, and their reliabilities are detailed below for each HSLS:09 questionnaire. Researchers should be aware that the individual item-level data are also available on the data file. The items contributing to the scales are identified in tables 64 through 67. Researchers are encouraged to further examine the psychometric properties of the scales using the item level data. The scales presented on the data file are just one way to combine the information.

5.5.1 Student

A total of 10 scales was created from the student responses: mathematics identity scale (X1MTHID); mathematics utility scale (X1MTHUTI); mathematics self-efficacy scale (X1MTHEFF); interest in fall 2009 mathematics course scale (X1MTHINT); science identity scale (X1SCIID); science utility scale (X1SCIUTI); science self-efficacy scale (X1SCIEFF); interest in fall 2009 science course scale (X1SCIINT); sense of school belonging scale (X1SCHOOLBEL); and school engagement scale (X1SCHOOLENG).

Table 64 contains a summary of the items used to calculate each scale and their reliability score.

Table 64. Summary information for student scales

Student scales	Variable names	Cronbach's Alpha
X1MTHID: Mathematics Identity	S1MPERSON1 S1MPERSON2	0.84
X1MTHUTI: Mathematics utility	S1MUSELIFE S1MUSECLG S1MUSEJOB	0.78
X1MTHEFF: Mathematics self-efficacy	S1MTESTS S1MTEXTBOOK S1MSKILLS S1MASSEXCL	0.90
X1MTHINT: Mathematics course interest	S1FAVSUBJ S1LEASTSUBJ S1MENJOYING S1MENJOYS S1MWASTE S1MBORING	0.75
X1SCHOOLBEL: School belonging	S1SAFE S1PROUD S1TALKPROB S1SCHWASTE S1GOODGRADES	0.72
X1SCHOOLENG: School engagement	S1NOHWDN S1NOPAPER S1NOBOOKS S1LATE	0.67
X1SCIID: Science identity	S1SPERSON1 S1SPERSON2	0.83
X1SCIUTI: Science utility	S1SUSELIFE S1SUSECLG S1SUSEJOB	0.75
X1SCIEFF: Science self-efficacy	S1STESTS S1STEXTBOOK S1SSKILLS S1SASSEXCL	0.88
X1SCIINT: Science course interest	S1SENJOYING S1SWASTE S1SBORING S1FAVSUBJ S1LEASTSUBJ S1SENJOYS	0.73

NOTE: Student weight (W1STUDENT) used to generate weighted estimates.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

5.5.2 Teacher

Five psychological scales were created from the subject-specific teacher questionnaire responses (table 65). Mathematics-teacher scales include: Mathematics teacher's perceptions of teacher expectations of the school's students (X1TMEXP); Mathematics teacher's perceptions of professional community (X1TMCOMM); Mathematics teacher self-efficacy (X1TMEFF); Mathematics teacher's perceptions of principal support (X1TMPRINC); and Mathematics teacher's perceptions of collective responsibility (X1TMRESP). The corresponding scales for science teachers include: Science teacher's perceptions of teacher expectations (X1TSEXP); Science teacher's perceptions of professional learning community (X1TSCOMM); Science teacher self-efficacy (X1TSEFF); Science teacher's perceptions of principal support (X1TSPRINC); and Science teacher's perceptions of collective responsibility (X1TSRESP).

5.5.3 School Counselor

Three school-level psychological scales were generated from the school counselor data: perceptions of the professional behavior and beliefs of the school's teachers (X1COUPERTEA); perceptions of counselor expectations (X1COUPERCOU); and perceptions of principal expectations (X1COUPERPRI). Table 66 contains the summary information for the three variables. Note that the estimates were calculated from the school-level file with the school-level analysis weight, W1SCHOOL.

5.5.4 School Administrator

A single school administrator scale was developed for HSLS:09—perception of school climate (X1SCHOOLCLI). Table 67 contains the summary information for the X1SCHOOLCLI. Note that the estimates were calculated from the school-level file with the school-level analysis weight, W1SCHOOL.

Table 65. Summary information for teacher scales

Teacher scales	Variable names	Cronbach's Alpha
X1TMEXP: Mathematics teacher's perceptions of teacher expectations	M1TEACHING M1LEARNING M1BELIEVE M1CLEARGOALS M1GIVEUP M1CARE M1EXPECT M1WORKHARD	0.86
X1TMCOMM: Mathematics teacher's perceptions of professional learning community	M1SHRIDEAS M1WORKSHOP M1SHRSTWRK M1SHRLESSONS M1SHRBELIEFS M1SHRMTHDS M1SHRELL M1SHRAPPRCH M1SHRCONTENT M1EFFECTIVE M1MENTOR M1CHAIR	0.91
X1TMEFF: Mathematics teacher self-efficacy	M1FAMILY M1DISCIPLINE M1STUACHIEVE M1PARENT M1RETAIN M1REDIRECT M1GETTHRU M1HOMEFX	0.71
X1TMPRINC: Mathematics teacher's perceptions of principal support	M1PRESSURES M1POORJOBRES M1PSETSPRIO M1PSCHVISION M1PCOMEXP M1PINNOVATE M1PCONSULTS	0.90
X1TMRESP: Mathematics teacher's perceptions of collective responsibility	M1TSCHDISC M1TIMPROVE M1TSETSTDS M1TSELFDEV M1THELPBEST M1TALLLEARN M1TFAIL	0.89

See note at end of table.

Table 65. Summary information for teacher scales—Continued

Teacher scales	Variable names	Cronbach's Alpha
X1TSEXP: Science teacher's perceptions of teacher expectations	N1TEACHING N1LEARNING N1BELIEVE N1CLEARGOALS N1GIVEUP N1CARE N1EXPECT N1WORKHARD	0.86
X1TSCOMM: Science teacher's perceptions of professional learning community	N1SHRIDEAS N1WORKSHOP N1SHRSTWRK N1SHRLESSONS N1SHRBELIEFS N1SHRMTHDS N1SHRELL N1SHRAPPRCH N1SHRCONTENT N1EFFECTIVE N1MENTOR N1CHAIR	0.91
X1TSEFF: Science teacher self-efficacy	N1FAMILY N1DISCIPLINE N1STUACHIEVE N1PARENT N1RETAIN N1REDIRECT N1GETTHRU N1HOMEFX	0.68
X1TSPRINC: Science teacher's perceptions of principal support	N1PRESSURES N1POORJOBRES N1PSETSPRIO N1PSCHVISION N1PCOMEXP N1PINNOVATE N1PCONSULTS	0.90
X1TSRESP: Science teacher's perceptions of collective responsibility	N1TSCHDISC N1TIMPROVE N1TSETSTDS N1TSELFDEV N1THELPBEST N1TALLLEARN N1TFAIL	0.89

NOTE: The mathematics teacher weight (W1MATHTCH) was used to generate the weighted estimates for mathematics teachers. The science teacher weight (W1SCITCH) was used to calculate the science teacher estimates.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 66. Summary information for school counselor scales

School counselor scales	Variable names	Cronbach's Alpha
X1COUPERTEA: Counselor perceptions of teacher expectations	C1TTEACHING C1TLEARNING C1TBELIEVE C1TWORKHARD C1TGIVEUP C1TCARE C1TEXPECT	0.85
X1COUPERCOU: Counselor perceptions of counselor expectations	C1CLEARNING C1CBELIEVE C1CWORKHARD C1CGIVEUP C1CCARE C1CEXPECT	0.78
X1COUPERPRI: Counselor perceptions of principal expectations	C1PLEARNING C1PBELIEVE C1PWORKHARD C1PGIVEUP C1PCARE C1PEXPECT	0.85

NOTE: School counselor estimates were calculated from the school-level file using the school-level weight (W1SCHOOL).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 67. Summary information for school administrator scale

School administrator scales	Variable names	Cronbach's Alpha
X1SCHOOLCLI: Perception	A1CONFLICT A1ROBBERY A1VANDALISM A1DRUGUSE A1ALCOHOL A1DRUGSALE A1WEAPONS A1PHYSABUSE A1TENSION A1BULLY A1VERBAL A1MISBEHAVE A1DISRESPECT	0.89

NOTE: School administrator estimates were calculated from the school-level file using the school-level weight (W1SCHOOL).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Chapter 6. Analytic Weights, Variance Estimation, and Nonresponse Bias Analysis

6.1 Overview: General Approach to Weighting

Analytic weights are used in combination with software that accounts for the High School Longitudinal Study of 2009 (HSLS:09) complex survey design to produce estimates for the target population. Five sets of analytic weights were computed for HSLS:09: a school weight (section 6.3), a student weight (section 6.4), two weights associated with contextual data from science and mathematics courses (section 6.5.2), and a weight for use with home-life contextual data (section 6.5.3). Base weights and adjustment factors used to create the analytic weights are discussed in each section as well as steps implemented to construct the corresponding set of balanced repeated replication (BRR) weights for variance estimation. Each section additionally emphasizes a discussion of the analyses conducted with the particular HSLS:09 analytic weight that is summarized in section 6.2.

Variance and bias are important components to examine when determining the quality of survey estimates. Issues related to the correct calculation of estimated standard errors and a discussion of the precision obtained for a set of important HSLS:09 characteristics are provided in section 6.6. The bias correction properties of the analytic weights are reviewed in section 6.7 with the presentation of results from two unit nonresponse bias analyses. In addition to examining levels of precision and bias, quality control procedures were injected into the weighting process and are discussed in the final section of the chapter (section 6.8).

6.2 Choosing an Analytic Weight

Numbers of respondents by study instrument, along with considerations of how researchers would likely analyze the data, were used to determine the set of HSLS:09 analytic weights included on the base-year data file. Because of the differential response rates associated with the parent interview and the science and mathematics teacher questionnaires, separate analytic weights were indicated for these components in addition to school and student weights. Table 68 shows the numbers and percentages of ninth-graders with student survey data and contextual data (data from parent, school administrator, school counselor, mathematics teacher, or science teacher).

Table 68. Summary of HSLS:09 base-year number and percent of student questionnaire completers with contextual data: 2009

Instrument	Eligible	Participated	Weighted percent[1]	Unweighted percent
Parent questionnaire	21,444	16,429	76.1	76.6
School administrator	21,444	20,301	94.2	94.7
School counselor	21,444	19,505	90.2	91.0
Teacher questionnaire				
Mathematics teacher	20,970	16,035	72.3	76.5
Science teacher	20,101	14,629	70.0	72.8

[1] All weighted percentages are based on the row under consideration and are calculated with the student analytic weight (W1STUDENT).
SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09) Base Year Public-Use Data File.

HSLS:09 is a longitudinal study; as longitudinal studies progress, the number of possible weights dramatically increases. Therefore, not every possible combination of the survey components is accounted for in a different analytic weight.

The base-year data file offers one school-level and four student-level analytic weights. The following guidelines are provided to assist researchers in identifying the appropriate weight for analyses that include a particular combination of components (table 69).

Table 69. HSLS:09 analytic weights

HSLS:09 analysis files	Universe[1]	Variable name	Nonresponse-adjusted components(s) in each weight
hsls09_school	All study-eligible schools	W1SCHOOL	School
hsls09_student[2]	All study-eligible 9th-grade students[3]	W1STUDENT	Student
		W1PARENT	Student*Parent
		W1SCITCH	Student*Science Teacher
		W1MATHTCH	Student*Mathematics Teacher

[1] The sum of the associated analytic weights estimates the total for the universe.
[2] Student-level weights are a function of the school analytic weights and therefore are also adjusted for school nonresponse.
[3] The subpopulation associated with the public-use file is restricted to ninth-grade students who were capable of participating in the student questionnaire and mathematics assessment.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

School-level analysis

- Analysis of school characteristics, school administrator survey data, and counselor survey data, individually or in combination, should be conducted with the school weight (W1SCHOOL). Note that weighted values generated from the school administrator and counselor response provide information for the HSLS:09 target population of schools.[29]

[29] Questionnaire responses were requested from the lead counselor or counselor most knowledgeable about ninth-grade counseling practices at each sampled school. Because the counselor was *not* randomly selected from the set of counselors, contextual estimates can only be generalized to the target population of schools and not to a population of school counselors.

Student-level analysis

- Analysis of student assessment scores or survey data, alone or in combination with the school characteristics or administrator/counselor data, should use the student weight (W1STUDENT). The weights account for school and student nonresponse and the estimates are associated with the HSLS:09 target population of ninth-grade students.[30]
- Analysis of parent responses (alone or in conjunction with student data, school characteristics or administrator/counselor data) should use the student home-life weight (W1PARENT). This weight is used to estimate characteristics associated with the HSLS:09 *student* target population and include adjustments for school, student, and parent nonresponse (see section 6.5.3).[31]
- Analysis of science teacher data (alone or in conjunction with student data, school characteristics or administrator/counselor data) should use the science course enrollee weight (W1SCITCH). This weight is used to produce subpopulation estimates for ninth-grade students enrolled in a science course (see section 6.5.2). The weight includes adjustments for school, student, and science teacher nonresponse.
- Analysis that draws on mathematics teacher data (alone or in conjunction with student data, school characteristics, or administrator/counselor data) should use the mathematics course enrollee weight (W1MATHTCH). As with the science teacher data, the mathematics course enrollee weight is used to produce subpopulation estimates for ninth-grade students enrolled in a mathematics course. The weight includes adjustments for school, student, and mathematics teacher nonresponse using only student characteristics.

As mentioned, not every possible combination of the survey components is accounted for in a different analytic weight. For combinations of data discussed above as well as others not mentioned, analysts are encouraged to think of the weight question in terms of the population of interest. For example, student-level analyses that include parent and mathematics teacher responses and either source of teacher data (alone or in conjunction with student data, school characteristics, or administrator/counselor data) should be conducted with the subject-specific course enrollee weight as discussed above. Because the subject-specific weight is associated with the subset of ninth-grade students taking the course, this weight, in contrast to either the student analytic weight or student home-life weight, is recommended for use with this combination of responses. If researchers are interested in the population of ninth-grade students with a science class, then W1SCITCH would be the appropriate weight to use with the student/science course analysis regardless of the inclusion of other contextual data items.

[30] An analysis of the nonresponse patterns in the combined student and administrator or counselor data did not indicate the need for additional student-level weights.

[31] Parent information was available for neither *all* sampled ninth-grade students nor for the target population of parents. Therefore, the contextual weights were adjusted for the known characteristics of the participating students.

6.3 School Weights

HSLS:09 school analytic weights are used to produce population estimates for U.S. schools providing instruction to 9th- and 11th-grade students. Additional details on the HSLS:09 school target population are provided in section 3.2.1. Variables used to produce target population estimates include characteristics obtained from NCES sample files,[32] and school-level information collected through the administrator and counselor questionnaires (table 69).

The elements combined to form the school analytic weights are provided below beginning with a base weight (section 6.3.1), two nonresponse adjustments (section 6.3.2), and a final calibration adjustment (section 6.3.3). The corresponding BRR weights, constructed in a similar fashion, are summarized in section 6.3.4.

6.3.1 Base Weight

An initial base weight, also referred to in other text as a design or sampling weight, was constructed as the inverse of the probability of selection, a function of the composite measure of size (*mos*) mentioned in chapter 3 and detailed in appendix D:

$$d_{hi} = \frac{S_{h+}}{m_h^* \, S_{hi}} \tag{6.1}$$

where h indexes the first-stage sampling strata (see section 3.2.3); i identifies the schools within stratum h; m_h^* is the total number of schools selected in the first-stage stratum h out of a total of M_h study-eligible schools on the sampling frame including the hold sample (see section 3.2.5); S_{hi} is the composite *mos* calculated for the hi^{th} school; and $S_{h+} = \sum_{i=1}^{M_h} S_{hi}$. Note that S_{hi} is a function of the sampling rate within stratum h and the number of students within school hi for the four second-stage sampling strata—Hispanic, Asian, Black, and Other.

Additional hold-sample schools were randomly selected for HSLS:09 but never released for data collection (see section 3.2.5). The base weight in expression (6.1) was adjusted for the random subsample that was actually released for the base-year study

$$w_{1hi} = \begin{cases} d_{hi} \; a_{1hi}, & \text{for released schools} \\ 0, & \text{for hold-sample schools never released} \end{cases} \tag{6.2}$$

where $a_{1hi} = m_h^* / m_h$ and m_h is the actual number of schools randomly selected from the original sample of m_h^* schools and released for data collection from stratum h. The subsampling rate, $1/a_{1hi}$, ranged in value from 0.5 to 1.0.

[32] As discussed in chapter 3, the public school sample was drawn from study-eligible schools identified from the NCES Common Core of Data file (CCD). The sample of study-eligible private schools (Catholic and other private schools) was randomly sampled from the NCES Private School Universe Survey file (PSS).

6.3.2 Adjustment for Nonresponse

Unit nonresponse occurs in most surveys. In general, base weights should be adjusted to minimize the bias associated with a less-than-complete response from the sample units. Two adjustment factors, discussed below, were created to address school-level nonresponse linked to school administrators (1) who declined the request to participate in HSLS:09 but provided information for the nonresponding-school questionnaire (see section 4.2.4.4), and (2) who declined participation *and* the request to complete the nonresponding-school questionnaire.

Study participation among the schools was categorized into four groups as shown in table 70. An analysis of the nonresponse patterns determined that different variables were associated with the two nonresponding groups (groups 2 and 3). Therefore, two school-level nonresponse adjustment factors were created for HSLS:09 in a stepwise manner. First, the base weights for groups 1 and 2 combined were adjusted for nonresponse associated with group 3. Using the resulting nonresponse-adjusted weight, the second nonresponse adjustment factor was created and applied to the weights for the participating schools to account for the remaining nonparticipating schools with information from the nonresponding school questionnaire. Note that only study-eligible schools (groups 1, 2, and 3) were included in the adjustment models because sufficient information was obtained from all nonresponding schools to verify the eligibility status.[33]

Table 70. School-level participation categories

Group	Description	n	Percent[1]
	Total	1,973	100.0
1	Eligible, responding school	944	47.8
2	Eligible, nonresponding school, administer-provided school characteristics data[2]	623	31.6
3	Eligible, nonresponding school, administrator did not provide school characteristics data	322	16.3
4	Ineligible school	84	4.3

[1] Unweighted percent is based on overall total within column. Percentages may not sum to 100 because of rounding.
[2] Information was requested of school administrators who declined participation for the in-school phase of the study through a nonresponding school questionnaire. These responses were used only for weighting purposes and are not available on either the public- or restricted-use files.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

The nonresponse adjustment factors were calculated through design-based logistic models using the WTADJUST procedure in SUDAAN® (Research Triangle Institute 2008). The interaction model terms, significantly associated with each type of response propensity, were identified through a Chi-squared automatic interaction detection (CHAID) analysis. Additional variables known historically to be associated with nonresponse were also included in the model.

[33] Had the study-eligibility status for the nonresponding schools been unknown, the model would have included the known ineligible schools to account for the likely proportion of nonresponding schools that were also ineligible.

Several of the variables were obtained from the sampling frame and therefore known for all sampled schools. Additional variables were collected from the administrator questionnaire and the (abbreviated) nonresponding school questionnaire with either complete (item) response or low levels of item nonresponse. The small percentage of missing values in the group-2 school records for the items used in the weight adjustment were imputed using a weighted hot-deck procedure (Cox 1980; Iannacchione 1982).[34]

Schools were selected in proportion to a school-specific *mos*, S_{hi}, so that schools with a small size measure have relatively large weights and vice versa. Using w_{1hi} in a nonresponse adjustment model would give more importance to small schools within an analysis stratum in comparison to the larger schools. To dampen this effect for the school-level nonresponse adjustments, an interim weight was created for HSLS:09 with the following form and used in the first WTADJUST procedure:

$$\begin{aligned} w^{*}_{1hi} &= w_{1hi}\, S_{hi} \\ &= \frac{S_{h+}}{m_h} \end{aligned} \tag{6.3}$$

for S_{h+} defined for expression (6.1) and m_h defined for expression (6.2). Thus the interim weights are identical within a design stratum. Model covariates included, for example, school type, region of the United States, metropolitan status, percentage of students by the four race/ethnicity sampling strata, and size of the school. Denote the resulting nonresponse weight adjustment from the first model as a^{*}_{1hi}.

A second interim weight was calculated as follows and used in the second nonresponse adjustment model:

$$w^{*}_{2hi} = \begin{cases} w^{*}_{1hi}\, a^{*}_{1hi}, & \text{for eligible, responding schools} \\ w^{*}_{1hi}\, a^{*}_{1hi}, & \text{for eligible, nonresponding schools with administrator-provided school characteristics data} \\ 0, & \text{for eligible, nonresponding schools without administrator-provided school characteristics data} \end{cases} \tag{6.4}$$

where a^{*}_{1hi} is the nonresponse weight adjustment calculated from the first logistic model. In addition to the covariates included in the first adjustment model, the second model included school covariates such as type of academic calendar, hours of instruction, number of certified full-time teachers, and grade span.

The resulting school weight adjusted for the two patterns of nonresponse was then computed as

[34] Data from the nonresponding school questionnaire are not included on the HSLS:09 data files.

$$w_{2hi} = \begin{cases} w_{1hi}\, a_{2hi}, & \text{for eligible, responding schools} \\ w_{1hi}, & \text{for ineligible schools} \\ 0, & \text{for all eligible, nonresponding schools} \end{cases} \quad (6.5)$$

where w_{1hi} is defined in expression (6.2); $a_{2hi} = a^*_{1hi}\, a^*_{2hi}$, the nonresponse weight adjustment calculated from both WTADJUST procedures; a^*_{1hi} is the first of two nonresponse adjustment weights; and a^*_{2hi} is the nonresponse weight adjustment calculated from the second of two logistic models. Note that $a_{2hi} = 1$ for all study-ineligible schools. Summary statistics for a_{2hi} are as follows: minimum = 1.03, median = 1.83, and maximum = 7.61. The average value by important school characteristics is provided in table 71 where the largest average value of a_{2hi} is naturally associated with the lowest weighted response rates.[35] Both adjustment factors were constrained to minimize excess variation in the resulting weight.

Table 71. Weighted response rate and average nonresponse adjustment by school characteristics

School characteristics	Number of responding schools	Weighted response rate[1]	Average nonresponse adjustment weight
Total	944	55.5	1.99
School type			
Public	767	58.8	1.93
Private	177	46.2	1.96
Catholic	102	57.0	1.92
Other private	75	42.2	2.66
Region			
Northeast	149	40.9	2.22
Midwest	251	64.8	1.87
South	380	60.0	1.82
West	164	47.1	2.33
Locale			
City	272	44.1	2.24
Suburban	335	46.4	2.06
Town	117	67.5	1.71
Rural	220	66.6	1.72

[1] Weighted response rates were calculated with the school-level base weight (w_{1hi}) as the sum of the weights for the eligible, responding schools divided by the sum of the weights for all eligible schools in the HSLS:09 sample (see AAPOR [2011] $RR1_w$).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

6.3.3 Weight Calibration and Final Analytic Weight

A final adjustment was applied to school weights to calibrate the sum of the analytic weights to target population counts tabulated from the 2007–08 CCD and 2007–08 PSS. The

[35] School-level weighted response rates were calculated using the AAPOR $RR1_w$ formula in the Standard Definitions report (AAPOR 2011).

calibration adjustments[36] are also known to reduce coverage bias and variation in the resulting analytic weights, improving precision in the survey estimates (Deville and Särndal 1992).

The calibration adjustment factors were calculated through a design-based model using the WTADJUST procedure in SUDAAN® (Research Triangle Park 2008)[37] and the nonresponse adjusted analytic weights given in expression (6.5). The model covariates included the following variables in addition to several one-way interactions: school type, region of the United States, metropolitan status, size of ninth-grade class, and an indicator as to whether a public school was located in one of the 10 augmented-sample states (section 3.2.4).

The final calibrated school-level analytic weight (W1SCHOOL) was then defined as

$$w_{3hi} = \begin{cases} w_{2hi}\, a_{3hi}, & \text{for eligible, responding schools} \\ w_{2hi}\, a_{3hi}, & \text{for ineligible schools} \\ 0, & \text{for eligible, nonresponding schools} \end{cases} \quad (6.6)$$

where a_{3hi} is the calibration adjustment calculated PROC WTADJUST in SUDAAN®.

Summary statistics for a_{3hi} across all schools are the following: minimum = 0.41, median = 0.84, and maximum = 4.82. The average value by certain school characteristics is provided in table 72. Summary statistics for the resulting final school analytic weight (W1SCHOOL) include the following statistics and measures by key school characteristics given in table 72.

Statistic	Value
Mean	24.4
Median	10.2
Standard deviation	49.44
Minimum	1.0
Maximum	926.1

Note that only the eligible, responding schools have been included on the public- and restricted-use data files. The sum of w_{3hi} for the HSLS:09 eligible, responding schools estimates the total number of study-eligible U.S. schools (see section 3.2.1 for a detailed discussion of the school target population). The sum of w_{3hi} for the ineligible schools estimates the contrasting number of schools in the United States that were not eligible for HSLS:09.

[36] Poststratification is a particular type of calibration adjustment where all the model covariates are crossed to form mutually exclusive and exhaustive groups. Calibration models allow for interactions and single terms to ensure that weight sums for certain groups and marginal characteristics match the corresponding known population values.

[37] The ADJUST=NONRESPONSE option in PROC WTADJUST was used to generate the nonresponse adjustments.

Table 72. Average calibration adjustments, weight sums, and unequal weighting effect by school characteristics

School characteristics	Number of responding schools	Average calibration adjustment	Final school analytic weights: Sum of the weights[1]	Final school analytic weights: Unequal weighting effect[2,3]
Total	944	0.93	23,022.0	5.10
School type				
Public	767	0.91	17,523.9	5.55
Private	177	1.02	5,498.1	3.75
Catholic	102	1.08	1,147.4	2.29
Other private	75	0.94	4,350.7	2.42
Region				
Northeast	149	0.97	4,006.8	4.16
Midwest	251	0.90	6,776.6	3.66
South	380	0.94	7,822.4	3.39
West	164	0.93	4,416.1	10.08
Locale				
City	272	0.93	4,869.5	3.94
Suburban	335	0.74	5,219.9	3.84
Town	117	1.38	3,824.9	2.97
Rural	220	0.97	9,107.7	4.87

[1] The control totals used in the calibration adjustment are the counts of eligible schools provided in table 5. The counts differ from the control totals because of the ineligible schools identified only after sample selection.
[2] The unequal weighting effect (UWE) is also referred to as the design effect of the weights and is calculated as one plus the square of the coefficient of variation ($1 + CV^2$).
[3] HSLS:09 was designed to produce efficient estimates for student data. Hence, the UWEs for school weights are larger than the values achieved for the student analytic weights. See section 6.4.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

6.3.4 Balanced Repeated Replication Weights

Five sets of 200 BRR weights, one set for each HSLS:09 analytic weight (table 69), were constructed for HSLS:09 for use in calculating replicate variance estimates (Wolter 2007). In conjunction with the school analytic weight (W1SCHOOL), the first set of HSLS:09 BRR weights was created for school-level analysis of school characteristic data and questionnaire responses from the school administrator and counselor instruments at the school level. The large number of replicates (i.e., 200) was produced to ensure a sufficient number of degrees of freedom for complex analyses such as regression models.

Variance estimates themselves are calculated using a random-group variance formula with a fully orthogonal balanced set of 200 groups (i.e., replicates). The replicates are formed through procedures that assume a sample design with two primary sampling units (PSUs) (i.e., schools) within each of 199 BRR strata. Details of the procedures are provided below. Additional information on the "two-PSU per stratum" approach is found in section 6.6.

Prior to creating the BRR weights, the adjusted base weights, w_{1hi} given in expression (6.2), for all schools were calibrated to the National Center for Education Statistics (NCES) population counts (see section 6.3.3) so that the ineligible schools could be excluded from the

replicate process. Once the BRR strata, PSUs, and adjusted base weights were finalized, a nonresponse adjustment much like the one discussed in section 6.3.2 was created and applied to create the final 200 BRR analytic weights.

6.4 Student Weights

As summarized in table 69, HSLS:09 student analytic weights are needed for analyzing the student data. The weights are associated with study-eligible ninth-grade students as discussed in section 3.3.1. The components used to create the student analytic weights are detailed below beginning with a base weight (section 6.4.1), two nonresponse adjustments (section 6.4.2), and a final calibration adjustment (section 6.4.3). The corresponding BRR student weights are discussed in section 6.3.4.

6.4.1 Base Weight

HSLS:09 ninth-grade students were randomly selected within four race/ethnicity sampling strata (Hispanic, Asian, Black, and Other) as discussed in section 3.3.4. The conditional base weight for students in the j^{th} race/ethnicity stratum ($j = 1, \ldots, 4$) was constructed as the inverse of the probability of selection within the hi^{th} school sampled in the first stage of the design:

$$d_{j|hi} = \frac{d_{hi}}{f_{hj}} \equiv \frac{N_{hij}}{n_{hij}}, \tag{6.7}$$

where $n_{hij} = n_h \, f_{hj} \, N_{hij} / S_{hi}$, the expected number of students to be selected. The within-school sampling rates specific to the race/ethnicity groups, $f_{hij} = f_{hj} / d_{hi}$, were set prior to obtaining updated ninth-grade enrollment counts from the school. Sampling rates for a few schools were adjusted if an administrator requested a census, or when the counts/percent distribution by race/ethnicity differed greatly from the NCES information.

The unconditional student base weight was created as follows and used in the weight adjustment models discussed in the next sections:

$$w_{1hij} = w_{3hi} \, d_{j|hi} \tag{6.8}$$

for w_{3hi} defined in expression (6.6). Unlike the school sample, all students selected for HSLS:09 were released for data collection. No hold sample of students was drawn.

6.4.2 Adjustments for Nonresponse

Although the student weighted response rate was relatively high, a nonresponse adjustment weight was developed to address bias associated with having less than full participation from the sample. As implemented in the Education Longitudinal Study of 2002 (ELS:2002), two sequential nonresponse adjustments were constructed and applied—one

associated with parent permission refusal and one associated with student participation refusal. Each adjustment is discussed in turn below.

Approximately 9.4 percent of the questionnaire-capable student sample (2,375 of 24,658) did not participate because of a parent refusal (table 73). To minimize bias associated with this type of student nonresponse, a nonresponse adjustment was applied to the weights in expression (6.8) for 22,283 (=21,444 + 839) questionnaire-capable students without a parent refusal. Note that the ability of the student to participate in the study was determined prior to data collection so that all nonresponding students were classified as questionnaire capable. For this reason, the questionnaire-incapable students were excluded from the weight adjustment.

Table 73. Study-eligible student participation categories

Description	n	Percent[1]
Overall total number of sample students	25,206	100.0
Questionnaire-incapable students	548	2.2
Total questionnaire-capable students	24,658	97.8
Responding student	21,444	85.1
Nonresponding student—other refusal	839	3.3
Nonresponding student—parent refusal	2,375	9.4

[1] The unweighted percent by questionnaire-capability status is based on overall total number of sampled students. The unweighted percent by response status is based on total number of questionnaire-capable students. Percentages may not sum to 100 because of rounding.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

This nonresponse adjustment factor was calculated with the WTADJUST procedure in SUDAAN® as implemented with the school nonresponse adjustments. A CHAID analysis identified variables associated with parent refusal including school characteristics (e.g., school type, region) and student characteristics (e.g., sex, race/ethnicity) available on the sampling frame. The student weight adjusted for the first of two nonresponse conditions was defined as

$$w_{2hij} = \begin{cases} w_{1hij}\, a_{1hij}, & \text{for students whose parents did not refuse their participation} \\ w_{1hij}, & \text{for questionnaire-incapable students} \\ 0, & \text{all other sampled students} \end{cases} \quad (6.9)$$

where a_{1hij} is the first student nonresponse weight adjustment calculated from SUDAAN®. Summary statistics for the first weight adjustment are the following: minimum = 1.00, median = 1.08, and maximum = 3.01.

The weights in expression (6.9) were then adjusted to account for the remaining types of student refusal. These include, for example, students who completed an insufficient number of questions on the instrument to be classified as a usable case and those who were otherwise eligible but did not participate after multiple call attempts. A second logistic model was

constructed in the WTADJUST procedure to inflate w_{2hij} for the 21,444 eligible, responding students (table 73). Thus, the nonresponse-adjusted student weight was calculated as

$$w_{3hij} = \begin{cases} w_{2hij}\, a_{2hij}, & \text{for participating students} \\ w_{2hij}, & \text{for questionnaire-incapable students} \\ 0, & \text{all other sampled students} \end{cases} \quad (6.10)$$

where a_{2hij} is the second student nonresponse weight adjustment calculated from SUDAAN®. The minimum, median, and maximum values for a_{2hij} are 1.00, 1.03, and 1.92, respectively.

6.4.3 Weight Calibration and Final Analytic Weight

The sum of the nonresponse-adjusted weights, expression (6.10), was compared against totals tabulated from the 2007–08 NCES sampling frame files of eligible schools. Because the weight sums were less than the sampling frame counts,[38] a calibration adjustment was applied to the weights of the responding students and the questionnaire-incapable students. However, because of the time difference between the creation of the NCES files and the period of data collection for the study, only school-level characteristics were included in the WTADJUST procedure model. The final student analytic weight (W1STUDENT) was calculated as follows:

$$w_{4hij} = \begin{cases} w_{3hij}\, a_{3hij}, & \text{for participating students} \\ w_{3hij}\, a_{3hij}, & \text{for questionnaire-incapable students} \\ 0, & \text{all other sampled students} \end{cases} \quad (6.11)$$

where a_{3hij} is the calibration adjustment determined through the exponential model. The minimum, median, and maximum values for a_{3hij} are 0.60, 1.19, and 4.36, respectively.

The summary statistics for the student analytic weight (W1STUDENT) in the HSLS:09 public-use file are:

Statistic	Value
Mean	191.9
Median	136.3
Standard deviation	236.8
Minimum	1.8
Maximum	5,500.5

Details of the student weights, including average calibration adjustment and sum of the final weight, are provided in table 74 by important school-level characteristics.

[38] The percent relative difference of the weight sum from the overall count of ninth-grade students on the sampling frames was approximately a 15 percent undercount. This discrepancy was in part a result of differences in student counts overall and by race/ethnicity between aged NCES sampling information and current information provided by the school.

Table 74. Average calibration adjustments, weight sums, and unequal weighting effect by school and student characteristics

Characteristics	Number of responding students[1]	Average calibration adjustment	Final student analytic weights	
			Sum of the weights[2]	Unequal weighting effect[3]
Total	21,444	1.29	4,114,959.9	2.52
School type				
Public	17,511	1.30	3,818,078	2.34
Private	3,963	1.25	296,881	1.93
Catholic	2,444	1.22	153,072	1.80
Other private	1,489	1.30	143,810	1.87
Region				
Northeast	3,331	1.22	711,547	3.68
Midwest	5,695	1.32	913,569	1.87
South	8,705	1.26	1,547,519	2.06
West	3,713	1.37	942,325	2.47
Locale				
City	6,067	1.34	1,338,549	3.64
Suburban	7,636	1.28	1,399,615	1.88
Town	2,580	1.23	492,894	2.04
Rural	5,161	1.28	966,666	1.80

[1] The questionnaire-incapable students have been excluded from the analysis presented in this table.
[2] The control totals are the counts of students provided in table 5 in chapter 3.
[3] The unequal weighting effect is also referred to as the design effect of the weights and is calculated as one plus the square of the coefficient of variation ($1 + CV^2$).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

6.4.4 Balanced Repeated Replication Weights

Procedures for constructing the student BRR replicate weights mirrored the methods used to develop the main analytic weight. First, the conditional probability of selection for the students was applied to the corresponding school-level replicate weight to form the student BRR base weights. Second, the two nonresponse adjustments discussed in section 6.4.2 were applied to each set of base weights. Finally, student-level BRR weights were calibrated to the NCES sampling frame as discussed in section 6.4.3. The nonresponse-adjusted replicate weights were calibrated to the control totals to form the 200 final student BRR weights.

6.5 Student-Level Contextual Analytic Weights

Not all persons identified to provide contextual information for the sampled students agreed to participate in HSLS:09. For this reason, weights were created for analyzing HSLS:09 data that also include responses from the contextual instruments (number and percentage of cases provided in table 75). Student-level analyses including school administrator and counselor responses (section 6.5.1), science and mathematics teacher responses (section 6.5.2), and parent responses (section 6.5.3) are discussed below.

Table 75. Sample size and percentage of cases, by HSLS:09 respondent group

Respondent group	n	Unweighted percentage	Weighted percentage
Questionnaire-capable students	21,444	87.0	87.4
Participating students with contextual data from:			
School administrator	20,301	94.7	94.2
School counselor	19,505	91.0	90.2
Science teacher [1]	14,629	68.2	65.3
Mathematics teacher [1]	16,035	74.8	70.8
Parent/guardian	16,429	76.6	76.1

[1] A total of 1,340 students did not have a science course and 471 did not have a mathematics course. In combination, 165 students had neither a science nor a mathematics course. These students were excluded from the calculations presented in this table.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base-Year Public-Use Data File.

6.5.1 Administrator and Counselor Data

School administrators and school counselors provided information on conditions at the school in general and those specific to the ninth-grade class. Responses were obtained from most school administrators while a slightly lower percentage of school counselors participated in the study (table 75). Separate contextual weights were not constructed for administrator and counselor data because of (1) the high response rates and (2) the availability of questionnaire responses from nonparticipating schools to adjust for nonresponse bias in the school analytic weight. Instead, when including these contextual responses in an analysis of the student data, researchers should use the student analytic weight (W1STUDENT) as discussed in section 6.2.

6.5.2 Science and Mathematics Course Enrollee Contextual Weights

Teacher background and limited classroom information was collected from one science teacher and one mathematics teacher for each sampled student enrolled in a science or mathematics course in the fall of 2009. As shown in table 15, weighted response rates for science and mathematics teachers were 70.2 and 71.9 percent, respectively. To account for the loss of student records linked to the nonresponding teachers (31.8 percent of the science enrollees and 25.2 percent of the mathematics enrollees), two subject-specific enrollee weights were created for analyzing student data in combination with the classroom information.

The two weights were independently created by adjusting the main student analytic weight (W1STUDENT) to address the loss of student records. Variables used to construct a nonresponse weight adjustment are only effective if they are related to the response patterns exhibited in the data. However, teachers were not sampled directly from each school (see section 3.4.3) so that no information was available for the nonresponding teachers. Consequently, a weight adjustment could not be calculated to adjust for patterns of HSLS:09 teacher nonresponse. Instead, the student analytic weights for enrollees linked to a responding

teacher were combined with students not enrolled in the course and calibrated to the sum of W1STUDENT for the full set of course enrollees using the SUDAAN procedure WTADJUST.

An initial enrollee weight was constructed as:

$$w_{5hijk} = \begin{cases} w_{4hij}\, a_{4hijk}, & \text{for responding students with either a responding} \\ & \text{teacher or no subject-}k\text{ course} \\ 0, & \text{all other sampled students} \end{cases} \quad (6.12)$$

where k indexes the ninth-grade course (1 = science, 2 = mathematics), w_{4hij} is the student analytic weight (W1STUDENT), and a_{4hijk} is the calibration weight adjustment calculated through a model containing school characteristics and student demographic characteristics. Note that students without a science and/or mathematics course were included in the model to account for those who were associated with nonresponding teachers but were actually not enrolled.[39] Weights for students without a course were set to zero to create the final enrollee analytic weight. The final science enrollee weight (W1SCITCH) and the final mathematics enrollee weight (W1MATHTCH) take the form:

$$w_{6hijk} = \begin{cases} w_{5hij}, & \text{for responding, enrolled students with a responding teacher} \\ 0, & \text{for responding students not enrolled in the course} \\ 0, & \text{all other sampled students} \end{cases} \quad (6.13)$$

Summary statistics for the course enrollee weights are provided in table 76. Note that, as discussed in section 6.2, the analyses using the course-specific weights are associated with the target population of ninth-grade students enrolled in the course and *not* any population of teachers.

The two sets of BRR enrollee weights (W1SCITCH001-200 for science enrollees and W1MATHTCH001-200 for mathematics enrollees) were created in a similar fashion by calibrating the BRR weights (W1STUDENT001-200) in each replicate to the control totals used to generate the weight adjustments identified in expression (6.12).

[39] This technique is similar to including ineligibles in a weight adjustment procedure to address potential ineligible sample units in the nonresponding set.

Table 76. Summary statistics for HSLS:09 contextual analytic weights by school type.

School type	Statistic	School weight	Student weight[1]	Contextual weights[1]		
				Student home life	Science enrollee	Mathematics enrollee
Total	N	944	21,444	16,429	14,629	16,035
	Mean	24.4	191.9	250.5	254.2	249.9
	Median	10.2	136.3	173.3	182.9	169.7
	Standard deviation	49.4	236.8	317.3	323.6	310.9
	Minimum	1.0	1.8	2.7	1.7	1.5
	Maximum	926.1	5,500.5	7,603.3	6,879.0	4,198.7
	Sum	23,022.0	4,114,959.9	4,114,959.9	3,718,347.0	4,006,425.4
	95th percentile	93.9	514.1	658.7	679.9	750.9
	Unequal weighting effect[2]	5.1	2.5	2.6	2.6	2.5
Public	N	767	17,511	13,168	11,748	12,869
	Mean	22.8	218.0	289.9	292.8	288.4
	Median	10.0	162.8	217.3	224.7	206.4
	Standard deviation	48.8	252.5	340.4	346.3	332.8
	Minimum	1.0	1.8	2.7	2.8	1.5
	Maximum	926.1	5,500.5	7,603.3	6,879.0	4,198.7
	Sum	17,523.9	3,818,078.1	3,817,551.8	3,439,247.7	3,711,594.1
	95th percentile	83.6	573.8	757.1	760.1	810.5
	Unequal weighting effect[2]	5.6	2.3	2.4	2.4	2.3
Private	N	177	3,933	3,261	2,881	3,166
	Mean	31.1	75.5	91.2	96.9	93.1
	Median	11.6	54.7	65.3	59.8	61.6
	Standard deviation	51.7	72.7	87.9	109.0	92.3
	Minimum	2.1	3.3	3.7	1.7	2.6
	Maximum	384.3	1,216.8	1,524.6	1,776.9	645.3
	Sum	5,498.1	296,881.8	297,408.1	279,099.3	294,831.3
	95th percentile	125.4	233.4	280.9	308.0	280.2
	Unequal weighting effect[2]	3.8	1.9	1.9	2.3	2.0

[1] The questionnaire-incapable students have been excluded from the analysis presented in this table.
[2]The unequal weighting effect is also referred to as the design effect of the weights and is calculated as one plus the square of the coefficient of variation ($1 + CV^2$).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

6.5.3 Student Home-Life Contextual Weights

Information on factors affecting family life and background as well as parent/guardian opinions of education and school involvement was collected through the parent instrument. Among the student respondents, the weighted parent/guardian response rate was 67.5 percent (table 15). As with the course-enrollee contextual weights, information on nonresponding parents

was not available to create weight adjustment that adjusted weights for patterns of parental nonresponse. Therefore, a student home-life contextual analytic weight (W1PARENT) was developed only by calibrating the final student analytic weight (W1STUDENT)[40] using similar procedures as discussed in section 6.5.2 and took the form:

$$w_{6hij} = \begin{cases} w_{4hij}\ a_{5hij}, & \text{for responding student-parent pairs} \\ 0, & \text{all other sampled students} \end{cases} \quad (6.14)$$

where a_{5hij} is the calibration weight adjustment calculated from the WTADJUST procedure using school- and student-level characteristics, and w_{4hij} is the student analytic weight (W1STUDENT). The population totals used in the calibration adjustment were the same as those used to construct W1STUDENT. Summary statistics for the final student home-life weight are displayed in table 76.

The methodology used to create the calibration weight adjustment for the student home-life contextual weight was applied to the student home-life BRR weights to construct the associated BRR student home-life weights (W1PARENT001-200).

6.6 Variance Estimation

Analyses with HSLS:09 data should involve statistical software with the capabilities of calculating (a) BRR replicate variance estimates using the BRR weights and associated analytic weight, or (b) linearization variance estimates through a Taylor series approximation using only the analytic weight. Note that NCES standards recommend the use of replicate variance estimation over linearization methods. Many standard software packages calculate estimates under the assumption of a simple random sample design as in traditional mathematical statistics and do not account for the clustering of students within schools. This incorrect design assumption can lead to estimated variances and confidence intervals that are too small and can, therefore, lead to incorrectly rejecting the null hypothesis for statistical tests of differences. The procedures to construct these design variables are detailed in section 6.6.1 along with a discussion of replicate variance estimates calculated with the analytic and BRR weights. The variance inflation associated with the clustered HSLS:09 sample design in comparison to an unclustered design, quantified in the design effect, is discussed in section 6.6.2.

6.6.1 Standard Errors

Two methods of variance estimation are available for HSLS:09: Taylor series linearization and BRR. Linearization variance estimation requires software that constructs a first-order Taylor-series approximation of the statistic being analyzed (e.g., mean), and data sources containing the analytic stratum and PSU identifiers as well as a single analytic weight (see, e.g., Binder 1983; Woodruff 1971). The stratum and PSU variables are not available on the public-use

[40] Note that only participating students had a non-zero analysis weight. See expression (6.11).

file as one measure to minimize disclosure risk (see section 7.4). Therefore, linearization variance estimation is only permitted with the HSLS:09 restricted-use file.

By contrast, BRR variance estimation does not require knowledge of the analytic strata and PSUs and instead only requires a large set of replicate weights and the main analytic weight. Therefore, BRR variance estimation can be conducted with HSLS:09 public-use data and with the restricted-use data. The BRR weights are constructed to capture the variation associated with the sampling information and, along with appropriate software, provide an alternative to the linearization method. A discussion of the analytic strata and PSUs is given below followed by a brief description of the BRR variance formula. Note that BRR variance estimates, in general, are slightly larger in value than those produced through a linearization methodology (Wolter 2007). This is because the BRR weights capture additional random variability associated with, for example, the weight adjustments applied to the base weight to construct the analytic weight. For this reason, NCES recommends BRR over linearization variance estimation.

The HSLS:09 samples of schools (PSUs) and of students within schools were drawn through a stratified, two-stage sample design. As discussed in section 3.2.3, schools were randomly selected in the first stage of sampling with Chromy's sequential probability with minimum replacement (Chromy PMR) sampling algorithm. Although the sample design has a *1-PSU per stratum* structure,[41] analytic strata must be formed to enable variance estimation. This task was accomplished by collapsing two to three PSUs to form analytic strata, a recommended method for maximizing degrees of freedom (Chromy 1981). Schools were combined within the design strata[42] in such a way as to maximize retention of the original design. A third PSU was included in the stratum for those design strata with an odd number of PSUs. This procedure produced a total of 450 analytic strata containing an average of 2.1 PSUs.[43]

As mentioned above, replicate variance estimation can be implemented with data from either the HSLS:09 public- or restricted-use files, the analytic weight, and BRR weights that incorporate the sampling information. To create the school BRR weights, for example, 922 analytic strata were formed by combining two to three schools in the order in which the schools were sampled. Ineligible schools were excluded from this procedure because all other participating and nonparticipating schools were verified to be eligible for HSLS:09. The 922 analytic strata were collapsed into 199 BRR strata in such as way as to create strata with roughly equal total measure of size (S_{hi} in expression (6.1)) with representation across school type, region, and metropolitan status. Within each BRR stratum, two BRR PSUs were formed by randomly assigning each of the original analytic strata contained with the BRR stratum to one of the PSUs.

[41] The Chromy PMR sampling methodology produces a specific type of systematic sample that represents a 1-unit per stratum design.
[42] Design strata included school type, region, and metropolitan status.
[43] Variable that identify the analytic strata (STRAT_ID) and analytic PSUs (PSU) are available only on the HSLS:09 restricted-use files.

The BRR strata were randomly assigned to the second through 200 rows of a (200×200) Hadamard matrix containing a sequence of +1 and -1 values. The first row of +1s in the matrix was excluded from the random assignment. The columns of the matrix provided the recipe for the 200 BRR replicate base weights, $d_{hi(r)}$, as shown below.

	BRR base weight	
Matrix value	BRR PSU #1	BRR PSU #2
+1	$d_{hi(r)} = d_{hi} \times 2$	$d_{hi(r)} = 0$
-1	$d_{hi(r)} = 0$	$d_{hi(r)} = d_{hi} \times 2$

Details for adjusting the BRR base weights to create the final BRR school weights are provided in section 6.3.4. The corresponding replicate weights for students and contextual replicate weights for teachers and parents are discussed in sections 6.3.4 and 6.5, respectively.

Using the BRR weights, the general formula for calculating a BRR variance estimate, used in several statistical software packages, is as follows:

$$var\left(\hat{\theta}\right) = \frac{1}{200}\sum_{a=1}^{200}\left(\hat{\theta}_{(a)} - \hat{\theta}\right)^2 \tag{6.15}$$

where 200 is the number of HSLS:09 BRR weights, $\hat{\theta}$ is the estimated value for a statistic of interest (e.g., mean) calculated with a particular analytic weight discussed above, and $\hat{\theta}_{(a)}$ is the corresponding value calculated with the a^{th} BRR (replicate) weight (a=1,…,200).

Software that enables survey data analyses includes, for example, SUDAAN®, SAS® survey procedures,[44] WesVar®,[45] Stata®,[46] and R®.[47] Example SUDAAN code for producing estimated means and standard errors with the HSLS:09 public-use data using the linearization method is shown in figure 7. A similar example using the replication variance method and BRR weights is provided in figure 8. The corresponding Stata code is provided in figures 9 and 10.

[44] See the most recent SAS/STAT User's Guide located at http://support.sas.com/documentation/.
[45] http://www.westat.com/westat/statistical_software/WesVar/index.cfm.
[46] http://www.stata.com/.
[47] http://www.r-project.org/.

Figure 7. Example SAS-SUDAAN code to produce mean and linearization standard error

```
PROC SORT DATA=<filename>;                          *File sorted by nest variables;
  BY STRAT_ID PSU;
RUN;

PROC DESCRIPT DATA=<filename> DESIGN=WR;
  NEST STRAT_ID PSU / MISSUNIT;                          *Analysis stratum/PSU;
  SUBPOPN (<domain variable = level>);                *Subset to reporting domain;
  WEIGHT W1STUDENT;                                      *Main analytic weight;
  VAR <analysis variable>;                                  *Analysis variable;
  PRINT MEAN SEMEAN / STYLE=NCHS;                     *Mean and standard error;
RUN;
```

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Figure 8. Example SUDAAN code to produce mean and BRR standard error for a student-level analysis

```
PROC DESCRIPT DATA=<filename> DESIGN=BRR;
  WEIGHT W1STUDENT;[1]                                    *Main analytic weight;
  REPWGT W1STUDENT001-W1STUDENT200;                      *BRR replicate weights;
  SUBPOPN (<domain variable = level>);                *Subset to reporting domain;
  VAR <analysis variable>;                                  *Analysis variable;
  PRINT MEAN SEMEAN / STYLE=NCHS;                     *Mean and standard error;
RUN;
```

[1] Balanced repeated replication (BRR) variance estimation can be conducted with or without the analytic weight. The former is only available with the HSLS:09 restricted-use file and, with most software, will produce the same point estimate as produced with linearization variance estimation. As discussed in, for example, Wolter (2007), BRR variance estimates calculated without the analytic weight should produce slightly larger standard errors.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Figure 9. Example STATA code to produce mean and linearization standard error

```
SVYSET PSU [PWEIGHT=W1STUDENT], STRATA (STRAT_ID) VCE(LINEAR),
singleunit(centered)
SVY, SUBP (<domain variable >) : MEAN < analysis variable >
```

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Figure 10. Example STATA code to produce mean and BRR standard error for a student-level analysis

```
SVYSET [PWEIGHT=W1STUDENT], BRRWEIGHT(W1STUDENT001-W1STUDENT200) VCE(BRR)
SVY, SUBP (<domain variable >) : MEAN < analysis variable >
```

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

6.6.2 Design Effects

Design effects (*deff*) quantify the efficiency of the sample design using particular items collected in the survey. The *deff* are calculated as the ratio of the estimated variance that properly accounts for the complex sample design, $\hat{V}_d\left(\hat{\theta}\right)$, to the estimated variance from a simple random sample (*srs*) design of the same size, $\hat{V}_s\left(\hat{\theta}\right)$, for an estimated HSLS:09 characteristic $\hat{\theta}$:

$$deff = \frac{\hat{V}_d\left(\hat{\theta}\right)}{\hat{V}_s\left(\hat{\theta}\right)} \tag{6.16}$$

The design-based variance in the numerator reflects the effects of HSLS:09 stratification, clustering, differential sampling of subgroups in the population, differential nonresponse, and the resulting variation in the final analytic weights. As with the estimated standard errors, the *deff* presented in this document were produced using final analytic weights and data that have been edited, key missing items imputed, and treated to limit disclosure risk. The *srs deff* were calculated using a model-based formulation, $deff_4$ in the SUDAAN procedures.

A total of 89 estimates from HSLS:09 were used in the *deff* analysis presented here: 22 school-level variables from the administrator and counselor questionnaires, 37 items from the student questionnaire plus one mathematics achievement score (*theta*), and 29 parent-questionnaire items. The items were chosen using six criteria: (1) representation from the school-level instruments (administrator and counselor) and the student-level instruments (student and parent); (2) HSLS:09 variables common to the ELS:2002 base-year design effect analysis; (3) variables identified for the First Look report; (4) substantively important variables to NCES; (5) variables included in several other NCES studies such as ELS:2002, the National Education Longitudinal Study and the National Postsecondary Student Aid Study; and (6) random sample to ensure coverage of all sections of the instruments.

Tables 77 and 78 summarize the average *deff* across the study items for key characteristics of interest. The root design effects,

$$deft = \sqrt{\frac{\hat{V}_d\left(\hat{\theta}\right)}{\hat{V}_s\left(\hat{\theta}\right)}}, \tag{6.17}$$

are also presented. Appendix G contains the detailed values used in the summary calculations.

Table 77. Average design effects (*deff*) and root design effects (*deft*) for school administrator and counselor data

Group	School sample size		Average *deff* [2]	Average *deft* [3]
	n	Percent[1]		
Total	944	100.0	4.7	2.0
School type				
Public	767	81.3	6.3	2.5
Private	177	18.8	4.2	2.0
Region				
Northeast	149	15.8	2.5	1.5
Midwest	251	26.6	3.1	1.7
South	380	40.3	3.2	1.7
West	164	17.4	10.1	3.0
Locale				
City	272	28.8	4.1	2.0
Suburban	335	35.5	4.7	2.2
Town	117	12.4	4.2	2.0
Rural	220	23.3	4.9	2.2

[1] Unweighted percent is based on overall total number of schools (n = 944). Percentages may not sum to 100 because of rounding.
[2] The formula for the design effect (*deff*) is provided in expression 6.16.
[3] The formula for the root design effect (*deft*) is provided in expression 6.17.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Public-Use Data File.

Table 78. Average design effects (*deff*) and root design effects (*deft*) for student and parent data

Characteristic	Student respondents n	Final student weights		Parent respondents n	Final home-life weights	
		Average *deff*[1]	Average *deft*[2]		Average *deff*[1]	Average *deft*[2]
Total	21,444	4.7	2.1	16,429	4.2	2.0
School type						
Public	17,511	4.3	2.0	13,168	3.7	1.9
Private	3,933	4.3	1.9	3,261	6.0	2.4
Region						
Northeast	3,331	6.8	2.4	2,596	6.9	2.5
Midwest	5,695	4.4	2.0	4,385	3.8	1.9
South	8,705	3.8	1.9	6,660	3.5	1.8
West	3,713	4.7	2.1	2,788	4.5	2.1
Locale						
City	6,067	7.0	2.5	4,714	6.0	2.4
Suburban	7,636	3.7	1.8	5,876	3.9	1.9
Town	2,580	4.2	1.9	1,945	4.0	2.0
Rural	5,161	4.8	2.0	3,894	4.6	2.0
Student sex						
Male	10,887	3.8	1.9	8,237	3.4	1.8
Female	10,557	3.8	1.9	8,192	3.4	1.8
Student race/ethnicity[3]						
Asian	1,672	4.7	2.1	1,239	4.8	2.2
Hispanic	3,515	3.8	1.9	2,604	3.8	1.9
Black	2,218	3.7	1.9	1,579	3.5	1.9
White	11,854	2.8	1.6	9,386	2.6	1.6
More than one race	1,912	3.1	1.7	1,420	2.9	1.7
Socioeconomic status[4]						
Low SES	3,434	3.5	1.8	2,839	3.1	1.7
Middle SES	12,491	3.5	1.8	8,696	3.1	1.8
High SES	5,519	3.0	1.7	4,894	3.1	1.7

[1] The formula for the design effect (*deff*) is provided in expression 6.16.
[2] The formula for the root design effect (*deft*) is provided in expression 6.17.
[3] Race/ethnicity as defined in the student questionnaire.
[4] Categories for socioeconomic status (SES) were defined using the SES quintile variable (X1SESQ5) where X1SESQ5 = 1 (20th percentile) represents low SES, and X1SESQ5 = 5 (80th percentile) represents high SES. All others were classified as middle SES.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Public-Use Data File.

6.7 Unit Nonresponse Bias Analysis

NCES standards dictate that a unit nonresponse bias analysis should be performed when either overall or domain-specific weighted response rates fall below 85 percent. This analysis determines whether any statistically detectable differences exist between estimates calculated for the study respondents and nonrespondents. Particulars of this statistical test are shown in section 6.7.1.

HSLS:09 schools were classified as respondents if the school administrator permitted student data collection. The overall weighted school response rates for HSLS:09 was 55.5 percent (table 5). Study variables and results from the unit nonresponse bias analysis are presented in section 6.7.2.

Responding students had to have completed a significant portion of the questionnaire to attain this label. Even though the weighted student response rate exceeded the threshold (85.7 percent in table 5), certain domains (e.g., school type, region, student sex, student race/ethnicity) were flagged for bias analysis. The study variables identified for the unit nonresponse bias analysis are displayed in section 6.7.3 along with the bias results.

6.7.1 Test of Significant Nonresponse Bias

Nonresponse bias is the difference between the estimated parameter calculated from the respondent data and the true value. For a population mean, the nonresponse bias would be calculated as

$$Bias(\bar{y}_R) = \bar{y}_R - \mu \tag{6.18}$$

where $\bar{y}_R$ is the mean (or proportion) estimated from the survey responses and μ is the corresponding true value from the target population. Because the true value is unknown, it and the bias must be estimated using data from respondents and nonrespondents:

$$\hat{\mu} = (1-\hat{\eta})\bar{y}_R + \hat{\eta}\bar{y}_{NR} \tag{6.19}$$

where $\hat{\eta}$ is the weighted unit nonresponse rate.[48] Substituting expression (6.19) into expression (6.18) provides the formula for the estimated bias

$$\hat{Bias}(\bar{y}_R) = \hat{\eta}(\bar{y}_R - \bar{y}_{NR}) \tag{6.20}$$

Estimated levels of bias were first calculated with the DESCRIPT procedure in SUDAAN and the (adjusted) base weights used to generate the nonresponse rate. Using the estimated standard error of the bias that accounted for the association between $\bar{y}_R$ and $\bar{y}_{NR}$, a *t* test was formed to determine whether the bias was significantly greater than zero at a 0.05 level of significance. The same test was recomputed using nonresponse-adjusted weights to determine

[48] The weighted unit nonresponse rate was calculated using the design weights adjusted for school release and the student design weights for each type of nonresponse bias analysis.

whether the weight adjustment appropriately reduced the bias to insignificant levels. Table 79 contains a summary of the analysis for the five analytic weights. See appendix H.1 for the detailed analysis tables.

Table 79. Summary statistics for unit nonresponse bias analyses by HSLS:09 analytic weight

		Significant bias tests [1]		Median absolute relative bias [2]		
Analytic weight	Number of *t* tests	Before adjustment (%)	After adjustment (%)	Before adjustment (%)	After adjustment (%)	Change
School	55	45.5	20.0	12.0	5.8	-6.2
Student	60	18.3	0.0	1.2	0.1	-1.1
Student contextual						
Home-life	60	23.3	1.7	1.5	0.6	−0.9
Science enrollee	60	33.3	11.7	6.6	3.9	−2.7
Math enrollee	60	23.3	1.7	5.9	1.3	−4.6

[1] Bias significantly different from zero at the 0.05 level of significance. "Before" and "After" are in reference to the nonresponse weight adjustment.
[2] The (percent) relative bias is calculated as 100 multiplied by the estimated bias divided by the estimated value. The absolute relative bias is the absolute value of the (percent) relative bias.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

6.7.2 School Nonresponse Bias Analysis

NCES statistical standards state that a group of sample members with less than a high level of response (defined as an 85 weighted response rate or better) should be subjected to a nonresponse bias analysis. The purpose of this analysis is to determine whether detectable levels of nonresponse bias exist in the data. The goal of 944 participating schools was attained for HSLS:09 but the weighted response rate (55.5 percent) met the criterion for a bias analysis. As discussed in section 4.2.4.4, information through an abbreviated questionnaire was obtained for 65.9 percent of the nonparticipating schools (= 623/945 in table 70) either through an interview with the school administrator or with contacts at the district/diocese.

The abbreviated questionnaire, in combination with the NCES sampling frame items, netted a total of 15 variables for the school nonresponse bias analysis including school type, region of the United States, metropolitan designation, size of the school, ninth-grade enrollment count, and number of full-time teachers. As shown in table 79, 45.5 percent of the tests showed significant levels of bias (median value 12.0). The median value was reduced to 5.8 percent after adjusting the weights. The detailed analysis tables are included in appendix H, table H-1.

6.7.3 Student-Level Nonresponse Bias Analysis

The overall weighted response rate exceeded the 85 percent for the HSLS:09 student sample (85.7 percent in table 5). However, weighted response rates within certain domains were less than the desired value. For the nonresponse bias analysis, some information for nonresponding students was available through the enrollment lists such as race/ethnicity and sex. Additionally, school characteristics were used as analysis variables. In total, 17 variables were

used for the student nonresponse bias analysis including characteristics known for all participating schools. Approximately 18 percent of the 60 statistical tests identified bias significantly greater than zero at the 0.05 significance level (table 79). All unit nonresponse bias was reduced to insignificant levels after adjusting the student base weights for the variables included in the examination. The detailed analysis tables are included in appendix H, table H-2.

6.7.4 Student-Level Contextual Nonresponse Bias Analysis

The weighted response rates for the providers of student contextual information (parents, science teacher, and mathematics teacher) all fell below 85 percent. As shown in table 5, mathematics and science teacher response rates (71.9 percent and 70.2 percent, respectively) exceeded the parent response rates (67.5 percent). Information on the nonresponding adults was not available for either weight adjustment (section 6.5) or for the nonresponse bias analysis. Therefore, student and school characteristics used in the student-level nonresponse bias analysis were used for the contextual analyses. In total, 17 variables were used for the student nonresponse bias analysis including characteristics known for all participating schools.

Bias was detected for 33 percent of the 60 tests implemented with the science course enrollee weight, a 10 percentage point increase above the levels for either the home-life weight or the mathematics course enrollee weight. After adjusting the weights, the median relative bias was reduced 2.7 percentage points but still showed the largest number of significant tests among the contextual weights (11.7 percent vs. 1.7 percent). The detailed analysis table for the home-life weight is included in table H-3 in appendix H followed by the science and mathematics course enrollee weights (tables H-4 and H-5, respectively).

6.8 Quality Control for the Weights

Quality control (QC) was emphasized on all activities, including weighting. Because of the central importance of the analytic weights to population estimation, a senior statistician also thoroughly checked each set of weights. The most fundamental type of check was the verification of totals that are algebraically equivalent (e.g., marginal totals of the weights of eligible schools or students prior to nonresponse adjustment and of respondents after nonresponse adjustment). In addition, various analytic properties of the initial weights, the weight adjustment factors, and the final weights were examined both overall and within sampling strata, including the (1) distribution of the weights, (2) ratio of the maximum weight divided by the minimum weight, and (3) unequal weighting effect. Similar procedures were used to QC the BRR weights.

To complement the standard set of QC weighting procedures, the design effect and unit nonresponse bias analyses were used. Large design effects were reexamined to determine whether variations in the adjustment factors were excessive and upper and lower bounds tightened. Results from the preliminary and final nonresponse bias analyses were examined to evaluate the effectiveness of the nonresponse model.

Chapter 7. Item Response, Imputation, and Disclosure Treatment

7.1 Overview

Chapter 7 details the High School Longitudinal Study of 2009 (HSLS:09) base-year study procedures used to address patterns of nonresponse among those sample members who agreed to participate in the study. Section 7.2 and appendix H contain the results from an analysis to evaluate detectable levels of bias associated with item nonresponse. Section 7.3 highlights the procedures and results associated with imputing missing values for a set of important study variables. Appendix I contains additional information for single-value imputation; imputation associated with socioeconomic status is provided in appendix J. The chapter concludes in section 7.4 with an overview of methods used to analyze the HSLS:09 data for disclosure risk and to treat the data to minimize the likelihood of identifying any particular sample member.

7.2 Item Nonresponse Bias Analysis

Item response rates measure the proportion of responses obtained for a particular question among the study (unit) respondents who were supposed to answer the question. For example, if a student answers that he or she is not Hispanic, then he or she is skipped out of the subsequent Hispanic origin question and the missing value would be appropriate and is recoded to −7 in the HSLS:09 data file (see section 8.1.5). Item response rates differ from a unit response rate which measures the proportion of eligible sample members among those selected for the study who actually participate. As with the unit nonresponse bias analysis discussed in section 6.7, item nonresponse bias can occur for items that should have a valid response and can affect the analysis results produced from the data.

A description of the item nonresponse bias analysis conducted on the edited HSLS:09 data is presented below including a discussion of the procedures for estimating bias (section 7.2.1) and the weighted item response rates used to identify variables for the analysis (section 7.2.2). In keeping with National Center for Education Statistics (NCES) statistical standards, section 7.2.3 contains a list of the HSLS:09 variables identified for the analysis because the weighted item response rate was less than 85 percent. The nonresponse bias results are summarized in section 7.2.4.

7.2.1 Estimating Item Nonresponse Bias

The formula for estimating bias in the HSLS:09 data was first presented for assessing unit nonresponse bias (section 6.7) among the set of eligible sample members selected for the study.

By comparison, an item-level analysis identifies detectable levels of item nonresponse bias among the set of sample members classified as study respondents.

The item nonresponse bias estimator takes a similar form to the estimator for unit nonresponse bias given in expression (6.20):

$$\hat{B}ias\left(\overline{y}_{xR}\right) = \hat{\eta}_x\left(\overline{y}_{xR} - \overline{y}_{xNR}\right) \tag{7.1}$$

where *x* indicates the study item being analyzed for bias and $\hat{\eta}_x$ is the weighted item nonresponse rate. Because the item nonresponse negates the ability to calculate estimates for the item nonrespondents, the bias must be estimated using a characteristic *y* known for the item respondents and nonrespondents. Therefore, $\overline{y}_{xR}$ and $\overline{y}_{xNR}$ given in expression (7.1) are the estimated mean of *y* for the item respondents and nonrespondents, respectively. Note that the weighted nonresponse rate and the classification as respondent or nonrespondent changes with each *x* variable included in the analysis.

The *y* variables for the item nonresponse bias analysis were chosen from a set of variables known for the complete (or almost complete) set of study respondents that were also associated with many important factors studied in HSLS:09. The following HSLS:09 sampling frame characteristics were included in the school- and student-level analyses:

- school type (public, private-total, private-Catholic, private-other);
- region of the United States (Northeast, Midwest, South, West); and
- locale[49] (urban, suburban, town, rural).

Additional student characteristics available for more than 96 percent of the study respondents were identified for the student-level analyses:

- sex (99.9 percent complete);
- race/ethnicity (American Indian/Alaska Native, non-Hispanic; Asian, non-Hispanic; Black/African American, non-Hispanic; Hispanic, no race specified; Hispanic, race specified; More than one race, non-Hispanic; Native Hawaiian/Pacific Islander, non-Hispanic; White, non-Hispanic; 99.0 percent complete);
- Whether English is the primary language spoken at home (99.9 percent complete); and
- Mathematics ability estimate (*theta*; 96.9 percent complete).

HSLS:09 data were edited for consistency prior to calculating the nonresponse bias estimates given in equation (7.1) only after excluding any imputed values from the analysis. The final HSLS:09 school analysis weight (W1SCHOOL) was used to calculate the weighted estimates for the evaluation of the administrator and counselor questionnaires. The HSLS:09 weights for the student and home-life analyses were W1STUDENT and W1PARENT,

[49] School locale is also referred to as "urbanicity".

respectively. The subject-specific weights were included in the calculations for science (W1SCITCH) and mathematics (W1MATHTCH) course enrollee data.

7.2.2 Item Response Rates

NCES statistical standards state that questionnaire items (or composite variables derived from a set of questionnaire items) with low item response should be examined for significant levels of nonresponse bias. This bias, as with unit nonresponse bias, could affect analysis results obtained from the study data and lead to erroneous conclusions. All study items with a weighted response rate less than 85 percent were classified as high item-nonresponse items and included in the analysis results presented in this section.

Response rates for all HSLS:09 questionnaire items and composites were calculated as (see NCES Statistical Standard 1-3-5)

$$1 - \hat{\eta}_x = \frac{I_x}{I - V_x}, \tag{7.2}$$

the ratio of the (weighted) number of sample members with a valid response to variable x (I_x) to the (weighted) total number of unit respondents (I) minus any for which the question was not applicable (V_x).

The identification of study respondents who were excluded from the calculation followed a particular formula. For example, if a school administrator answered "no" to a (gate) question on whether the school had a religious orientation, then the variable linked to a subsequent question on the type of religious affiliation would be coded as "−7" (= legitimate skip/not applicable).

Gate: *Does this school have a religious orientation or purpose?*
Branch: *What is this school's religious orientation or affiliation?*

An item nonresponse analysis of the branch question would exclude any −7 cases. By comparison, if a question was not answered because the respondent completed only a portion of the questionnaire or if the respondent was administered an abbreviated questionnaire that did not include the item, then the respondent would be included as an item nonrespondent in the associated item nonresponse bias analysis.

7.2.3 High Item-Nonresponse Items

A total of 79 items on the administrator questionnaire (16.4 percent of 481 questions) had a weighted response rate less than 85 percent (table 80). The lowest item response rate, 15.4 percent for the "offers biology I through some other means" question (A1OFFBIO1), was appropriately administered to 99 (=12 + 87) school administrators. Almost 90 percent of the variables (71 of 79 questions) had a weighted response rate of at least 65 percent.

Table 80. School-level questionnaire items with a weighted item response rate below 85 percent

Variable name	Description	Percent of records by type of response[1]			Unweighted item response rate	Weighted item response rate[2]
		Valid	Not applicable	Item missing		
A1VANDALISM	Frequency of vandalism at this school	87.8	0.0	12.2	87.8	84.9
A1MTHSTREQ	How math course(s) required for grad compare to state's requirements	81.2	8.2	10.6	88.5	84.8
A1YRSHSTCHR	Principal's years of secondary teaching experience	85.0	0.0	15.0	85.0	84.8
A1HRSTUDENT	Hours/wk spent meeting with students	86.4	0.0	13.6	86.4	84.7
A1HRPARENT	Hours/wk spent talking and meeting with parents	86.4	0.0	13.6	86.4	84.7
A1HREXTMGMNT	Hours/wk spent on external school management	86.4	0.0	13.6	86.4	84.7
A1HRMONITOR	Hours/wk spent monitoring hallways/campus/lunchroom	86.3	0.0	13.7	86.3	84.7
A1BAMAJ2	Principal's major for bachelor's degree 2-digit CIP code	87.5	0.2	12.3	87.7	84.7
A1HRINTMGMNT	Hours/wk spent on internal school management	86.1	0.0	13.9	86.1	84.7
A1HRTEACHERS	Hours/wk spent working with teachers on instructional issues	86.4	0.0	13.6	86.4	84.6
A1TRANSFRALT	Percent of 08–09 students transferred out to an alternative program/school	86.6	0.0	13.4	86.6	84.6
A1VBLOCKMINS	Length of block-scheduled vocational/technical courses	29.1	66.6	4.4	86.9	84.6
A1HRDISCIPLN	Hours/wk spent on student discipline/attendance	85.8	0.0	14.2	85.8	84.5
A1BULLY	Frequency of student bullying at this school	87.7	0.0	12.3	87.7	84.4
A1CONFLICT	Frequency of physical conflicts among students at this school	87.5	0.0	12.5	87.5	84.4
A1HRPAPERWK	Hours/wk spent on paperwork required by authorities	85.6	0.0	14.4	85.6	84.4
A1CAPACITY	Percent capacity to which school is filled	89.1	0.0	10.9	89.1	83.8
A1RETURN09	Percent of 9th-graders enrolled in this school Sept 2008 returned Sept 2009	85.2	0.0	14.8	85.2	83.6
A1HSSUBJECT	Main subject principal taught at high school level	75.8	8.8	15.4	83.1	83.0
A1ADA	Average daily attendance percentage for students	86.0	0.0	14.0	86.0	81.9

See notes at end of table.

Table 80. School-level questionnaire items with a weighted item response rate below 85 percent—Continued

Variable name	Description	Percent of records by type of response[1]			Unweighted item response rate	Weighted item response rate[2]
		Valid	Not applicable	Item missing		
A1NOMTHO	School offers no mathematics course through some other means	82.5	0.0	17.5	82.5	81.6
A1OFFCLCAPIB	School offers calculus IB through some other means	76.7	6.4	16.9	81.9	81.3
A1STARTDEG	Principal's highest degree started but not completed (if any)	75.5	11.6	13.0	85.4	81.1
A1OFFMPSCIA	School offers computer science AP (A) through some other means	70.8	12.4	16.8	80.8	81.1
A1OFFCMPSCIB	School offers computer science AP (AB) through some other means	76.5	6.3	17.2	81.6	81.1
A1OFFANGEOM	School offers analytic geometry through some other means	67.8	15.9	16.3	80.6	79.6
A1OFFCLCAPBC	School offers calculus AP (BC) through some other means	51.4	33.7	15.0	77.4	79.4
A1NOSCIO	School offers no science course through some other means	81.4	0.0	18.6	81.4	79.3
A1OFFALG3	School offers algebra III through some other means	57.3	27.1	15.5	78.7	78.7
A1OFFINTSCI2	School offers integrated science II or above through some other means	75.5	6.6	17.9	80.8	78.7
A1OFFSTATSAP	School offers statistics AP through some other means	46.8	38.5	14.6	76.2	78.5
A1OFFENVAP	School offers environmental science AP through some other means	60.6	22.5	16.9	78.2	77.9
A12YRDEGREE	Percent of 08–09 12th-graders who went on to 2-year institution	81.2	0.0	18.8	81.2	77.8
A1OFFINTSCI1	School offers integrated science I through some other means	67.2	15.8	17.0	79.8	77.7
A14YRDEGREE	Percent of 08–09 12th-graders who went on 4-year degree-granting institution	81.1	0.0	18.9	81.1	77.6
A1OFFOTHPSCI	School offers an other physical science through some other means	61.4	22.1	16.6	78.8	77.6
A1MILITARY	Percent of 08–09 12th-graders who joined military	80.7	0.0	19.3	80.7	77.6
A1OFFINTMTH2	School offers integrated mathematics II or above through some other means	63.3	20.2	16.6	79.3	77.5
A1OFFSTATS	School offers statistics or probability through some other means	44.4	41.7	14.0	76.1	77.5
A1WORK	Percent of 08–09 12th-graders who entered the workforce	80.2	0.0	19.8	80.2	77.5

See notes at end of table.

Table 80. School-level questionnaire items with a weighted item response rate below 85 percent—Continued

Variable name	Description	Percent of records by type of response [1]			Unweighted item response rate	Weighted item response rate [2]
		Valid	Not applicable	Item missing		
A1OFFTECH	School offers principles of technology through some other means	69.6	13.1	17.3	80.1	77.4
A1OFFINTMTH1	School offers integrated mathematics I through some other means	62.3	21.4	16.3	79.2	77.3
A1DIDOTHER	Percent of 08–09 12th-graders who did something else	79.7	0.0	20.3	79.7	77.2
A1MSSUBJECT	Main subject principal taught at middle school level	42.8	44.7	12.5	77.4	77.1
A1OBLOCKMINS	Length of other block-scheduled courses	20.4	75.1	4.5	81.9	76.4
A1OFFADVPHYS	School offers advanced physics/phys II/AP/IB through some other means	44.1	40.3	15.5	74.0	76.4
A1OFFOTHESCI	School offers an other Earth or environmental science through some other means	60.5	22.9	16.7	78.4	76.2
A1OFFGENSCI	School offers general science through some other means	67.5	15.4	17.1	79.8	76.1
A1OFFOTHBIO	School offers an other biological science through some other means	55.1	28.8	16.1	77.4	76.1
A1OFFLSCI	School offers life science through some other means	65.5	18.0	16.4	79.9	75.8
A1OFFCMPSCI	School offers computer science through some other means	46.7	38.5	14.8	76.0	75.8
A1OFFALGP1P2	School offers algebra I, part 1 and part 2 through some other means	39.5	46.7	13.7	74.2	75.0
A1CHOICEOTHR	School participates in another public school choice program	24.9	67.9	7.2	77.5	74.7
A1CHOICEIN	Students can enroll in school or another school within district	24.9	67.9	7.2	77.5	74.7
A1CHOICEOUT	Students can enroll in public school in another district at no tuition cost	24.9	67.9	7.2	77.5	74.7
A1CHOICEPRIV	Students can enroll in a private school using state/district funds	24.9	67.9	7.2	77.5	74.7
A1CHOICESCH	Students from other districts can enroll in school at no tuition cost	24.9	67.9	7.2	77.5	74.7
A1OFFRMTH	School offers review or remedial mathematics through some other means	51.2	33.4	15.3	77.0	74.6
A1FILLMTH	Ease of filling high school mathematics teaching vacancies	47.0	43.5	9.6	83.1	74.0
A1OFFADVCHEM	School offers advanced chemistry/chem II/AP/IB thru some other means	34.0	51.8	14.2	70.6	73.9

See notes at end of table.

Table 80. School-level questionnaire items with a weighted item response rate below 85 percent—Continued

Variable name	Description	Percent of records by type of response [1]			Unweighted item response rate	Weighted item response rate [2]
		Valid	Not applicable	Item missing		
A1OFFADVBIO	School offers advanced biology/bio II/AP/IB through some other means	27.9	58.8	13.3	67.8	73.3
A1OFFERTHSCI	School offers Earth science through some other means	38.6	47.3	14.1	73.3	72.8
A1HROTH	Hours/wk spent on other activities	74.2	0.0	25.8	74.2	72.4
A1OFFENVSCI	School offers environmental science through some other means	30.9	56.0	13.2	70.1	72.2
A1OFFCLCAPAB	School offers calculus AP (AB) through some other means	19.5	68.0	12.5	60.9	72.0
A1FILLSCI	Ease of filling high school science teaching vacancies	45.0	45.0	9.9	82.0	71.9
A1OFFPREALG	School offers pre-algebra through some other means	45.6	39.9	14.5	75.8	69.9
A1OFFTRIG	School offers trigonometry through some other means	25.5	61.9	12.6	66.9	68.3
A1AYPYR	Year of AYP improvement, as of 09-10 school year	26.9	65.7	7.4	78.4	68.0
A1OFFANATOMY	School offers anatomy or physiology through some other means	24.8	62.8	12.4	66.7	65.2
A1OFFCLC	School offers calculus through some other means	20.9	67.7	11.4	64.8	65.0
A1OFFPHYSCI	School offers physical science through some other means	26.7	60.0	13.3	66.8	62.2
A1OFFPHYS1	School offers physics I through some other means	6.4	83.1	10.5	38.0	47.7
A1HRTEACHING	Hours/wk spent on principal's own teaching assignments	6.0	82.5	11.5	34.2	46.9
A1OFFALG2	School offers algebra II through some other means	3.5	86.6	9.9	26.1	31.1
A1OFFALG1	School offers algebra I through some other means	6.4	83.1	10.5	38.0	30.4
A1OFFGEOM	School offers geometry through some other means	2.0	88.1	9.9	17.0	21.7
A1OFFCHEM1	School offers chemistry I through some other means	1.1	89.2	9.7	10.4	18.5
A1OFFBIO1	School offers biology I through some other means	1.4	88.9	9.8	12.1	15.4

[1] The reserve codes "−7" and "−9" identify the legitimately skipped/not applicable questionnaire items and the questions that should have been answered but were not (item missing), respectively.
[2] Weighted response rates were calculated with the school analysis weight (W1SCHOOL).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base-year Restricted-use File.

All questionnaire items in the counselor instrument had a weighted response rate that exceeded 85 percent.

As shown in table 81, only 10 student questionnaire items (2.7 percent of 376 questions) had weighted response rates less than 85 percent. A total of 70 items on the parent questionnaire (26.3 percent of 266 questions) were identified for the nonresponse bias analysis (table 82). The larger percentage of parent survey questions included in the analysis is in large part a result of the use of the parent/guardian abbreviated questionnaires to reduce unit nonresponse. For the teacher questionnaires, 21 mathematics-teacher items (13.8 percent of 152 questions shown in table 83) and 16 science-teacher items (9.0 percent of 178 questions listed in table 84) were identified for nonresponse bias analysis. The lowest weighted item response rate was approximately 68 percent for both sets of teachers.

Table 81. Student-level questionnaire items with a weighted item response rate below 85 percent

		Percent of records by type of response [1]				
Variable name	Description	Valid	Not applicable	Item missing	Unweighted item response rate	Weighted item response rate [2]
S1ESTIN	Estimated cost of 1-year tuition/fees at public 4-year college in student's state	71.2	2.8	26.0	73.2	73.5
S1ESTCONF	How confident student is in estimate given, cost of public 4-year in-state college	70.5	2.8	26.7	72.6	72.8
S1ESTFEE	Estimated tuition/fees given for public 4-year in-state college includes room/board	69.7	2.8	27.5	71.7	71.7
S1ASIANOR	Student's Asian sub-group	10.6	87.1	2.3	81.9	60.6
S1COSTIN	Cost of 1 year's tuition/fees at specific 4-year in-state college	2.0	95.0	3.0	40.3	39.5
S1COSTPRV	Cost of 1 year's tuition/fees at specific private college	2.2	95.1	2.7	45.4	39.5
S1FEEPRV	Cost of tuition/fees given for private college includes room and board	2.2	95.1	2.7	44.7	38.9
S1FEEIN	Cost of tuition/fees given for 4-year in-state college includes room/board	2.0	95.0	3.0	39.3	38.6
S1COSTOUT	Cost of 1 year's tuition/fees at specific 4-year out-of-state college	1.4	95.9	2.7	35.0	35.3
S1FEEOUT	Cost tuition/fee given for 4-year out-of-state college includes room/board	1.4	95.9	2.7	34.6	35.1

[1] The reserve codes "−7" and "−9" identify the legitimately skipped/not applicable questionnaire items and the questions that should have been answered but were not (item missing), respectively.
[2] Weighted response rates were calculated with the student analysis weight (W1STUDENT).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base-year Restricted-use File.

Table 82. Parent-level questionnaire items with a weighted item response rate below 85 percent

Variable name	Description	Percent of records by type of response[1]				Number of abbreviated questionnaires	Unweighted response rate with abbreviated cases removed	Unweighted item response rate	Weighted item response rate[2]
		Valid	Not applicable	Unit missing	Item missing				
P1HHPARREL1	First resident parent's relationship to 9th-grader	0.5	66.7	32.6	0.1	808	95.7	78.8	84. 3
P1PUBPRV	Type of postsecondary institution respondent thinks 9th-grader will attend	31.7	30.1	32.6	5.6	808	92.9	85.0	82.3
P1ACCTPAY	Family opened account(s) to save for 9th-grader's college education	30.8	30.5	32.6	6.2	808	91.1	83.2	81.5
P1ENGLISH	English is regularly spoken in home	14.1	50.0	32.6	3.3	808	99.6	81.2	81.4
P1COUNTRY2	Country in which second resident parent was born	11.3	53.6	32.6	2.6	808	96.8	81.5	80.6
P1COUNTRY1	Country in which first resident parent was born	12.8	51.2	32.6	3.5	808	97.7	78.4	78.5
P1HISPOR2	Spouse/partner/second resident parent is Mexican or other Hispanic/Latino	6.5	58.5	32.6	2.4	808	96.7	72.7	78.5
P1CHINESE	Chinese language regularly spoken in home	13.6	50.0	32.6	3.8	808	95.8	78.2	78.3
P1EUROLANG	Other European language regularly spoken in home	13.6	50.0	32.6	3.8	808	95.8	78.2	78.3
P1FILIPINO	Filipino language regularly spoken in home	13.6	50.0	32.6	3.8	808	95.8	78.2	78.3
P1MIDEAST	Middle Eastern language regularly spoken in home	13.6	50.0	32.6	3.8	808	95.8	78.2	78.3
P1OTHRASIAN	Other Asian language regularly spoken in home	13.6	50.0	32.6	3.8	808	95.8	78.2	78.3
P1SASIAN	South Asian language regularly spoken in home	13.6	50.0	32.6	3.8	808	95.8	78.2	78.3
P1SEASIAN	Southeast Asian language regularly spoken in home	13.6	50.0	32.6	3.8	808	95.8	78.2	78.3

See notes at end of table.

Table 82. Parent-level questionnaire items with a weighted item response rate below 85 percent—Continued

Variable name	Description	Percent of records by type of response[1]				Number of abbreviated questionnaires	Unweighted response rate with abbreviated cases removed	Unweighted item response rate	Weighted item response rate[2]
		Valid	Not applicable	Unit missing	Item missing				
P1SPANISH	Spanish is regularly spoken in home	13.6	50.0	32.6	3.8	808	95.8	78.2	78.3
P1OTHRLANG	Other language regularly spoken in home	13.6	50.0	32.6	3.8	808	95.8	78.2	78.3
P1LANG9	Language 9th-grader usually speaks to respondent in home	13.5	50.0	32.6	3.9	808	95.4	77.8	78.1
P1RSPLANG	Language respondent usually speaks to 9th-grader in home	13.5	50.0	32.6	3.8	808	95.5	77.9	78.0
P1USYR1	Year respondent/first resident parent came to U.S. to stay	13.5	52.5	33.8	0.2	808	96.0	77.7	78.0
P1SAVEDPAY	Amount currently set aside for 9th-grader's future educational needs	29.0	30.5	32.6	8.0	808	85.9	78.4	77.6
P1HISPOR1	Respondent/first resident parent is Mexican or other Hispanic	8.6	55.4	32.6	3.4	808	97.3	71.4	77.2
P1INCOME	Household income in 2007–continuous form	52.0	0.0	32.6	15.4	808	80.9	77.1	76.5
P1TUITION	Respondent has info on cost of tuition/fees at specific public in-state institution	21.3	40.4	32.6	5.7	808	89.4	78.8	75.2
P1DIFSCHLNG	Difficulty joining in 9th-grader's school events because speaks non-English	12.8	50.0	32.6	4.6	808	90.5	73.8	74.7
P1USYR2	Year spouse/partner/second resident parent came to U.S. to stay	11.0	53.2	32.6	3.2	808	91.3	77.2	74.6
P1INOUTST	Whether respondent thinks 9th-grader will attend in-state or out-of-state public institution	16.6	45.1	32.6	5.7	808	86.9	74.4	71.8
P1ESTIN	Estimate of cost of 1 year's tuition/fees at public 4-year in-state institution	44.1	6.2	32.6	17.1	808	76.0	72.1	68.6

See notes at end of table.

Table 82. Parent-level questionnaire items with a weighted item response rate below 85 percent—Continued

Variable name	Description	Percent of records by type of response[1]				Number of abbreviated questionnaires	Unweighted response rate with abbreviated cases removed	Unweighted item response rate	Weighted item response rate[2]
		Valid	Not applicable	Unit missing	Item missing				
P1ESTCONF	Confidence in estimate of 1 year's cost for public 4-year in-state institution	44.0	6.2	32.6	17.2	808	75.9	71.9	68.5
P1ESTFEE	Estimate of cost at public 4-year in-state institution includes room/board	43.7	6.2	32.6	17.6	808	75.2	71.3	67.9
P1HHPARREL2	Second resident parent's relationship to 9th-grader	0.2	67.1	32.6	0.1	808	90.5	61.3	65.1
P1REPEATGK	9th-grader repeated kindergarten	6.9	56.4	32.6	4.2	808	87.8	62.4	64.4
P1REPEATG1	9th-grader repeated 1st grade								
P1REPEATG9	9th-grader repeated 9th grade	6.9	56.4	32.6	4.2	808	87.8	62.4	64.4
P1USYR9	Year 9th-grader came to U.S. to stay	5.2	58.9	32.6	3.3	808	97.8	61.2	58.9
P1USGRADE	Grade level 9th-grader was placed in when started school in U.S.	5.2	58.9	32.6	3.4	808	96.5	60.4	58.4
P1ELLNOW	Whether 9th-grader currently in English language learners program	5.2	58.0	32.6	4.2	808	84.1	55.4	57.6
P1COUNTRY9	Country in which 9th-grader was born	4.9	59.1	32.6	3.4	808	97.0	59.5	57.4
P1HHOTHR	Where 9th-grader lives when not living with respondent	4.7	58.6	32.6	4.1	808	83.6	53.6	52.2
P1COSTIN	Cost of tuition/fees at public 4-year in-state institution	5.7	55.5	32.6	6.2	808	65.4	47.8	44.9
P1FEEIN	Cost of tuition/fees at public 4-year in-state institution includes room/board	5.6	55.5	32.6	6.3	808	64.6	47.2	44.2
P1QHELP1	9th-grader helped respondent complete questionnaire	3.6	57.6	32.6	6.2	808	54.9	37.0	32.1
P1QHELP2	Other family member helped respondent complete questionnaire	3.6	57.6	32.6	6.2	808	54.9	37.0	32.1
P1QHELP3	Respondent's friend helped respondent complete questionnaire	3.6	57.6	32.6	6.2	808	54.9	37.0	32.1

See notes at end of table.

Table 82. Parent-level questionnaire items with a weighted item response rate below 85 percent—Continued

Variable name	Description	Percent of records by type of response[1]				Number of abbreviated questionnaires	Unweighted response rate with abbreviated cases removed	Unweighted item response rate	Weighted item response rate[2]
		Valid	Not applicable	Unit missing	Item missing				
P1QHELP4	Person helped respondent complete questionnaire—other	3.6	57.6	32.6	6.2	808	54.9	37.0	32.1
P1ASIANOR2	Asian origin of spouse/partner/ second resident parent	4.7	58.2	32.6	4.5	808	67.2	51.1	30.7
P1COSTPRV	Cost of tuition/fees at private 4-year in-state institution	3.6	58.0	32.6	5.8	808	57.5	37.9	28.5
P1FEEPRV	Cost of tuition/fees at private 4-year in-state institution includes room/board	3.5	58.0	32.6	5.9	808	56.3	37.1	28.0
P1ASIANOR1	Asian origin of respondent/first resident parent	5.6	55.7	32.6	6.2	808	64.8	47.2	27.0
P1BAMAJV2r	P1 C11A Parent 2's major for bachelor's degree-verbatim	15.3	48.3	32.6	3.8	808	82.4	80.0	21.4
P1HIMAJV2r	P1 C10A Parent 2's major for highest level of education-verbatim	20.6	42.0	32.6	4.8	808	83.8	81.0	19.3
P1SKIPGK	9th-grader skipped kindergarten	0.8	62.5	32.6	4.2	808	43.8	15.5	16.3
P1SKIPG1	9th-grader skipped 1st grade	0.8	62.5	32.6	4.2	808	43.8	15.5	16.3
P1SKIPG8	9th-grader skipped 8th grade	0.8	62.5	32.6	4.2	808	43.8	15.5	16.3
P1JOBDV2r	P1 C16B Parent 2's job duties-verbatim	42.2	16.3	32.6	8.9	808	82.3	82.5	16.3
P1BAMAJV1r	P1 C03A Parent 1's major for bachelor's degree-verbatim	20.9	42.5	32.6	4.0	808	86.6	84.1	16.2
P1COSTOUT	Cost of tuition/fees at private 4-year out-of-state institution	1.0	60.5	32.6	5.9	808	27.7	14.8	14.5
P1FEEOUT	Cost tuition/fees at private 4-year out-of-state inst includes room/board	1.0	60.5	32.6	5.9	808	27.4	14.7	14.3

[1] The reserve codes -7 through -9 identify the legitimate skip/not applicable items, the unit nonrespondents, and the item nonrespondents, respectively.
[2] Weighted response rates were calculated with the home-life analysis weight (W1PARENT).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base-year Restricted-use File.

Table 83. Mathematics teacher-level questionnaire items with a weighted item response rate below 85 percent

Variable name	Description	Percent of records by type of response[1]			Unweighted item response rate	Weighted item response rate[2]
		Valid	Not applicable	Item missing		
M1ENGCOMP	How teacher compares boys and girls English or language arts abilities	83.8	0.0	16.2	83.8	83.9
M1SCICOMP	How teacher compares boys and girls science abilities	83.7	0.0	16.3	83.7	83.4
M1COURSE	Student's fall 2009 math course—categorized	78.2	0.0	21.8	78.2	78.6
M1ACHIEVE	Achievement of students in math course compared w/ average 9th-grader	77.9	0.0	22.1	77.9	78.3
M1GROUP	Math teacher has students work in small groups	77.7	0.0	22.3	77.7	78.2
M1UNPREPPCT	Percentage of students in math course that are unprepared	77.5	0.0	22.5	77.5	78.1
M1COMPUTE	Math teacher's emphasis on speedy/accurate computations	77.6	0.0	22.4	77.6	78.1
M1PREPARE	Math teacher's emphasis on preparation for further math study	77.7	0.0	22.3	77.7	78.1
M1IDEAS	Math teacher's emphasis on connecting math ideas	77.7	0.0	22.3	77.7	78.1
M1REASON	Math teacher's emphasis on reasoning mathematically	77.7	0.0	22.3	77.7	78.1
M1BUSINESS	Math teacher's emphasis on business/industry applications of math	77.6	0.0	22.4	77.6	78.1
M1INTEREST	Math teacher's emphasis on increasing students' interest in math	77.8	0.0	22.2	77.8	78.1
M1ALGORITHM	Math teacher's emphasis on teaching math algorithms/ procedures	77.7	0.0	22.3	77.7	78.0
M1COMPSKILLS	Math teacher's emphasis on developing computational skills	77.7	0.0	22.3	77.7	78.0
M1PROBLEM	Math teacher's emphasis on developing problem-solving skills	77.7	0.0	22.3	77.7	78.0
M1TEST	Math teacher's emphasis on standardized test preparation	77.6	0.0	22.4	77.6	78.0
M1EXPLAIN	Math teacher's emphasis on effectively explaining math ideas	77.6	0.0	22.4	77.6	78.0
M1HISTORY	Math teacher's emphasis on history and nature of math	77.5	0.0	22.5	77.5	77.9

See notes at end of table.

Table 83. Mathematics teacher-level questionnaire items with a weighted item response rate below 85 percent—Continued

Variable name	Description	Percent of records by type of response[1]			Unweighted item response rate	Weighted item response rate[2]
		Valid	Not applicable	Unit missing		
M1LOGIC	Math teacher's emphasis on logical structure of mathematics	77.2	0.0	22.8	77.2	77.7
M1CONCEPTS	Math teacher's emphasis on teaching math concepts	77.6	0.0	22.4	77.6	77.6
M1ASSIGN	How math teacher assigns students to small groups	67.1	10.4	22.5	74.9	75.5

[1] The reserve codes "−7" and "−9" identify the legitimately skipped/not applicable questionnaire items and the questions that should have been answered but were not (item missing), respectively.
[2] Weighted response rates were calculated with the mathematics course enrollee analysis weight (W1MATHTCH).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base-year Restricted-use File.

Table 84. Science teacher-level questionnaire items with a weighted item response rate below 85 percent

Variable name	Description	Percent of records by type of response[1]			Unweighted item response rate	Weighted item response rate[2]
		Valid	Not applicable	Item missing		
N1COURSE	Student's fall 2009 science course—categorized	78.4	0.0	21.6	78.4	78.8
N1GROUP	Science teacher has students work in small groups	77.9	0.0	22.1	77.9	78.4
N1EVIDENCE	Science teacher's emphasis on evaluating arguments based on evidence	78.0	0.0	22.0	78.0	78.4
N1ACHIEVE	Achievement of students in science course compared w/ average 9th-grader	77.9	0.0	22.1	77.9	78.4
N1INTEREST	Science teacher's emphasis on increasing students' interest in science	78.1	0.0	21.9	78.1	78.4
N1TERMS	Science teacher's emphasis on important science terms/facts	77.8	0.0	22.2	77.8	78.3
N1SKILLS	Science teacher's emphasis on science process/inquiry skills	77.9	0.0	22.1	77.9	78.3
N1PREPARE	Science teacher's emphasis on preparation for further science study	77.8	0.0	22.2	77.8	78.2
N1CONCEPTS	Science teacher's emphasis on teaching basic science concepts	77.7	0.0	22.3	77.7	78.2

See notes at end of table.

Table 84. Science teacher-level questionnaire items with a weighted item response rate below 85 percent—Continued

Variable name	Description	Percent of records by type of response [1]			Unweighted item response rate	Weighted item response rate [2]
		Valid	Not applicable	Item missing		
N1UNPREPPCT	Percentage of students in science course that are unprepared	77.4	0.0	22.6	77.4	77.9
N1TEST	Science teacher's emphasis on standardized test preparation	77.2	0.0	22.8	77.2	77.7
N1HISTORY	Science teacher's emphasis on history/nature of science	77.2	0.0	22.8	77.2	77.7
N1IDEAS	Science teacher's emphasis on effectively communicating science ideas	77.2	0.0	22.8	77.2	77.7
N1BUSINESS	Science teacher's emphasis on business/industry applications of science	77.3	0.0	22.7	77.3	77.6
N1SOCIETY	Science teacher's emphasis on relationship between science, technology, and society	77.1	0.0	22.9	77.1	77.6
N1ASSIGN	How science teacher assigns students to small groups	75.1	2.4	22.4	77.0	77.5

[1] The reserve codes "−7" and "−9" identify the legitimately skipped/not applicable questionnaire items and the questions that should have been answered but were not (item missing), respectively.
[2] Weighted response rates were calculated with the science course enrollee analysis weight (W1SCITCH).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base-year Restricted-use File.

7.2.4 Summarized Results

Item nonresponse bias was evaluated for the questions identified in the previous section as having low levels of item response. The bias was evaluated for various characteristics and is summarized in tables 85 through 90. The detailed analysis tables are included in appendix H. The frequency distribution of the bias ratios (estimated bias divided by the standard error) by study instrument are summarized in table 85 where ratios larger than 2.0 suggest non-negligible levels of item nonresponse bias. For example, 6.9 percent of the 1,817 bias tests (=79 variables crossed with 23 school characteristics) on the administrator questionnaire. By comparison, fewer bias ratios for the teacher analyses fell above the threshold bias ratios—5.7 percent for mathematics teacher variables and 1.8 percent for science teacher variables.

Table 85. Frequency distribution of the estimated bias ratios by study instrument

Study instrument	Range of bias ratio[1]	Frequency[2]	Percent[3]
Administrator	Total	1,817	100.0
	0 ≤ bias ratio < 2.0	1692	93.1
	2.0 ≤ bias ratio < 5.0	108	5.9
	5.0 ≤ bias ratio	17	0.9
Student	Total	290	100.0
	0 ≤ bias ratio < 2.0	257	88.6
	2.0 ≤ bias ratio < 5.0	31	10.7
	5.0 ≤ bias ratio	2	0.7
Parent	Total	1,537	100.0
	0 ≤ bias ratio < 2.0	1,155	75.1
	2.0 ≤ bias ratio < 5.0	296	19.3
	5.0 ≤ bias ratio	86	5.60
Math teacher	Total	609	100.0
	0 ≤ bias ratio < 2.0	574	94.3
	2.0 ≤ bias ratio < 5.0	35	5.7
	5.0 ≤ bias ratio	0	0.0
Science teacher	Total	464	100.0
	0 ≤ bias ratio < 2.0	459	98.9
	2.0 ≤ bias ratio < 5.0	5	1.8
	5.0 ≤ bias ratio	0	0.0

[1] The bias ratio is calculated as the estimated item nonresponse bias divided by the estimated respondent value. The “total” row identifies the total number of calculations completed by study instrument.
[2] The number of calculations falling in the specified range of the bias ratio values.
[3] Unweighted percent of calculations falling in the specified range of the bias ratio values.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 86. Summary statistics for school-level item nonresponse bias analyses

School characteristics	Number of *t* tests	Percent[1] of significant *t* tests	Relative bias[2]		Absolute relative bias[3]	
			Average	Median	Average	Median
Total	1,817	16.9	0.9	1.7	17.7	8.6
School type						
Public	79	20.3	-2.2	-0.7	4.1	1.0
Private	79	20.3	-4.2	2.1	18.4	3.1
Region						
Northeast	79	12.7	13.2	9.7	14.6	9.8
Midwest	79	39.2	14.6	11.2	17.2	12.7
South	79	12.7	-3.3	-2.2	5.6	2.8
West	79	2.5	-23.3	18.4	23.3	18.4
Locale						
City	79	11.4	-4.0	-2.1	9.2	5.8
Suburban	79	13.9	-2.4	-1.3	7.7	5.0
Town	79	17.7	17.7	13.9	20.4	13.9
Rural	79	6.3	-4.1	-2.1	6.4	3.3

[1] Unweighted percent of statistical tests with an item nonresponse bias significantly different from zero at the 0.05 significance level.
[2] The relative bias is calculated as the estimated bias divided by the estimated value.
[3] The absolute relative bias is the absolute value of the relative bias.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table 87. Summary statistics for student-level item nonresponse bias analyses

School characteristics	Number of *t* tests	Percent[1] of significant *t* tests	Relative bias[2]		Absolute relative bias[3]	
			Average	Median	Average	Median
Total	290	23.5	1.7	0.4	12.4	5.8
School type						
Public	10	40.0	-1.3	-0.1	1.7	0.8
Private	10	40.0	9.8	1.5	16.9	11.4
Region						
Northeast	10	0.0	-4.1	-0.1	6.0	4.5
Midwest	10	40.0	2.7	2.5	6.9	8.5
South	10	10.0	2.8	0.1	3.2	0.6
West	10	30.0	-4.9	-2.0	8.4	4.5
Locale						
City	10	10.0	-1.1	-0.9	6.0	6.1
Suburban	10	20.0	7.4	5.7	9.3	7.8
Town	10	30.0	-7.6	-3.2	8.1	3.2
Rural	10	30.0	-6.5	-2.0	7.60	3.7
Student sex						
Male	10	20.0	-4.4	-4.7	5.6	4.7
Female	10	20.0	5.4	5.62	6.7	5.6
Race/ethnicity						
Hispanic	10	70.0	-25.5	-27.7	25.5	27.7
Asian	10	30.0	-2.8	-2.1	21.4	9.9
Black	10	30.0	-11.8	-3.7	22.3	16.5
Other	10	10.0	11.1	9.3	11.1	9.3

[1] Unweighted percent of statistical tests with an item nonresponse bias significantly different from zero at the 0.05 significance level.
[2] The relative bias is calculated as the estimated bias divided by the estimated value.
[3] The absolute relative bias is the absolute value of the relative bias.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base-year Public-Use Data File.

Table 88. Summary statistics for parent-level item nonresponse bias analyses

School characteristics	Number of *t* tests	Percent[1] of significant *t* tests	Relative bias[2]		Absolute relative bias[3]	
			Average	Median	Average	Median
Total	1,537	57.5	-2.4	-0.8	16.2	10.4
School type						
Public	53	69.8	-1.6	-0.4	1.7	0.4
Private	53	69.8	20.7	9.0	23.0	10.3
Region						
Northeast	53	39.6	-4.2	-1.7	11.5	5.8
Midwest	53	62.3	-6.4	-10.0	13.0	13.0
South	53	69.8	-5.8	-4.9	8.0	5.7
West	53	56.6	10.6	11.7	12.0	11.7
Locale						
City	53	62.3	3.6	5.8	7.1	6.4
Suburban	53	18.9	2.8	2.5	4.6	3.0
Town	53	62.3	-19.1	-20.3	21.1	20.3
Rural	53	60.4	-7.3	-9.6	10.5	9.6
Student sex						
Male	53	18.9	-1.6	-1.6	2.7	2.67
Female	53	18.9	1.3	1.3	3.0	3.0
Race/ethnicity						
Hispanic	53	86.8	-1.6	12.7	23.4	16.9
Asian	53	75.5	17.7	19.6	37.7	20.0
Black	53	77.4	-33.1	-37.1	34.4	37.1
Other	53	88.7	-12.6	-2.4	23.2	20.8

[1] Unweighted percent of statistical tests with an item nonresponse bias significantly different from zero at the 0.05 significance level.
[2] The relative bias is calculated as the estimated bias divided by the estimated value.
[3] The absolute relative bias is the absolute value of the relative bias.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base-year Public-Use Data File.

Table 89. Summary statistics for mathematics teacher-level item nonresponse bias analyses

School characteristics	Number of *t* tests	Percent[1] of significant *t* tests	Relative bias[2]		Absolute relative bias[3]	
			Average	Median	Average	Median
Total	609	2.9	-0.1	-0.2	2.9	2.1
School type						
Public	21	0.0	-0.0	-0.0	0.1	0.1
Private	21	0.0	0.3	0.1	1.8	1.8
Region						
Northeast	21	85.7	5.8	6.0	5.8	6.0
Midwest	21	0.0	1.5	1.5	1.5	1.5
South	21	0.0	-2.5	2.5	2.5	2.5
West	21	0.0	-1.8	1.8	1.8	1.8
Locale						
City	21	90.5	5.8	6.2	5.8	6.2
Suburban	21	0.0	-3.5	-3.7	3.5	3.7
Town	21	0.0	-2.3	-2.1	2.3	2.1
Rural	21	0.0	-1.9	-2.1	2.0	2.1
Student sex						
Male	21	4.8	-0.5	-0.5	0.5	0.5
Female	21	4.8	0.5	0.5	0.5	0.5
Race/ethnicity						
Hispanic	21	0.0	0.1	0.2	0.3	0.2
Asian	21	0.0	-4.2	-3.9	4.2	3.9
Black	21	0.0	-1.6	-1.5	1.6	1.5
Other	21	0.0	0.5	0.5	0.5	0.5

[1] Unweighted percent of statistical tests with an item nonresponse bias significantly different from zero at the 0.05 significance level.
[2] The relative bias is calculated as the estimated bias divided by the estimated value.
[3] The absolute relative bias is the absolute value of the relative bias.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base-year Public-Use Data File.

Table 90. Summary statistics for science teacher-level item nonresponse bias analyses

School characteristics	Number of *t* tests	Percent[1] of significant *t* tests	Relative bias[2]		Absolute relative bias[3]	
			Average	Median	Average	Median
Total	464	1.9	0.4	-0.2	3.2	2.1
School type						
Public	16	0.0	-0.2	-0.2	0.2	0.2
Private	16	0.0	2.3	2.3	2.3	2.3
Region						
Northeast	16	0.0	-2.5	-2.5	2.5	2.5
Midwest	16	56.2	4.8	4.8	4.8	4.8
South	16	0.0	-1.6	-1.7	1.6	1.7
West	16	0.0	-0.4	-0.3	0.4	0.3
Locale						
City	16	0.0	-0.2	-0.2	0.2	0.2
Suburban	16	0.0	-2.0	-1.9	2.0	1.9
Town	16	0.0	7.0	6.9	7.0	6.9
Rural	16	0.0	-0.3	-0.3	0.3	0.3
Student sex						
Male	16	0.0	0.5	0.5	0.5	0.5
Female	16	0.0	-0.5	-0.5	0.5	0.5
Race/ethnicity						
Hispanic	16	0.0	-1.3	-1.3	1.3	1.3
Asian	16	0.0	-7.2	-7.1	7.23	7.1
Black	16	0.0	-0.5	-0.6	0.6	0.6
Other	16	0.0	0.9	0.9	0.9	0.9

[1] Unweighted percent of statistical tests with an item nonresponse bias significantly different from zero at the 0.05 significance level.
[2] The relative bias is calculated as the estimated bias divided by the estimated value.
[3] The absolute relative bias is the absolute value of the relative bias.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

7.3 Item Imputation

Missing data in an otherwise complete study instrument occurs when a study respondent does not answer a particular question either intentionally (e.g., declined to report the family income) or unintentionally (e.g., missed one item within a set of related questions). Most statistical software packages exclude records that do not contain complete information. This is a consideration for multivariate analyses where the combination of missing values for a set of variables can greatly reduce the utility of the analytic data file.

Missing data patterns can be classified as missing completely at random (MCAR), missing at random given a set of covariates, or non-ignorable missing values (see, e.g., Little and Rubin 2002; Pfeffermann 1993). If missing values were truly MCAR, then most analytic results would not be affected (i.e., biased) by the excluded survey cases. However, this assumption in general does not hold for survey data.

One remedy to alleviate the problem of missing items is imputation. Advantages of using imputed values include the ability to use all study respondent records in an analysis (complete-case analysis) which affords more power for statistical tests. Additionally, if the imputation procedure is effective (i.e., the imputed value is equal to [or close to] the true value) then the analysis results are likely less biased than those produced with the incomplete data file.

As alluded to in the previous section, HSLS:09 variables in general did not suffer from high levels of item nonresponse. Nevertheless, a set of key analytic variables was identified for item imputation to facilitate complete-case analysis on data obtained from the participating ninth-grade students.[50] Values were assigned in place of missing responses for 18 variables identified from the student and parent questionnaires through single-value imputation (section 7.3.1). Missing student ability estimates in mathematics (*theta*), the associated standard error of measurement (*sem*) for *theta*, and socioeconomic status (SES) values derived from parent responses were replaced with five values using a multiple imputation procedure (section 7.3.2). Regardless of the method, indicator variables (flags) were created to allow users to easily identify the imputed values.

7.3.1 Single-Value Imputation

7.3.1.1 Variables Identified for Imputation

Eighteen key analysis variables were identified for single-value imputation (table 91) from the edited HSLS:09 data. These variables included important demographic variables (e.g., student's race) and components used in the calculation of other analysis variables (e.g., parental education is used in the calculation of SES). Additional variables were considered for this list but excluded because of a high item response rate.

[50] The HSLS:09 public-use file contains responses for 21,444 students who completed the study questionnaire. Additional information for the 548 questionnaire-incapable students is provided only on the HSLS:09 restricted-use file, resulting in a total of 21,992 student records (=21,444 + 548).

Table 91. Variables included in the single-value imputation and number and weighted percent of items imputed by study instrument

Study questionnaire	Variable	Number of items imputed	Weighted percent imputed
Student[1]	Student's race (X1RACE)	21	0.10
	Whether the student is Hispanic (X1HISPANIC)	15	0.06
	How far student expects to get in school (X1STUEDEXPCT)	308	1.56
Parent[2]	Parent 1 relationship to 9th-grader (X1P1RELATION)	12	0.06
	Parent 2 relationship to 9th-grader (X1P2RELATION)	26	0.17
	Parent 1 and 2 relationship pattern (X1PARPATTERN)	1,011	6.49
	Parent 1 highest level of education (X1PAR1EDU)	184	1.32
	Parent 2 highest level of education (X1PAR2EDU)	255	1.86
	Highest level of education for parents (X1PAREDU)	382	2.66
	Parent 1 employment status (X1PAR1EMP)	1,021	6.56
	Parent 2 employment status (X1PAR2EMP)	867	5.51
	Parent 1 current/most recent occupation: 2-digit O*NET code (X1PAR1OCC2)	360	2.68
	Parent 2 current/most recent occupation: 2-digit O*NET code (X1PAR2OCC2)	379	2.63
	Total family income from all sources in 2008 (X1FAMINCOME)	959	5.62
	Number of 2009 household members (X1HHNUMBER)	1,380	8.43
	How far in school parent thinks 9th-grader will get (P1EDUEXPECT)	1,073	7.30

[1] The number of items imputed is the unweighted count of responding students out of 21,444 with a missing variable. The final student analysis weight (W1STUDENT) was used to calculate the weighted percent imputed among those where a valid response should have been provided. Those records where the question was not applicable (i.e., -7 values) were excluded from the imputation process unless otherwise specified.
[2] The number of items imputed is the unweighted count of responding parents (out of 16,429) missing a response to the variable. The final student home-life analysis weight (W1PARENt) was used to calculate the weighted percent imputed among those where a valid response should have been provided. Those records where the question was not applicable (i.e., -7 values) were excluded from the imputation process.
NOTE: O*NET = Occupational Information Network.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base-year Public-Use Data File.

7.3.1.2 Imputation Methodology

The imputation methodology implemented to address the missing data items for a particular variable in table 91 varied by (1) the type of variable (e.g., categorical vs. continuous), (2) the relationship(s) between this variable and other HSLS:09 variables, and (3) the rate and pattern of missing values. This examination was implemented initially with draft study data and finalized only after all data were edited.

Both deterministic and stochastic methods were used to impute the missing values. Deterministic (i.e., logical) imputation was used first for applicable variables. Values were logically imputed based either on information from the enrollment lists, from other responses within the questionnaire, or from the linked questionnaire. For example, missing gender values

were logically imputed for those students with gender-specific names and, when possible, confirmed with parent responses.

After all logical imputations were completed and consistency of the values verified, a weighted sequential hot-deck (WSHD) (statistical) imputation procedure (Cox 1980; Iannacchione 1982) using the final analysis weights was applied to the remaining missing values for all variables in table 91. The WSHD procedure replaces missing data with valid data from a donor record within an imputation class.

Procedures for identifying the WSHD imputation classes varied by the magnitude of the (weighted) item nonresponse rates. For variables with low levels of item nonresponse, variables related to important reporting characteristics were used to form the class. For example, all of the student variables in table 91 had an item nonresponse rate below 2 percent. The imputation class variables were selected based on the desire to preserve variable distribution within schools, race/ethnicity, sex, or a combination of the three. A similar process was used for parent questionnaire variables with very low item nonresponse rates (less than 1.5 percent).

For parent variables with larger rates of item nonresponse, imputation classes were identified through a nonparametric classification and regression tree (CART). The CART procedure isolates the variables and combination of variable values (used to form the classes) most associated with the variable requiring imputation (Breiman et al. 1984).

In addition to class variables, sorting variables that were relevant for each item being imputed were specified for the WSHD methodology. Records within each imputation class were sorted to increase the chance of obtaining a close match between donor and recipient. If more than one sorting variable was chosen, a serpentine sort was performed where the direction of the sort (ascending or descending) changed each time the value of a variable changed. The serpentine sort minimized the change in the student characteristics every time one of the variables changed its value.

Variables requiring statistical imputation were imputed sequentially. However, a few variables that were substantively related and had similar patterns of item nonresponse were grouped together into blocks, and the variables within a block were imputed simultaneously. The order in which variables, or blocks of variables, were imputed was primarily based on the level of missing data and the dependencies within the imputation variables. The variables with lower levels of missing data (less than or equal to 5 percent missing) were imputed before the variables with higher levels of missing data.

Finally, analysis weights were used to ensure that the population estimate calculated with data including the imputed values (post-imputation) did not change significantly from the estimate calculated prior to imputation (pre-imputation). See, for example, the HOTDECK procedure in SUDAAN® (Research Triangle Institute 2008).

7.3.1.3 Imputation Results

Table 92 contains the order in which the variables were imputed in addition to the method(s) of imputation used to resolve the missing data problems. Additional details on the imputation methodology are found in appendix I.

Table 92. Imputation order and imputation methods for variables requiring imputation by study instrument

Imputation order	Study questionnaire	Variable	Method of imputation
1	Student	Student's sex (X1SEX)	Logical,
2		Student is Hispanic (X1HISPANIC)	Logical, statistical
3		Student's race (X1RACE)	Derived[1]
4		How far student expects to get in school (X1STUEDEXPCT)	Statistical
1	Parent	Parent 1 relationship to 9th-grader (X1P1RELATION)	Statistical
2		Parent 2 relationship to 9th-grader (X1P2RELATION)	Statistical
3		Parent 1 highest level of education (X1PAR1EDU)	Statistical
4		Parent 2 highest level of education (X1PAR2EDU)	Statistical
5		Highest level of education for parents (X1PAREDU)	Derived[1]
6		Total family income from all sources in 2008 (X1FAMINCOME)	Statistical
7		Parent 1 and 2 relationship pattern (X1PARPATTERN)	Derived[1]
8		Parent 1 employment status (X1PAR1EMP)	Statistical
9		Parent 1 current/most recent occupation: 2-digit O*NET code (X1PAR1OCC2)	Statistical
10		Parent 2 employment status (X1PAR2EMP)	Statistical
11		Parent 2: current/most recent occupation: 2-digit O*NET code (X1PAR2OCC2)	Statistical
12		How far in school parent thinks 9th-grader will get (X1PAREDEXPCT)	Statistical
13		Number of 2009 household members (X1HHNUMBER)	Statistical, derived[2]

[1] The variable was derived from another (source) variable containing imputed values. The imputation flag corresponds with the flag for the source variable.
[2] Two source variables were imputed and used to derive the analysis variable.
NOTE: O*NET = Occupational Information Network.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

7.3.1.4 Evaluation of Imputed Values

Imputation diagnostics consisted of three checks: (1) overall imputation checks, (2) imputation checks by imputation class variables, and (3) multivariate consistency checks. The imputation checks compared the distributions and sum of the weighted and unweighted counts for each level of the imputed variable before and after imputation. Differences greater than 5 percent were flagged and examined to determine whether changes should be made to the imputation sort or class variables. The three imputation checks are briefly described below.

Table I-2 in appendix I presents the before and after imputation distributions. To evaluate the effects of imputation, the distribution of variables was tested for significant changes. Statistical tests (*t* tests) were used to test each level of the variables for differences at the 0.05 significance level. Chi-squared tests were performed to test for significant differences in the distributions of each variable.

The imputation checks by class variables evaluated the number of times a given observation was used as a donor. Additionally, the weighted and unweighted counts for each level of the imputed variable in the defined imputation classes were compared before and after the imputation. Differences of 5 percent or more were flagged for further review.

Finally, multivariate consistency checks ensured that relationships between variables were maintained and that any special instructions for the imputation were implemented properly. For example, if the imputed value for parental employment status was "never worked for pay," then the parental occupation variable was coded as a legitimate skip for consistency.

In any of the three aforementioned checks, if there was any evidence of substantial deviation from the weighted sums or any identified inconsistencies, the imputation process was revised and rerun.

7.3.2 Multiple Imputation

The last imputation method used was a model-based multiple imputation (MI) procedure. Through MI, the variance associated with imputation can be accounted for in the precision of the estimates through appropriate software. Variables identified for this method are generally continuous in nature and have a sufficient item nonresponse or relevance to the study that warrants the capture of the additional variation. The MI procedure was implemented on three HSLS:09 variables for certain student records—the ninth-grade student ability estimate for mathematics (*theta*) and the associated standard error of measurement for *theta* (*sem*) simultaneously, followed by SES. Details of each implementation are provided below.

7.3.2.1 *Theta* and SEM

A high completion rate for the mathematics assessment was attained for the HSLS:09 base-year study. Among the 21,444 students who responded to the questionnaire, 96.9 percent (96.8 percent weighted) answered a sufficient number of assessment questions to calculate *theta* and *sem*. A set of five imputed values was generated for the remaining 663 students with questionnaire data using SAS PROC MI. The Markov Chain Monte Carlo model option, which assumes the data are from a multivariate normal distribution, was used to estimate the (joint posterior) probability distribution of the two variables. Random draws from this distribution were taken to fill in the missing values. This simultaneous imputation was used to best capture the association of *theta* with *sem*.

The candidate predictor variables for the MI model used to impute *theta* and *sem* were taken from a large list of school and student characteristics such as sex, race/ethnicity, student language, student postsecondary aspirations, parental aspirations for student, family composition, parental occupation and education level, household income, school type, locale, census division, school size, and an indicator for states included in the public-school augmented sample (see section 3.2.4). One variable from a set of highly correlated variables was retained for the model to ensure convergence to a stable solution. However, as is standard practice, many covariates were used in the MI model to maximize the coverage of variables that might be used in models constructed by education researchers.

The imputation tasks resulted in six variables each for *theta* and *sem*. Variables X1TXMTH1–X1TXMTH5 and X1TXMSEM1–X1TXMSEM5 contained the five values for *theta* and *sem*, respectively. The average of the five values were given the variable names X1TXMTH and X1TXMSEM, and can be used with the analysis weights to estimate the population value as implemented in current software (see, e.g., section 3.7 in the SUDAAN language manual [Research Triangle Institute 2008]; PROC MIANALYZE procedure in SAS; IVEware[51]). Note that *theta* and *sem* were calculated directly for 20,781 student respondents from the mathematics assessment data. For these records, the average value, and the five individual values, for each variable equal the calculated scores. The imputation flag X1TXMATH_IM distinguishes the imputed from the nonimputed values.

Additional values were generated from the resulting *theta* and *sem* values. Five mathematics proficiency probability scores (X1TXMPROF1–X1TXMPROF5) were calculated from the five imputed values. Three additional variables were constructed from the average of the imputed *theta* values: the mathematics item response theory–estimated number right score (X1TXMSCR); the standardized *theta* score (X1TXMTSCOR); and the *theta* score categorized into quintiles (X1TXMQUINT).

7.3.2.2 Socioeconomic Status

An SES variable is essential for descriptive and analytical studies using HSLS:09 data. This measure is needed both for subpopulation definition and as an independent or control variable. Of the many hundreds of publications based on the prior four secondary longitudinal studies, virtually all use the SES index provided by each study.

Two SES indices were developed for HSLS:09 that differ slightly from the definitions used in previous NCES secondary longitudinal studies. The first index (X1SES) was calculated to most closely match the definition used in, for example, the Education Longitudinal Study of 2002 (ELS:2002). HSLS:09 SES included responses from all parent/guardian types while ELS:2002 SES focused only on biological, adoptive, and stepparents. A second index (X1SES_U), a variant of X1SES, accounts for differences in the target population by school

[51] http://www.isr.umich.edu/src/smp/ive/

urbanicity (X1LOCALE). An analyst who wants to account for the relativity of SES to locale has two options: (1) to use X1SES_U in a bivariate or multivariate analysis, or (2) to use X1SES in a multivariate analysis that controls for locale. An analyst who wants to achieve results that are more strictly comparable with those of the prior NCES secondary longitudinal studies should use X1SES. Both indices are briefly discussed below. Details of the construction and imputation of the variables are found in appendix J.

The new SES indices were constructed as a function of five component variables obtained from the parent/guardian questionnaire:

1. the highest education among parents/guardians in the two-parent family of a responding student, *or* the education of the sole parent/guardian (X1PAR1EDU);
2. the education level of the other parent/guardian in the two-parent family (X1PAR2EDU);
3. the highest occupation prestige score among parents/guardians in the two-parent family of a responding student, or the prestige score of the sole parent/guardian (X1PAR1OCC2);
4. the occupation prestige score of the other parent/guardian in the two-parent family (X1PAR2OCC2); and
5. family income (X1FAMINCOME).

Estimated means and standard deviations for the five SES components were calculated with (a) responses from the parent questionnaire, (b) the student home-life (contextual) analysis weight (W1PARENT discussed in section 6.5.3), and (c) SUDAAN®, software that accounts for the complex HSLS:09 sample design. Means and standard deviations calculated from all records were used to generate the first SES index (X1SES). Means and standard deviations calculated within school urbanicity (X1LOCALE) were used to generate the second SES index (X1SES_U). With these estimates, five *z* scores were calculated (one per SES component) for each index by subtracting the mean value from the component value and dividing by the standard deviation. The indices were then generated by taking the unweighted average across the nonmissing *z* scores.[52]

Standard HSLS:09 procedures dictated that the data were edited for consistency prior to calculating a composite variable. As shown in table 93, sufficient information was obtained from the parent questionnaire to directly calculate the *z* scores and associated SES indices for 69.0 percent of the participating students. The SES indices were calculated for 1,622 additional records (7.6 percent) only after administering the single-value imputation procedures discussed in section 7.3.1.3 on one or more of the SES component variables. Five values for the remaining 5,015 records (23.4 percent) were generated through an MI model similar to the model used for *theta* and *sem*.

[52] Missing *z* scores were generated for the SES components X1PAR2EDU and X1PAR2OCC2 for students with only one parent/guardian and excluded from the calculation of the SES index.

Table 93. Distribution of responding students by parent response status and by availability of parent responses to calculate SES

		Responding students	
Parent response status	SES category	n	Percent[1]
Total		21,444	100.0
Respondent	Total	16,429	76.6
	All SES components[2] were available	14,807	69.0
	SES components were imputed[3]	1,622	7.6
Nonrespondent	No SES components were available	5,015	23.4

[1] Unweighted percent is based on overall total within column. Percentages may not sum to 100 because of rounding.
[2] In addition to locale for the sampled school, components used to calculate socioeconomic status (SES) were obtained from parent responses. They included parent/guardian education, parent/guardian occupation, and family income. Details on the calculation of the SES index as well as the associated imputation procedures are provided in appendix J.
[3] One or more SES component values were imputed using a weighted sequential hot-deck imputation procedure (section 7.3.1.2) on parent questionnaire responses.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Public-Use Data File.

At completion, a set of HSLS:09 variables was generated for the two SES indices. For the first index similar to ELS:2002 definition, X1SES1–X1SES5 contains the five MI values, X1SES is the average of the five MI values, and X1SESQ5 is the X1SES quintile. The corresponding set of variables for the index controlled for school urbanicity are X1SES1_U–X1SES5_U, X1SES_U, and X1SESQ5_U. The values of X1SES1–X1SES5 and X1SES, as well as X1SES1_U–X1SES5_U and X1SES_U, are identical for the 16,429 records exempt from the multiple imputation process (i.e., 14,807 students with no imputed SES data and the 1,622 students with responding parents but one or more imputed SES components). These three groups of records were flagged on the data files as X1SES_IM = 0 (no imputation); X1SES_IM = 2 (SES component imputation); and X1SES_IM = 1 (multiple imputation).

7.4 Disclosure Risk Analysis and Protections

Extensive confidentiality and data security procedures were employed for HSLS:09 data collection and data processing activities. Data were prepared in accordance with NCES-approved disclosure avoidance plans. The data disclosure guidelines were designed to minimize the likelihood of identifying individuals on the file by matching outliers or other unique data from external data sources. Because of the paramount importance of protecting the confidentiality of NCES data that contain information about specific individuals, HSLS:09 base-year data files were subject to various procedures to minimize disclosure risk. The HSLS:09 base-year data products and some of the disclosure treatment methods employed to produce them are described in the following sections. Details have been suppressed from this document to maintain the desired level of confidentiality.

7.4.1 Base-Year Data Products

Data produced for the HSLS:09 base year include restricted-use data and public-use data. Both the restricted- and public-use data include a student-level file and a school-level file. The student and school files contain information from the following sources:

- Student file—contains responses and associated derived variables from the HSLS:09 student, parent, mathematics teacher, science teacher, school administrator, and counselor survey instruments.
- School file[53]—contains responses and associated derived variables from the HSLS:09 administrator and counselor instruments.

Additional variables include those associated with survey-based analysis such as analysis strata and final analysis weights (see chapter 6).

The disclosure treatment developed for the HSLS:09 base year comprised several steps:

- reviewed the collected data and identified items that may increase risk of disclosure;
- applied disclosure treatment[54] to the high-risk items to lower the risk of disclosure;
- produced restricted-use data files that incorporate the disclosure-treated data; and
- produced public-use data files, constructed from the disclosure-treated restricted-use files, using additional disclosure limitation methods.

The disclosure treatment methods used to produce the HSLS:09 base-year data files include variable recoding, variable suppression, and swapping. These methods are described below.

7.4.2 Recoding, Suppression, and Swapping

The disclosure treatment methods used to produce the HSLS:09 base-year data files include variable recoding, suppressing, and swapping. Some variables that had values with extremely low frequencies were recoded to ensure that the recoded values occurred with a reasonable frequency. Other variables were recoded from continuous to categorical values. In this way, rare events or characteristics have been masked for certain variables.

Other variables were classified as high risk and were suppressed from the public-use file. The suppressing techniques included removing the response from the file (i.e., reset to a "suppressed" reserve code) or removing records entirely from the public-use file (e.g., student nonrespondents).

Swapping was applied to certain HSLS:09 base-year data items. All respondents were given a positive probability of being selected for swapping and swapping was carried out under specific targeted, but undisclosed, swap rates. In data swapping, the values of the variables being

[53] Because the public-use student-level file already has the school and counselor survey data merged to the student level, there is no unique identifier on the public use student-level file enabling a link to the public-use school-level file.
[54] The NCES Statistical Standards (Seastrom 2003) (http://nces.ed.gov/statprog/2002/std4_2.asp), specifically NCES Standard 4-2, provide information both about the legislative background and legal requirements of maintaining confidentiality, and definitions of key terms (perturbation, coarsening, disclosure risk analysis, data swapping, and so forth).

swapped are exchanged between carefully selected pairs of records: a target record and a donor record. By doing so, even if a tentative identification of an individual is made, uncertainty remains about the accuracy and interpretation of the match because every record had some undisclosed probability of having been swapped. Swapping variables were selected from all questionnaires: parent, teacher, student, administrator, and counselor. Summary information for the treated HSLS:09 variables through a comparison of the public and restricted-use files is included in appendix L.

Because perturbation (swapping) of the HSLS:09 base-year data could have changed the relationships between data items, an extensive data quality check was carried out to assess and limit the impact of swapping on these relationships. For example, a set of correlations for a variety of variables was evaluated pre- and post-treatment to verify that the swapping did not greatly affect the associations. Also, if the analysis determined that the components of a composite variable should be swapped, then the composite variable was reconstructed after swapping.

However, in contrast to swapping, composite variables and their components could have been independently suppressed or recoded for inclusion in public-use files, resulting in a potential mismatch in the public-use file. In cases where recoding or suppression of composite variables and their components was carried out independently, public-use data users may not be able to recreate some of the composite variables provided in the public-use files. An example of this situation included variables where the response categories have been collapsed for disclosure protection. The corresponding composite variable was derived from the full set of response categories as collected. Therefore, users who recalculate the composite variable with public-use information may see different results.

Chapter 8.
Data File Structure and Contents

8.1 Base-Year eDAT and ECB DVD Data Structure

8.1.1 Overview

This chapter provides a concise account of the High School Longitudinal Study of 2009 (HSLS:09) base-year data file contents. It addresses the structure of the data files, restricted-use linkages to Common Core of Data (CCD) and Private School Universe Survey (PSS) data, reserve code scheme, and the Education Data Analysis Tool (eDAT) and electronic codebook (ECB) applications that make data available to public and restricted users. Additional documentation of the data files can be found in several appendices. Composite variables are documented in appendix F. Codebooks with weighted and unweighted item frequencies may be found in appendix K. The restricted and public use file contents are compared in appendix L. Finally, variable lists for the eDAT and ECB may be found in appendix M.

8.1.2 Student File

Students are sampled at the participating schools and data collected are associated with those students. The data stored at the student level are obtained from the student questionnaire, the student assessment, and the parent questionnaire. The mathematics and science teacher questionnaire data are also merged at the student level. For a detailed description of how teacher data are merged, please refer to section 5.3.1. The student file contains one record per student, and all associated data are merged at the student level. For convenience, school-level data are replicated at the student level, which allows for easier analysis of student data by various school-level demographics.

8.1.3 School File

In the school file, the data are stored at the school level and are obtained from the administrator questionnaire and the counselor questionnaire. There is one record per participating high school available on the file. Every student in the student file has an associated school record on the school file, which can be linked via the school ID (SCH_ID) on the restricted-use version. The SCH_ID variable is included on the restricted-use, but not the public-use, student file; it is included with both versions of the school file.

8.1.4 CCD, PSS, and Other Restricted-Use Linkages

All participating schools have been coded with the CCD school ID or the PSS school ID. This vital link allows restricted users to access public and private school characteristics available on the HSLS:09 school main file.

8.1.5 Reserve Codes

Reserve codes represent different types of missing data. The reserve code values apply to all variables. A negative value scheme for the reserve codes has been adopted so that users can easily exclude missing data without having to identify each value for each variable explicitly.

The following reserve code structure applies:

- −5 = "Data Suppressed"—indicates values that are available on the restricted-use data but suppressed on the public-use data.
- −7 = "Item legitimate skip/NA"—indicates items that are programmatically skipped based on rules in the questionnaire and are not applicable to those respondents.
- −8 = "Nonrespondent/component NA"—indicates that data are not available because of unit nonresponse or the interview component did not apply (e.g., student has no mathematics class, thus the mathematics teacher interview does not apply).
- −9 = "Missing"—indicates item level missing where the question may apply to the respondent but it is not answered, or the question is not administered because the gate/introductory question is not answered.
- −1, −2, −3, −4, and −6 are reserved for subsequent rounds where new reserve code values may apply.

8.1.6 Education Data Analysis Tool and Electronic Codebook

HSLS:09 base-year data have been made available for public users via the eDAT application and in both restricted (NCES 2011-333) and public-use (NCES 2011-334) formats on a DFD-housed ECB. The eDAT is available as a web-based application on the National Center for Education Statistics (NCES) server. The ECB is designed to run in a Windows environment on the user's computer. The restricted version of the ECB is available only to users who have obtained a restricted-use license and are approved to receive the ECB for their research purposes.

Both applications serve as an electronic version of a fully documented survey codebook. They allow the data user to browse through all HSLS:09 variables contained on the data files, to search variable and value names for key words related to particular research questions, to review the wording of these items along with notes and other pertinent information related to them, to examine the definitions and programming code used to develop composite and classification variables, and to download the data for statistical analysis. The applications also provide an electronic display of the distribution of counts and percentages for each variable in the dataset. Analysts can use the applications to select or "tag" variables of interest, print hardcopy codebooks that display the distributions of the tagged variables, and generate SAS, SPSS, and STATA program code (including variable and value labels) that can be used with the analyst's own statistical software.

8.2 Composite Variables

Composite variables—also called constructed, derived, or created variables—are generated using responses from two or more questionnaire items or from recoding of a variable (typically for disclosure avoidance reasons). Some are copied from another source (e.g., a variable supplied in sampling, or a variable imported from an external database). Examples of composite variables include school variables (school sector, locale, region of the country), assessment scores (achievement quintile in mathematics), psychological scales (mathematics self-efficacy), and demographic variables (sex, race, Hispanic ethnicity, and month and year of birth).

Composite variables can be used as classification variables or independent variables in data analysis. For purposes of better estimation in analysis, many of the composite variables have undergone imputation procedures for missing data (all imputed versions of variables have been flagged with associated imputation indicator variables).

Details about the construction of composite variables are available in appendix F.

8.2.1 Naming Conventions

Data users should find naming conventions for variables, flags, and weights intuitive. The naming convention is composed of the following pattern:

- Character 1: Component identifier
  - Composite variables = X
  - Student = S
  - Parent = P
  - Mathematics teacher = M
  - Science teacher = N
  - Administrator = A
  - Counselor = C
  - Weights = W
- Character 2: round identifier (i.e., 1, 2, 3), in which all base-year variables are "1" and subsequent rounds will follow sequentially (e.g., first follow-up is "2").
- Characters 3–12: Indicates a descriptive name for the variable

Variable names have been expanded beyond the eight characters used by previous data products because SAS, SPSS, and STATA now support longer variable names.

Variable labels offer more description than the variable names, although for convenience the first two characters of the variable name have been retained in the variable label to indicate

the component and the round. For example, a base-year parent questionnaire variable label will always begin with "P1." The next part of the variable label contains the section letter and the question number within that section, if applicable. For example, section C's fifth question would be "C05." The last part of the variable label is a text description of the item. An example of a base-year parent questionnaire variable name is P1JOBNOW1 and its label is "P1 C05 Parent 1 currently holds a job."

References

American Association for Public Opinion Research. (2011). *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*. 7th edition. AAPOR. Retrieved from http://www.aapor.org/AM/Template.cfm?Section=Standard_Definitions2&Template=/CM/ContentDisplay.cfm&ContentID=3156.

Binder, D.A. (1983). On the Variances of Asymptotically Normal Estimators From Complex Surveys. *International Statistical Review*, *51*(3), 279-292.

Bock, D., and Mislevy, R.J. (1982). Adaptive EAP Estimation of Ability in a Microcomputer Environment. *Applied Psychological Measurement, 6*(4): 431-444.

Bozick, R., and Ingels, S.J. (2008). *Mathematics Coursetaking and Achievement at the End of High School: Evidence from the Education Longitudinal Study of 2002 (ELS:2002)* (NCES 2008-319). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Breiman, L., Friedman, J., Stone, C.J., and Olshen, R.A. (1984). *Classification and Regression Trees*. New York: Chapman & Hall/CRC.

Chromy, J.R. (1981). Variance Estimators for a Sequential Sample Selection Procedure. In D. Krewski, R. Platek, and J.N.K. Rao (Eds.), *Current Topics in Survey Sampling* (pp. 329–347). New York: Academic Press.

Cox, B.G. (1980). The Weighted Sequential Hot Deck Imputation Procedure. *Proceedings of the Section on Survey Research Methods* (pp. 721–726). The American Statistical Association.

Curtin, T.R., Ingels, S.J., Wu, S., and Heuer, R. (2002). *NELS:88 Base Year to Fourth Follow-up Data File User's Manual* (NCES 2002-323). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Deville, J.C., and Särndal, C-E. (1992). Calibration Estimating in Survey Sampling. *Journal of the American Statistical Association*, *87*: 376-382.

Folsom, R.E., Potter, F.J., and Williams, S.R. (1987). Notes on a Composite Size Measure for Self-Weighting Samples in Multiple Domains. In *Proceedings of the American Statistical Association, Section of Survey Research Methods*, 792-796.

Guarino, C.M., Hamilton, L.S., Lockwood, J.R., and Rathbun, A.H. (2006). *Teacher Qualifications, Instructional Practices, and Reading and Mathematics Gains of Kindergartners* (NCES 2006-031). U.S. Department of Education, Institute of Education Sciences. Washington, DC: National Center for Education Statistics.

Hambleton, R.K., and Swaminathan, H. (1985). *Item Response Theory: Principles and Applications*. Boston: Kluwer.

Iannacchione, V.G. (1982). Weighted Sequential Hot Deck Imputation Macros. In *Proceedings of the Seventh Annual SAS Users Group International Conference*, 759-763.

Ingels, S.J. (1996). *Sample Exclusion in NELS:88—Characteristics of Base Year Ineligible Students: Changes in Eligibility Status After Four Years* (NCES 96-723). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Ingels, S.J., Curtin, T.R., Kaufman, P., Alt, M.N., and Chen, X. (2002). *Coming of Age in the 1990s: The Eighth-Grade Class of 1988 12 Years Later* (NCES 2002-321). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Ingels, S.J., Dalton, B., Holder, T.E., Lauff, E., and Burns, L.J. (2011). *High School Longitudinal Study of 2009 (HSLS:09). A First Look at Fall 2009 Ninth-Graders* (NCES 2011-327). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Ingels, S.J., Herget, D., Pratt, D.J., Dever, J., and Copello, E. (2010). *High School Longitudinal Study of 2009 (HSLS:09) Base-Year Field Test Report* (NCES 2010-01). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

Ingels, S.J., Pratt, D.J., Wilson, D., Burns, L.J., Currivan, D., Rogers, J.E., and Hubbard-Bednasz, S. (2007). *Education Longitudinal Study of 2002 (ELS:2002) Base-Year to Second Follow-up Data File Documentation* (NCES 2008-347). U.S. Department of Education, Institute of Education Sciences. Washington, DC: National Center for Education Statistics.

Jones, C., Clarke, M., Mooney, G., McWilliams, H., Crawford, I., Stephenson, B., and Tourangeau, R. (1983). *High School and Beyond 1980 Sophomore Cohort First Follow-Up (1982) Data File User's Manual* (NCES 83-214). U.S. Department of Education Sciences, National Center for Education Statistics. Washington, DC: Government Printing Office.

Keyfitz, N. (1951). Sampling With Probabilities Proportional to Size: Adjustment for Changes in the Probabilities. *Journal of the American Statistical Association*, *46*(253): 105-109.

Little, R.J.A., and Rubin, D.B. (2002). *Statistical Analysis With Missing Data*. New Jersey: John Wiley & Sons, Inc.

McLaughlin, D.H., and Cohen, J. (1997). *NELS:88 Survey Item Evaluation Report* (NCES 97-052). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Nakao, K., and Treas, J. (1990). Computing 1989 Prestige Scores. *GSS Methodological Report*, No. 70, Chicago: NORC. Retrieved from http://cloud9.norc.uchicago.edu/faqs/prestige.htm.

Pfeffermann, D. (1993). The Role of Sampling Weights When Modeling Survey Data. *International Statistical Review*, *61*, 317-337.

Research Triangle Institute (2008). *SUDAAN Language Manual, Release 10.0.* Research Triangle Park, NC: Research Triangle Institute.

Riccobono, J.A., Henderson, L.B., Burkheimer, G.J., Place, C., and Levinsohn, J.R. (1981). *National Longitudinal Study: Base Year (1972) Through Fourth Follow-up (1979) Data File User's Manual.* U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Rock, D.A. (2007). *A Note on Gain Scores and Their Interpretation in Developmental Models Designed to Measure Change in the Early School Years* (Report RR-07-08). Princeton, N.J.: Educational Testing Service. Retrieved from http://www.ets.org/research/contact.html.

Rock, D.A., and Pollack, J.M. (1995). *Psychometric Report for the NELS:88 Base Year Through Second Follow-Up* (NCES 95-382). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Seastrom, M. (2003). *NCES Statistical Standards* (NCES 2003-601). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office. Retrieved from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2003601.

Spencer, B.D., Frankel, M.R., Ingels, S.J., Rasinski, K., and Tourangeau, R. (1990). *NELS:88 Base Year Sample Design Report* (NCES 90-463). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Tourangeau, R., Sebring, P., Campbell, B., Glusberg, M., Spencer, B.D., and Singleton, M. (1987). *The National Longitudinal Study of the High School Class of 1972 (NLS:72) Fifth Follow-up (1986) Data File User's Manual* (NCES 87-406c). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Wolter, K. (2007). *Introduction to Variance Estimation*. Second Edition. New York: Springer-Verlag.

Woodruff, R.S. (1971). A Simple Method for Approximating the Variance of a Complicated Estimate. *Journal of the American Statistical Association, 66*, 411-414.

Zahs, D., Pedlow, S., Morrissey, M., Marnell, P., and Nichols, B. (1995). *High School and Beyond Fourth Follow-up Methodology Report* (NCES 95-426). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Zimowski, M., Muraki, E., Mislevy R., and Bock, D. (2003). *BILOG-MG*. Lincolnwood, IL: Scientific Software International.

Appendix A.
Base-Year Questionnaires

Student Questionnaire and Flowchart

Section A: Student Background

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Screen: Introduction to Section A
Question wording: Next we are going to ask you a few questions about your background.
Routing: Go to S1 A01.
~~~~~~
Screen: S1 A01
Question wording: What is your sex?
Variable: S1SEX
1=Male
2=Female
Routing: Go to S1 A02.
~~~~~~
Screen: S1 A02
Question wording: Are you Hispanic or [Latino/Latina]?
Note: Question wording was customized in the survey instrument such that "Latino" or "Latina" was conditionally displayed based on student-indicated gender.
Variable: S1HISPANIC
1=Yes
0=No
Routing: If S1HISPANIC = 1 then go to S1 A03;
If S1HISPANIC = 0 then go to S1 A04;
If no response then go to S1 A04.
~~~~~~
Screen: S1 A03
Question wording: Which of the following are you?
Variable: S1HISPOR
1=Mexican, Mexican-American, Chicano
2=Cuban
3=Dominican
4=Puerto Rican
5=Central American such as Guatemalan, Salvadoran, Nicaraguan, Costa Rican, Panamanian, or Honduran
6=South American such as Colombian, Argentine, or Peruvian
7=Other Hispanic or Latino or Latina
Routing: Go to S1 A04.
~~~~~~
Screen: S1 A04
Question wording:
[In addition to learning about your Hispanic background, we would also like to know about your racial background.]
Which of the following choices describe your race? You may choose more than one.
(Check all that apply.)
Note: Question wording was customized in the survey instrument such that if respondent indicated they were of Hispanic/Latino origin, then bracketed text above was displayed.
Variable: S1WHITE
Item wording: White
0=No
1=Yes
Variable: S1BLACK
Item wording: Black or African American
0=No
1=Yes
~~~~~~

Variable: S1ASIAN
Item wording: Asian
0=No
1=Yes
Variable: S1PACISLE
Item wording: Native Hawaiian or other Pacific Islander
0=No
1=Yes
Variable: S1AMINDIAN
Item wording: American Indian or Alaska Native
0=No
1=Yes

Routing: If S1ASIAN=1 then go to S1 A05;
else go to S1 A06.

~~~~~~

Screen: S1 A05
Question wording: Which one of the following are you?
Variable: S1ASIANOR
1=Chinese
2=Filipino
3=Southeast Asian such as Vietnamese or Thai
4=South Asian such as Indian or Sri Lankan
5=Other Asian such as Korean or Japanese

Routing: Go to S1 A06.

~~~~~~

Screen: S1 A06
Question wording: What is your birth date?
Variable: S1BIRTHMON
1=January
2=February
3=March
4=April
5=May
6=June
7=July
8=August
9=September
10=October
11=November
12=December
Variable: not delivered
1=1
2=2
3=3
4=4
5=5
6=6
7=7
8=8
9=9
10=10
11=11
12=12
13=13
14=14
15=15

16=16
17=17
18=18
19=19
20=20
21=21
22=22
23=23
24=24
25=25
26=26
27=27
28=28
29=29
30=30
31=31

Variable: S1BIRTHYR

1=1990 or earlier
2=1991
3=1992
4=1993
5=1994
6=1995
7=1996
8=1997 or later

Routing: Go to S1 A07.

~~~~~~

Screen: S1 A07

Question wording: What was the first language you learned to speak when you were a child? Was it...

Variable: S1LANG1ST

1=English
2=Spanish
3=Another language
4=English and Spanish equally or
5=English and another language equally?

Routing: If S1LANG1ST = 1 then go to Introduction to Section B;
If S1LANG1ST = 2 and student did not indicate in the locating section that they had no living mother or female guardian, go to S1 A09;
If S1LANG1ST = 2 and student indicated in the locating section that they had no living mother or female guardian, go to S1 A10;
If S1LANG1ST = 3 then go to S1 A08;
If S1LANG1ST = 4 and student did not indicate in the locating section that they had no living mother or female guardian, go to S1 A09;
If S1LANG1ST = 4 and student indicated in the locating section that they had no living mother or female guardian, go to S1 A10;
If S1LANG1ST = 5 then go to S1 A08;
If no response then go to Introduction to Section B.

~~~~~~

Screen: S1 A08

Question wording: What is the [other] language you first learned to speak?
Note: "Other" was displayed in question wording if respondent indicated their first language was "English and another language equally".

Variable: S1LANG1STOS

1=A European language, such as French, German, or Russian
2=A Chinese language
3=A Filipino language

4=A Southeast Asian language such as Vietnamese or Thai
5=A South Asian language such as Hindi or Tamil
6=Another Asian language such as Japanese or Korean
7=A Middle Eastern language such as Arabic or Farsi, or
8=Another language

Routing: if missing go to Introduction to Section B;
If student did not indicate in the locating section that they had no living mother or female guardian, go to S1 A09;
If student indicated in the locating section that they had no living mother or female guardian, go to S1 A10.

~~~~~~

Screen: S1 A09
Question wording: How often do you speak [this language] with your mother or female guardian at home?
Note: Question wording was customized in the survey instrument such that the respondent's first language was displayed in place of "this language".

Variable: S1LANGMOM

1=Never
2=Sometimes
3=About half the time
4=Most of the time
5=Always
6=No mother or female guardian in your household

Routing: go to S1 A10.

~~~~~~

Screen: S1 A10
How often do you speak [this language] with your friends?
Note: Question wording was customized in the survey instrument such that the respondent's first language was displayed in place of "this language".

Variable: S1LANGFRIEND

1=Never
2=Sometimes
3=About half the time
4=Most of the time
5=Always

Routing: Go to Introduction to Section B

~~~~~~

Section B: Previous School Experiences

~~~~~~

Screen: Introduction to Section B
Question wording: Next we are going to ask you a few questions about your background.
Routing: go to S1 B01.

~~~~~~

Screen: S1 B01
Question wording: What grade were you in last school year (2008-2009)?

Variable: S1GRD0809

1=7th Grade
2=8th Grade
3=9th Grade
4=You were in an ungraded program

Routing: go to S1 B02.
~~~~~~

~~~~~~

Screen: S1 B02
Question wording: During the last school year (2008-2009), did you attend [current school] or did you attend a different school?
Note: Question/response wording was customized in the survey instrument such that the respondent's current school name was displayed in place of "current school".

Variable: S1SCH0809
1=[current school]
2=Different school
3=You were homeschooled

Routing: If S1SCH0809 = 1, 3 or no response then go to S1 B04;
if S1SCH0809 = 2 then go to S1 B03.

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Screen: S1 B03
Question wording: During the last school year (2008-2009), what school did you attend?

Variable: not delivered, but used to construct X1STUPRVSCHL
Item wording: School Name

Variable: not delivered, but used to construct X1STUPRVSCHL
Item wording: City

Variable: not delivered, but used to construct X1STUPRVSCHL
1=Alabama
2=Alaska
3=Arizona
4=Arkansas
5=California
6=Colorado
7=Connecticut
8=Delaware
9=District of Columbia
10=Florida
11=Georgia
12=Hawaii
13=Idaho
14=Illinois
15=Indiana
16=Iowa
17=Kansas
18=Kentucky
19=Louisiana
20=Maine
21=Maryland
22=Massachusetts
23=Michigan
24=Minnesota
25=Mississippi
26=Missouri
27=Montana
28=Nebraska
29=Nevada
30=New Hampshire
31=New Jersey
32=New Mexico
33=New York
34=North Carolina
35=North Dakota
36=Ohio

37=Oklahoma
38=Oregon
39=Pennsylvania
40=Rhode Island
41=South Carolina
42=South Dakota
43=Tennessee
44=Texas
45=Utah
46=Vermont
47=Virginia
48=Washington
49=West Virginia
50=Wisconsin
51=Wyoming
99=FOREIGN COUNTRY

Routing: Go to S1 B04.

~~~~~~

Screen: S1 B04

Question wording: Since the beginning of the last school year (2008-2009), which of the following activities have you participated in?

Variable: S1MCLUB
Item wording: Math club
0=No
1=Yes

Variable: S1MCOMPETE
Item wording: Math competition
0=No
1=Yes

Variable: S1MCAMP
Item wording: Math camp
0=No
1=Yes

Variable: S1MTUTOR
Item wording: Math study groups or a program where you were tutored in math
0=No
1=Yes

Variable: S1SCLUB
Item wording: Science club
0=No
1=Yes

Variable: S1SCOMPETE
Item wording: Science competition
0=No
1=Yes

Variable: S1SCAMP
Item wording: Science camp
0=No
1=Yes

Variable: S1STUTOR
Item wording: Science study groups or a program where you were tutored in science
0=No
1=Yes

Variable: NOMSACT
Item wording: None of these
0=No
~~~~~~

1=Yes

Routing: Go to S1 B05.

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Screen: S1 B05

Question wording: Since the beginning of the last school year (2008-2009), how often have you done the following science activities?

Variable: S1SBOOKS

Item wording: Read science books and magazines

1=Never
2=Rarely
3=Sometimes
4=Often

Variable: S1WEBINFO

Item wording: Accessed web sites for computer technology information

1=Never
2=Rarely
3=Sometimes
4=Often

Variable: S1SMUSEUM

Item wording: Visited a science museum, planetarium or environmental center

1=Never
2=Rarely
3=Sometimes
4=Often

Routing: If S1GRD0809=(1 or 4) and Y_SGRP = 1 go to Introduction to Section C;
Else if S1GRD0809=(1 or 4) and Y_SGRP = 2 go to Introduction to Section D;
else go to S1 B06.

Note: So as to more evenly distribute item non-response resulting from an inability to complete the student questionnaire within the allotted time, the survey instrument rotated the order in which certain sections of the student questionnaire were administered. Y_SGRP=1 indicates that student questionnaire sections were administered in the following order: A, B, C, D, E, F, G; Y_SGRP=2 indicates that the student questionnaire sections were administered in the following order: A, B, D, C, G, F, E.

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Screen: S1 B06

Question wording: What math course did you take in the 8th grade? If you took more than one math course, please choose your most advanced or most difficult course.

Variable: S1M8

1=Math 8
2=Advanced or Honors Math 8 not including Algebra
3=Pre-algebra
4=Algebra I including IA and IB
5=Algebra II or Trigonometry
6=Geometry
7=Integrated Math
8=Other advanced math course such as pre-calculus or calculus
9=Other math

Routing: If missing go to S1 B08;
Else go to S1 B07.

~~~~~~

Screen: S1 B07

Question wording:

What was your final grade in this math course?
(If your school uses numerical grades only, please answer in terms of the letter equivalent. If you don't know the equivalent, assume that ...
90 to 100 is an "A"
80 to 89 i
~~~~~~

s a "B"
70 to 79 is a "C"
60 to 69 is a "D"
Anything less than 60 is "below D")

Variable: S1M8GRADE

1=A
2=B
3=C
4=D
5=Below D
6=Your class was not graded

Routing: Go to S1 B08.

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Screen: S1 B08

Question wording: What science course did you take in the 8th grade? If you took more than one science course, please choose your most advanced or most difficult course.

Variable: S1S8

9=Science 8
8=General Science or General Science 8
1=Biology
2=Life science
3=Pre-AP or pre-IB Biology
4=Chemistry
5=Earth Science
6=Environmental Science
7=Integrated Science
10=Principles of Technology
11=Physical Science
12=Physics
13=Other science course

Routing: If S1S8 = missing and Y_SGRP=1 then go to Introduction to Section C;
else if S1S8 = missing and Y_SGRP=2 then go to Introduction to Section D;
Else if S1S8 is not missing go to S1 B09.
Note: So as to more evenly distribute item non-response resulting from an inability to complete the student questionnaire within the allotted time, the survey instrument rotated the order in which certain sections of the student questionnaire were administered. Y_SGRP=1 indicates that student questionnaire sections were administered in the following order: A, B, C, D, E, F, G; Y_SGRP=2 indicates that the student questionnaire sections were administered in the following order: A, B, D, C, G, F, E.

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Screen: S1 B09

Question wording: What was your final grade in this science course?
(If your school uses numerical grades only, please answer in terms of the letter equivalent. If you don't know the equivalent, assume that ...
90 to 100 is an "A"
80 to 89
is a "B"
70 to 79 is a "C"
60 to 69 is a "D"
Anything less than 60 is "below D")

Variable: S1S8GRADE

1=A
2=B
3=C
4=D
5=Below D
6=Your class was not graded

Routing: If Y_SGRP=1 go to Introduction to Section C;
Else if Y_SGRP=2 go to Introduction to Section D.
Note: So as to more evenly distribute item non-response resulting from an inability to complete the student questionnaire within the allotted time, the survey instrument rotated the order in which certain sections of the student questionnaire were administered. Y_SGRP=1 indicates that student questionnaire sections were administered in the following order: A, B, C, D, E, F, G; Y_SGRP=2 indicates that the student questionnaire sections were administered in the following order: A, B, D, C, G, F, E.
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Section C: Math Experiences

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Screen: Introduction to Section C
Question wording: Now we are going to ask you a few questions about your experiences with math.
Routing: Go to S1 C01.
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Screen: S1 C01
Question wording: How much do you agree or disagree with the following statements?
Variable: S1MPERSON1
Item wording: You see yourself as a math person
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: S1MPERSON2
Item wording: Others see you as a math person
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Routing: Go to S1 C02.
~~~~~~
Screen: S1 C02
Question wording: When you are working on a math assignment, how often do you think you really understand the assignment?
Variable: S1MUNDERST
1=Never
2=Rarely
3=Sometimes
4=Often
Routing: go to S1 C03.
~~~~~~
Screen: S1 C03
Question wording: Are you currently taking a math course this fall?
[Were you taking a math course in the fall of 2009?]
Note: For interviews conducted prior to late-December 2009, this question appeared in the un-bracketed form above; for interviews conducted late-December 2009 or later, this question was displayed using the bracketed text above.
Variable: S1MFALL09
1=Yes
0=No
Routing: If S1MFALL09=1 go to S1 C04;
Else if Y_SGRP=1 go to Introduction to Section D;
Else if Y_SGRP=2 go to Introduction to Section G.
Note: So as to more evenly distribute item non-response resulting from an inability to complete the student questionnaire within the allotted time, the survey instrument rotated the order in which certain
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sections of the student questionnaire were administered. Y_SGRP=1 indicates that student questionnaire sections were administered in the following order: A, B, C, D, E, F, G; Y_SGRP=2 indicates that the student questionnaire sections were administered in the following order: A, B, D, C, G, F, E.
~~~~~~

Screen: S1 C04
Question wording: What math course(s) are you currently taking this fall?
[What math course(s) were you taking in the fall (2009)?]
(Check all that apply.)
Note: For interviews conducted prior to late-December 2009, this question appeared in the un-bracketed form above; for interviews conducted late-December 2009 or later, this question was displayed using the bracketed text above.

Variable: S1ALG1M09
Item wording: Algebra I including IA and IB
0=No
1=Yes

Variable: S1GEOM09
Item wording: Geometry
0=No
1=Yes

Variable: S1ALG2M09
Item wording: Algebra II
0=No
1=Yes

Variable: S1TRIGM09
Item wording: Trigonometry
0=No
1=Yes

Variable: S1REVM09
Item wording: Review or Remedial Math including Basic, Business, Consumer, Functional or General math
0=No
1=Yes

Variable: S1INTGM109
Item wording: Integrated Math I
0=No
1=Yes

Variable: S1STATSM09
Item wording: Statistics or Probability
0=No
1=Yes

Variable: S1INTGM209
Item wording: Integrated Math II or above
0=No
1=Yes

Variable: S1PREALGM09
Item wording: Pre-algebra
0=No
1=Yes

Variable: S1ANGEOM09
Item wording: Analytic Geometry
0=No
1=Yes

Variable: S1ADVM09
Item wording: Other advanced math course such as pre-calculus or calculus
0=No
1=Yes
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Variable: S1OTHM09
Item wording: Other math course
0=No
1=Yes

Routing: go to S1 C05.

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Screen: S1 C05

Question wording: Why are you taking [fall 2009 math course]?
[If late December or later add:
(If you are no longer taking this course, think back to the fall when you answer this question and the questions that follow.)]
(Check all that apply.)
Note: Question wording was customized such that the specific math course type indicated by each respondent (on Screen S1 C04) was displayed in place of "fall 2009 math course". If the respondent indicated taking more than one math course during fall 2009, this question was asked only once and referred to the student-indicated course type appearing first in the following list: "an advanced math course such as pre-calculus or calculus", "Statistics or Probability", "Algebra II", "Trigonometry", "Analytic Geometry", "Geometry", "Algebra I", "Integrated Math II or above", "Integrated Math I", "Pre-algebra", "Review or Remedial Math".

Variable: S1MENJOYS
Item wording: You really enjoy math
0=No
1=Yes

Variable: S1MCHALLENGE
Item wording: You like to be challenged
0=No
1=Yes

Variable: S1MHSREQ
Item wording: You had no choice, it is a school requirement
0=No
1=Yes

Variable: S1MCOUNSEL
Item wording: The school counselor suggested you take it
0=No
1=Yes

Variable: S1MPARENT
Item wording: Your parent(s) encouraged you to take it
0=No
1=Yes

Variable: S1MTEACHER
Item wording: A teacher encouraged you to take it
0=No
1=Yes

Variable: S1MNOOTHR
Item wording: There were no other math courses offered
0=No
1=Yes

Variable: S1MCLGADM
Item wording: You will need it to get into college
0=No
1=Yes

Variable: S1MCLGSUCC
Item wording: You will need it to succeed in college
0=No
1=Yes

Variable: S1MCAREER
~~~~~~

Item wording: You will need it for your career
0=No
1=Yes

Variable: S1MASSIGNED
Item wording: It was assigned to you
0=No
1=Yes

Variable: S1MOTHREASN
Item wording: Some other reason
0=No
1=Yes

Variable: S1MNOREASON
Item wording: You don't know why you are taking this course
0=No
1=Yes

Routing: go to S1 C06.

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Screen: S1 C06

Question wording: How much do you agree or disagree with the following statements about your [fall 2009 math course]?

Note: Question wording was customized such that the specific math course type indicated by each respondent (on Screen S1 C04) was displayed in place of "fall 2009 math course". If the respondent indicated taking more than one math course during fall 2009, this question was asked only once and referred to the student-indicated course type appearing first in the following list: "an advanced math course such as pre-calculus or calculus", "Statistics or Probability", "Algebra II", "Trigonometry", "Analytic Geometry", "Geometry", "Algebra I", "Integrated Math II or above", "Integrated Math I", "Pre-algebra", "Review or Remedial Math".

Variable: S1MENJOYING
Item wording: You are enjoying this class very much
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MWASTE
Item wording: You think this class is a waste of your time
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MBORING
Item wording: You think this class is boring
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: Go to S1 C07.

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Screen: S1 C07

Question wording: How much do you agree or disagree with the following statements about the usefulness of your [fall 2009 math] course? What students learn in this course...

Note: Question wording was customized such that the specific math course type indicated by each respondent (on Screen S1 C04) was displayed in place of "fall 2009 math course". If the respondent indicated taking more than one math course during fall 2009, this question was asked only once and referred to the student-indicated course type appearing first in the following list: "an advanced math course such as pre-calculus or calculus", "Statistics or Probability", "Algebra II", "Trigonometry", "Analytic

Geometry", "Geometry", "Algebra I", "Integrated Math II or above", "Integrated Math I", "Pre-algebra", "Review or Remedial Math".

Variable: S1MUSELIFE

Item wording: is useful for everyday life.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MUSECLG

Item wording: will be useful for college.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MUSEJOB

Item wording: will be useful for a future career.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: Go to S1 C08.

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Screen: S1 C08

Question wording: How much do you agree or disagree with the following statements about your [fall 2009 math] course?

Note: Question wording was customized such that the specific math course type indicated by each respondent (on Screen S1 C04) was displayed in place of "fall 2009 math course". If the respondent indicated taking more than one math course during fall 2009, this question was asked only once and referred to the student-indicated course type appearing first in the following list: "an advanced math course such as pre-calculus or calculus", "Statistics or Probability", "Algebra II", "Trigonometry", "Analytic Geometry", "Geometry", "Algebra I", "Integrated Math II or above", "Integrated Math I", "Pre-algebra", "Review or Remedial Math".

Variable: S1MTESTS

Item wording: You are confident that you can do an excellent job on tests in this course

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MTEXTBOOK

Item wording: You are certain that you can understand the most difficult material presented in the textbook used in this course

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MSKILLS

Item wording: You are certain that you can master the skills being taught in this course

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MASSEXCL

Item wording: You are confident that you can do an excellent job on assignments in this course

1=Strongly agree
2=Agree
3=Disagree
~~~~~~

4=Strongly disagree

Routing: if student's school did not agree to their teachers responding to the HSLS Teacher Questionnaire, go to S1 C11;
else if f pre-loaded math teacher names are available, go to S1 C09;
else if pre-loaded math teacher names are not available, go to S1 C10.

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Screen: S1 C09

Question wording: Who is your [fall 2009 math] teacher?

Note: Question wording was customized such that the specific math course type indicated by each respondent (on Screen S1 C04) was displayed in place of "fall 2009 math course". If the respondent indicated taking more than one math course during fall 2009, this question was asked only once and referred to the student-indicated course type appearing first in the following list: "an advanced math course such as pre-calculus or calculus", "Statistics or Probability", "Algebra II", "Trigonometry", "Analytic Geometry", "Geometry", "Algebra I", "Integrated Math II or above", "Integrated Math I", "Pre-algebra", "Review or Remedial Math".

Variable: not delivered, but used to help link students and math teachers

1=[pre-loaded math teacher #1]
2=[pre-loaded math teacher #2, if available]
3=[pre-loaded math teacher #3, if available]
4=[pre-loaded math teacher #4, if available]
5=[pre-loaded math teacher #5, if available]
6=[pre-loaded math teacher #6, if available]
7=[pre-loaded math teacher #7, if available]
8=Another teacher

Routing: If a pre-loaded teacher is selected from the dropdown menu, go to S1 C11;
else if "another teacher" is selected, or no response is provided, then go to S1 C10.

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Screen: S1 C10

Question wording: What is your [fall 2009 math] teacher's name?

Note: Question wording was customized such that the specific math course type indicated by each respondent (on Screen S1 C04) was displayed in place of "fall 2009 math course". If the respondent indicated taking more than one math course during fall 2009, this question was asked only once and referred to the student-indicated course type appearing first in the following list: "an advanced math course such as pre-calculus or calculus", "Statistics or Probability", "Algebra II", "Trigonometry", "Analytic Geometry", "Geometry", "Algebra I", "Integrated Math II or above", "Integrated Math I", "Pre-algebra", "Review or Remedial Math".

Variable: not delivered, but used to help link students and math teachers

1=Mr.
2=Mrs.
3=Ms.
4=Miss
5=Dr.

Variable: not delivered, but used to help link students and math teachers

Item wording: First name:

Variable: not delivered, but used to help link students and math teachers

Item wording: Last name:

Routing: go to S1 C11.

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Screen: S1 C11

Question wording: How much do you agree or disagree with the following statements about [your math teacher]? Remember, none of your teachers or your principal will see any of the answers you provide. Your math teacher...

Note: Question wording was customized in the survey instrument such that the name of the respondent's math teacher (if available) was displayed in place of "your math teacher".

Variable: S1MTCHVALUES

Item wording: values and listens to students' ideas.
~~~~~~

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MTCHRESPCT
Item wording: treats students with respect.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MTCHFAIR
Item wording: treats every student fairly.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MTCHCONF
Item wording: thinks every student can be successful.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MTCHMISTKE
Item wording: thinks mistakes are okay as long as all students learn.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MTCHTREAT
Item wording: treats some kids better than other kids.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MTCHINTRST
Item wording: makes math interesting.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MTCHMFDIFF
Item wording: treats males and females differently.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1MTCHEASY
Item wording: makes math easy to understand.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: If Y_SGRP=1 go to Introduction to Section D;
Else if Y_SGRP=2 go to Introduction to Section G.
Note: So as to more evenly distribute item non-response resulting from an inability to complete the student questionnaire within the allotted time, the survey instrument rotated the order in which certain

sections of the student questionnaire were administered. Y_SGRP=1 indicates that student questionnaire sections were administered in the following order: A, B, C, D, E, F, G; Y_SGRP=2 indicates that the student questionnaire sections were administered in the following order: A, B, D, C, G, F, E.
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Section D: Science Experiences

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Screen: Introduction to Section D
Question wording: Now we are going to ask you a few questions about your experiences with science.
Routing: Go to S1 D01.
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Screen: S1 D01
Question wording: How much do you agree or disagree with the following statements?
Variable: S1SPERSON1
Item wording: You see yourself as a science person
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: S1SPERSON2
Item wording: Others see you as a science person
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Routing: Go to S1 D02.
~~~~~~
Screen: S1 D02
Question wording: When you are working on a science assignment, how often do you think you really understand the assignment?
Variable: S1SUNDERST
1=Never
2=Rarely
3=Sometimes
4=Often
Routing: go to S1 D03.
~~~~~~
Screen: S1 D03
Are you currently taking a science course this fall?
[Were you taking a science course in the fall of 2009?]
Note: For interviews conducted prior to late-December 2009, this question appeared in the un-bracketed form above; for interviews conducted late-December 2009 or later, this question was displayed using the bracketed text above.
Variable: S1SFALL09
1=Yes
0=No
Routing: If S1SFALL09=1 go to S1 D04;
else if Y_SGRP=1 go to Introduction to Section E;
else if Y_SGRP=2 go to Introduction to Section C.
Note: So as to more evenly distribute item non-response resulting from an inability to complete the student questionnaire within the allotted time, the survey instrument rotated the order in which certain sections of the student questionnaire were administered. Y_SGRP=1 indicates that student questionnaire sections were administered in the following order: A, B, C, D, E, F, G; Y_SGRP=2 indicates that the student questionnaire sections were administered in the following order: A, B, D, C, G, F, E.
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Screen: S1 D04
Question wording: What science course(s) are you currently taking this fall?
[What science course(s) were you taking in the fall (2009)?]
(Check all that apply.)
Note: For interviews conducted prior to late-December 2009, this question appeared in the un-bracketed form above; for interviews conducted late-December 2009 or later, this question was displayed using the bracketed text above.

Variable: S1BIO1S09
Item wording: Biology I
0=No
1=Yes

Variable: S1EARTHS09
Item wording: Earth Science
0=No
1=Yes

Variable: S1PHYSS09
Item wording: Physical Science
0=No
1=Yes

Variable: S1ENVS09
Item wording: Environmental Science
0=No
1=Yes

Variable: S1PHYSIC1S09
Item wording: Physics I
0=No
1=Yes

Variable: S1INTGS1S09
Item wording: Integrated Science I
0=No
1=Yes

Variable: S1CHEM1S09
Item wording: Chemistry I
0=No
1=Yes

Variable: S1INTGS2S09
Item wording: Integrated Science II or above
0=No
1=Yes

Variable: S1ANATOMYS09
Item wording: Anatomy or Physiology
0=No
1=Yes

Variable: S1ADVBIOS09
Item wording: Advanced Biology such as Biology II, AP, or IB
0=No
1=Yes

Variable: S1ADVCHEMS09
Item wording: Advanced Chemistry such as Chemistry II, AP, or IB
0=No
1=Yes

Variable: S1GENS09
Item wording: General Science
0=No
1=Yes
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Variable: S1TECHS09
Item wording: Principles of Technology
0=No
1=Yes
Variable: S1LIFES09
Item wording: Life Science
0=No
1=Yes
Variable: S1ADVPHYSIC09
Item wording: Advanced Physics such as Physics II, AP or IB
0=No
1=Yes
Variable: S1OTHENVS09
Item wording: Other earth or environmental sciences such as ecology, geology, oceanography, or meteorology
0=No
1=Yes
Variable: S1OTHBIOS09
Item wording: Other biological sciences such as botany, marine biology, or zoology
0=No
1=Yes
Variable: S1OTHPHYS09
Item wording: Other physical sciences such as astronomy or electronics
0=No
1=Yes
Variable: S1OTHS09
Item wording: Other science course
0=No
1=Yes

Routing: Go to S1 D05.

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Screen: S1 D05
Question wording: Why are you taking [fall 2009 science course]?
[If late December or later add:
(If you are no longer taking this course, think back to the fall when you answer this question and the questions that follow.)]
Note: Question wording was customized such that the specific science type indicated by each respondent (on Screen S1 D04) was displayed in place of "fall 2009 science course"; if the respondent indicated taking more than one science course during fall 2009, this question was asked only once and referred to the student-indicated course type appearing first in the following list: "Advanced Physics", "Advanced Chemistry", "Advanced Biology", "Anatomy or Physiology", "Environmental Science", "Integrated Science II or above", "Integrated Science I", "Principles of Technology", "Physics I", "Chemistry I", "Biology I", "a biological sciences course", "Earth Science", "an earth or environmental science course", "Life Science", "Physical Science", "a physical science course", "General Science".
Variable: S1SENJOYS
Item wording: You really enjoy science
0=No
1=Yes
Variable: S1SCHALLENGE
Item wording: You like to be challenged
0=No
1=Yes
Variable: S1SHSREQ
Item wording: You had no choice, it is a school requirement
0=No
1=Yes
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Variable: S1SCOUNSEL
Item wording: The school counselor suggested you take it
0=No
1=Yes
Variable: S1SPARENT
Item wording: Your parent(s) encouraged you to take it
0=No
1=Yes
Variable: S1STEACHER
Item wording: A teacher encouraged you to take it
0=No
1=Yes
Variable: S1SNOOTHR
Item wording: There were no other science courses offered
0=No
1=Yes
Variable: S1SCLGADM
Item wording: You will need it to get into college
0=No
1=Yes
Variable: S1SCLGSUCC
Item wording: You will need it to succeed in college
0=No
1=Yes
Variable: S1SCAREER
Item wording: You will need it for your career
0=No
1=Yes
Variable: S1SASSIGNED
Item wording: It was assigned to you
0=No
1=Yes
Variable: S1SOTHREASN
Item wording: Some other reason
0=No
1=Yes
Variable: S1SNOREASON
Item wording: You don't know why you are taking this course
0=No
1=Yes

Routing: go to S1 D06.

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Screen: S1 D06
Question wording: How much do you agree or disagree with the following statements about your [fall 2009 science] course?
Note: Question wording was customized such that the specific science type indicated by each respondent (on Screen S1 D04) was displayed in place of "fall 2009 science course"; if the respondent indicated taking more than one science course during fall 2009, this question was asked only once and referred to the student-indicated course type appearing first in the following list: "Advanced Physics", "Advanced Chemistry", "Advanced Biology", "Anatomy or Physiology", "Environmental Science", "Integrated Science II or above", "Integrated Science I", "Principles of Technology", "Physics I", "Chemistry I", "Biology I", "a biological sciences course", "Earth Science", "an earth or environmental science course", "Life Science", "Physical Science", "a physical science course", "General Science".
Variable: S1SENJOYING
Item wording: You are enjoying this class very much
1=Strongly agree
~~~~~~

2=Agree
3=Disagree
4=Strongly disagree

Variable: S1SWASTE
Item wording: You think this class is a waste of your time
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1SBORING
Item wording: You think this class is boring
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: Go to S1 D07.

~~~~~~

Screen: S1 D07
Question wording: How much do you agree or disagree with the following statements about the usefulness of your [fall 2009 science] course? What students learn in this course...
Note: Question wording was customized such that the specific science type indicated by each respondent (on Screen S1 D04) was displayed in place of "fall 2009 science course"; if the respondent indicated taking more than one science course during fall 2009, this question was asked only once and referred to the student-indicated course type appearing first in the following list: "Advanced Physics", "Advanced Chemistry", "Advanced Biology", "Anatomy or Physiology", "Environmental Science", "Integrated Science II or above", "Integrated Science I", "Principles of Technology", "Physics I", "Chemistry I", "Biology I", "a biological sciences course", "Earth Science", "an earth or environmental science course", "Life Science", "Physical Science", "a physical science course", "General Science".

Variable: S1SUSELIFE
Item wording: is useful for everyday life.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1SUSECLG
Item wording: will be useful for college.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1SUSEJOB
Item wording: will be useful for a future career.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: Go to S1 D08.

~~~~~~

Screen: S1 D08
Question wording: How much do you agree or disagree with the following statements about your [fall 2009 science] course?
Note: Question wording was customized such that the specific science type indicated by each respondent (on Screen S1 D04) was displayed in place of "fall 2009 science course"; if the respondent indicated taking more than one science course during fall 2009, this question was asked only once and referred to the student-indicated course type appearing first in the following list: "Advanced Physics", "Advanced Chemistry", "Advanced Biology", "Anatomy or Physiology", "Environmental Science",

"Integrated Science II or above", "Integrated Science I", "Principles of Technology", "Physics I", "Chemistry I", "Biology I", "a biological sciences course", "Earth Science", "an earth or environmental science course", "Life Science", "Physical Science", "a physical science course", "General Science".

Variable: S1STESTS

Item wording: You are confident that you can do an excellent job on tests in this course

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1STEXTBOOK

Item wording: You are certain you can understand the most difficult material presented in the textbook used in this course

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1SSKILLS

Item wording: You are certain you can master the skills being taught in this course

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1SASSEXCL

Item wording: You are confident that you can do an excellent job on assignments in this course

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: if student's school did not agree to their teachers responding to the HSLS Teacher Questionnaire, go to S1 D11;
else if pre-loaded science teacher names are available, go to S1 D09;
else if pre-loaded science teacher names are not available, go to S1 D10.

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Screen: S1 D09

Question wording: What is the name of your [fall 2009 science] teacher?

Note: Question wording was customized such that the specific science type indicated by each respondent (on Screen S1 D04) was displayed in place of "fall 2009 science course"; if the respondent indicated taking more than one science course during fall 2009, this question was asked only once and referred to the student-indicated course type appearing first in the following list: "Advanced Physics", "Advanced Chemistry", "Advanced Biology", "Anatomy or Physiology", "Environmental Science", "Integrated Science II or above", "Integrated Science I", "Principles of Technology", "Physics I", "Chemistry I", "Biology I", "a biological sciences course", "Earth Science", "an earth or environmental science course", "Life Science", "Physical Science", "a physical science course", "General Science".

Variable: not delivered, but used to help link students and science teachers

1=[pre-loaded science teacher #1]
2=[pre-loaded science teacher #2, if available]
3=[pre-loaded science teacher #3, if available]
4=[pre-loaded science teacher #4, if available]
5=[pre-loaded science teacher #5, if available]
6=[pre-loaded science teacher #6, if available]
7=[pre-loaded science teacher #7, if available]
8=Another teacher

Routing: If a pre-loaded teacher is selected from the dropdown menu, go to S1 D11;
Else if the last response option ("Another teacher") is selected, or no response is provided, go to S1 D10.
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Screen: S1 D10
Question wording: What is your [fall 2009 science] teacher's name?
Note: Question wording was customized such that the specific science type indicated by each respondent (on Screen S1 D04) was displayed in place of "fall 2009 science course"; if the respondent indicated taking more than one science course during fall 2009, this question was asked only once and referred to the student-indicated course type appearing first in the following list: "Advanced Physics", "Advanced Chemistry", "Advanced Biology", "Anatomy or Physiology", "Environmental Science", "Integrated Science II or above", "Integrated Science I", "Principles of Technology", "Physics I", "Chemistry I", "Biology I", "a biological sciences course", "Earth Science", "an earth or environmental science course", "Life Science", "Physical Science", "a physical science course", "General Science".

Variable: not delivered, but used to help link students and science teachers
1=Mr.
2=Mrs.
3=Ms.
4=Miss
5=Dr.

Variable: not delivered, but used to help link students and science teachers
Item wording: First name:

Variable: not delivered, but used to help link students and science teachers
Item wording: Last name:

Routing: go to S1 D11.

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Screen: S1 D11
Question wording: How much do you agree or disagree with the following statements about [your science teacher]? Remember, none of your teachers or your principal will see any of the answers you provide. Your science teacher...
Note: Question wording was customized in the survey instrument such that the name of the respondent's science teacher (if available) was displayed in place of "your science teacher".

Variable: S1STCHVALUES
Item wording: values and listens to students' ideas.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1STCHRESPCT
Item wording: treats students with respect.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1STCHFAIR
Item wording: treats every student fairly.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1STCHCONF
Item wording: thinks every student can be successful.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1STCHMISTKE
Item wording: thinks mistakes are okay as long as all students learn.
1=Strongly agree

2=Agree
3=Disagree
4=Strongly disagree

Variable: S1STCHTREAT
Item wording: treats some kids better than other kids.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1STCHINTRST
Item wording: makes science interesting.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1STCHMFDIFF
Item wording: treats males and females differently.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1STCHEASY
Item wording: makes science easy to understand.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: If Y_SGRP=1 then go to Introduction to Section E;
Else if Y_SGRP=2 then go to Introduction to Section C.
Note: So as to more evenly distribute item non-response resulting from an inability to complete the student questionnaire within the allotted time, the survey instrument rotated the order in which certain sections of the student questionnaire were administered. Y_SGRP=1 indicates that student questionnaire sections were administered in the following order: A, B, C, D, E, F, G; Y_SGRP=2 indicates that the student questionnaire sections were administered in the following order: A, B, D, C, G, F, E.
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Section E: Home and School

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Screen: Introduction to Section E
Question wording: Now we are going to ask you a few questions about your experiences at home and in school.
Routing: Go to S1 E01.
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Screen: S1 E01
Question wording: How much do you agree or disagree with the following statements about your current school?

Variable: S1SAFE
Item wording: You feel safe at this school
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1PROUD
Item wording: You feel proud being part of this school
1=Strongly agree
~~~~~~

2=Agree
3=Disagree
4=Strongly disagree

Variable: S1TALKPROB
Item wording: There are always teachers or other adults in your school that you can talk to if you have a problem
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1SCHWASTE
Item wording: School is often a waste of time
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1GOODGRADES
Item wording: Getting good grades in school is important to you
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: Go to S1 E02.

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Screen: S1 E02
Question wording: How often do you...

Variable: S1NOHWDN
Item wording: go to class without your homework done?
1=Never
2=Rarely
3=Sometimes
4=Often

Variable: S1NOPAPER
Item wording: go to class without pencil or paper?
1=Never
2=Rarely
3=Sometimes
4=Often

Variable: S1NOBOOKS
Item wording: go to class without books?
1=Never
2=Rarely
3=Sometimes
4=Often

Variable: S1LATE
Item wording: go to class late?
1=Never
2=Rarely
3=Sometimes
4=Often

Routing: Go to S1 E03.

~~~~~~

Screen: S1 E03
Question wording: Not including lunch or study periods, what is your favorite school subject?

Variable: S1FAVSUBJ
1=English

2=Foreign Language
3=Science
4=Art
5=Music
6=Mathematics
7=Physical Education or Gym
8=Religion
9=Health Education
10=Computer Education or Computer Science
11=Social Studies, History, Government, or Civics
12=Career preparation class such as health professions, business, or culinary arts
13=Other

Routing: Go to S1 E04.

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Screen: S1 E04

Question wording: Not including lunch or study periods, what is your least favorite school subject?

Variable: S1LEASTSUBJ

1=English
2=Foreign Language
3=Science
4=Art
5=Music
6=Mathematics
7=Physical Education or Gym
8=Religion
9=Health Education
10=Computer Education or Computer Science
11=Social Studies, History, Government, or Civics
12=Career preparation class such as health professions, business, or culinary arts
13=Other

Routing: Go to S1 E05.

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Screen: S1 E05

Question wording: How much do you agree or disagree with the following statements?

Variable: S1PAYOFF

Item wording: Studying in school rarely pays off later with good jobs

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1GETINTOCLG

Item wording: Even if you study, you will not be able to get into college

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1AFFORD

Item wording: Even if you study, your family cannot afford to pay for you to attend college

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1WORKING

Item wording: Working is more important for you than attending college

1=Strongly agree
2=Agree

3=Disagree
4=Strongly disagree

Routing: Go to S1 E06.

~~~~~~

Screen: S1 E06

Question wording: Since the beginning of the last school year (2008-2009), which of the following people have you talked with about which math courses to take this year?
(Check all that apply.)

Variable: S1MOMTALKM
Item wording: Your mother or female guardian
0=No
1=Yes

Variable: S1DADTALKM
Item wording: Your father or male guardian
0=No
1=Yes

Variable: S1FRNDTALKM
Item wording: Your friends
0=No
1=Yes

Variable: S1TCHTALKM
Item wording: A favorite teacher
0=No
1=Yes

Variable: S1CNSLTALKM
Item wording: A school counselor
0=No
1=Yes

Variable: S1NOTALKM
Item wording: None of these people
0=No
1=Yes

Routing: go to S1 E07.

Note: S1MOMTALKM was not administered to respondents who, in the locating section of the student questionnaire, indicated that they did not have a living mother or female guardian; likewise, S1DADTALKM was not administered to respondents who, in the locating section of the student questionnaire, indicated that they did not have a living father or male guardian.

~~~~~~

Screen: S1 E07

Question wording: Since the beginning of the last school year (2008-2009), which of the following people have you talked with about which science courses to take this year?
(Check all that apply.)

Variable: S1MOMTALKS
Item wording: Your mother or female guardian
0=No
1=Yes

Variable: S1DADTALKS
Item wording: Your father or male guardian
0=No
1=Yes

Variable: S1FRNDTALKS
Item wording: Your friends
0=No
1=Yes

Variable: S1TCHTALKS
Item wording: A favorite teacher

0=No
1=Yes

Variable: S1CNSLTALKS
Item wording: A school counselor
0=No
1=Yes

Variable: S1NOTALKS
Item wording: None of these people
0=No
1=Yes

Routing: go to S1 E08.

Note: S1MOMTALKS was not administered to respondents who, in the locating section of the student questionnaire, indicated that they did not have a living mother or female guardian; likewise, S1DADTALKS was not administered to respondents who, in the locating section of the student questionnaire, indicated that they did not have a living father or male guardian.

~~~~~~

Screen: S1 E08

Question wording: Since the beginning of the last school year (2008-2009), which of the following people have you talked with about which courses to take this year other than math and science courses? (Check all that apply.)

Variable: S1MOMTALKOTH
Item wording: Your mother or female guardian
0=No
1=Yes

Variable: S1DADTALKOTH
Item wording: Your father or male guardian
0=No
1=Yes

Variable: S1FRNDTLKOTH
Item wording: Your friends
0=No
1=Yes

Variable: S1TCHTALKOTH
Item wording: A favorite teacher
0=No
1=Yes

Variable: S1CNSLTLKOTH
Item wording: A school counselor
0=No
1=Yes

Variable: S1NOTALKOTH
Item wording: None of these people
0=No
1=Yes

Routing: go to S1 E09.

Note: S1MOMTALKOTH was not administered to respondents who, in the locating section of the student questionnaire, indicated that they did not have a living mother or female guardian; likewise, S1DADTALKOTH was not administered to respondents who, in the locating section of the student questionnaire, indicated that they did not have a living father or male guardian.

~~~~~~

Screen: S1 E09

Question wording: Since the beginning of the last school year (2008-2009), which of the following people have you talked with about going to college?
(Check all that apply.)

Variable: S1MOMTALKCLG
Item wording: Your mother or female guardian

0=No
1=Yes

Variable: S1DADTALKCLG
Item wording: Your father or male guardian
0=No
1=Yes

Variable: S1FRNDTLKCLG
Item wording: Your friends
0=No
1=Yes

Variable: S1TCHTALKCLG
Item wording: A favorite teacher
0=No
1=Yes

Variable: S1CNSLTLKCLG
Item wording: A school counselor
0=No
1=Yes

Variable: S1NOTALKCLG
Item wording: None of these people
0=No
1=Yes

Routing: go to S1 E10.

Note: S1MOMTALKCLG was not administered to respondents who, in the locating section of the student questionnaire, indicated that they did not have a living mother or female guardian; likewise, S1DADTALKCLG was not administered to respondents who, in the locating section of the student questionnaire, indicated that they did not have a living father or male guardian.

~~~~~~

Screen: S1 E10

Question wording: Since the beginning of the last school year (2008-2009), which of the following people have you talked with about possible jobs or careers when you are an adult?
(Check all that apply.)

Variable: S1MOMTALKJOB
Item wording: Your mother or female guardian
0=No
1=Yes

Variable: S1DADTALKJOB
Item wording: Your father or male guardian
0=No
1=Yes

Variable: S1FRNDTLKJOB
Item wording: Your friends
0=No
1=Yes

Variable: S1TCHTALKJOB
Item wording: A favorite teacher
0=No
1=Yes

Variable: S1CNSLTLKJOB
Item wording: A school counselor
0=No
1=Yes

Variable: S1NOTALKJOB
Item wording: None of these people
0=No
1=Yes
~~~~~~

Routing: go to S1 E11.
Note: S1MOMTALKJOB was not administered to respondents who, in the locating section of the student questionnaire, indicated that they did not have a living mother or female guardian; likewise, S1DADTALKJOB was not administered to respondents who, in the locating section of the student questionnaire, indicated that they did not have a living father or male guardian.
~~~~~~

Screen: S1 E11
Question wording: Since the beginning of the last school year (2008-2009), which of the following people have you talked with about personal problems?
(Check all that apply.)

Variable: S1MOMTALKPRB
Item wording: Your mother or female guardian
0=No
1=Yes

Variable: S1DADTALKPRB
Item wording: Your father or male guardian
0=No
1=Yes

Variable: S1FRNDTLKPRB
Item wording: Your friends
0=No
1=Yes

Variable: S1TCHTALKPRB
Item wording: A favorite teacher
0=No
1=Yes

Variable: S1CNSLTLKPRB
Item wording: A school counselor
0=No
1=Yes

Variable: S1NOTALKPRB
Item wording: None of these people
0=No
1=Yes

Routing: go to S1 E12.
Note: S1MOMTALKPRB was not administered to respondents who, in the locating section of the student questionnaire, indicated that they did not have a living mother or female guardian; likewise, S1DADTALKPRB was not administered to respondents who, in the locating section of the student questionnaire, indicated that they did not have a living father or male guardian.
~~~~~~

Screen: S1 E12
Question wording: As far as you know, are the following statements true or false for your closest friend?
Your closest friend...

Variable: S1FRNDGRADES
Item wording: gets good grades.
1=True
2=False

Variable: S1FRNDSCHOOL
Item wording: is interested in school.
1=True
2=False

Variable: S1FRNDCLASS
Item wording: attends classes regularly.
1=True
2=False

Variable: S1FRNDCLG

Item wording: plans to go to college.
1=True
2=False

Routing: go to S1 E13.

~~~~~~

Screen: S1 E13

Question wording: How much do you agree or disagree with each of the following statements?
If you spend a lot of time and effort in your math and science classes...

Variable: S1TEFRNDS
Item wording: you won't have enough time for hanging out with your friends.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1TEACTIV
Item wording: you won't have enough time for extracurricular activities.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1TEPOPULAR
Item wording: you won't be popular.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: S1TEMAKEFUN
Item wording: people will make fun of you.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: Go to S1 E14.

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Screen: S1 E14

Question wording: In general, how would you compare males and females in each of the following subjects?

Variable: S1ENGCOMP
Item wording: English or language arts
1=Females are much better
2=Females are somewhat better
3=Females and males are the same
4=Males are somewhat better
5=Males are much better

Variable: S1MTHCOMP
Item wording: Math
1=Females are much better
2=Females are somewhat better
3=Females and males are the same
4=Males are somewhat better
5=Males are much better

Variable: S1SCICOMP
Item wording: Science
1=Females are much better
2=Females are somewhat better
3=Females and males are the same

4=Males are somewhat better
5=Males are much better

Routing: go to S1 E15.

~~~~~~

Screen: S1 E15

Question wording: During a typical weekday during the school year how many hours do you spend...

Variable: S1HRMHOMEWK

Item wording: working on math homework and studying for math class?

1=Less than 1 hour
2=1 to 2 hours
3=2 to 3 hours
4=3 to 4 hours
5=4 to 5 hours
6=5 or more hours

Variable: S1HRSHOMEWK

Item wording: working on science homework and studying for science class?

1=Less than 1 hour
2=1 to 2 hours
3=2 to 3 hours
4=3 to 4 hours
5=4 to 5 hours
6=5 or more hours

Variable: S1HROTHHOMWK

Item wording: working on homework and studying for the rest of your classes?

1=Less than 1 hour
2=1 to 2 hours
3=2 to 3 hours
4=3 to 4 hours
5=4 to 5 hours
6=5 or more hours

Variable: S1HRACTIVITY

Item wording: participating in extracurricular activities such as sports teams, clubs, band, student government?

1=Less than 1 hour
2=1 to 2 hours
3=2 to 3 hours
4=3 to 4 hours
5=4 to 5 hours
6=5 or more hours

Variable: S1HRWORK

Item wording: working for pay not including chores or jobs you do around your house?

1=Less than 1 hour
2=1 to 2 hours
3=2 to 3 hours
4=3 to 4 hours
5=4 to 5 hours
6=5 or more hours

Variable: S1HRFAMILY

Item wording: spending time with your family?

1=Less than 1 hour
2=1 to 2 hours
3=2 to 3 hours
4=3 to 4 hours
5=4 to 5 hours
6=5 or more hours

Variable: S1HRFRIENDS
~~~~~~

Item wording: hanging out or socializing with your friends?
1=Less than 1 hour
2=1 to 2 hours
3=2 to 3 hours
4=3 to 4 hours
5=4 to 5 hours
6=5 or more hours

Variable: S1HRTV
Item wording: watching television or movies?
1=Less than 1 hour
2=1 to 2 hours
3=2 to 3 hours
4=3 to 4 hours
5=4 to 5 hours
6=5 or more hours

Variable: S1HRVIDEO
Item wording: playing video games?
1=Less than 1 hour
2=1 to 2 hours
3=2 to 3 hours
4=3 to 4 hours
5=4 to 5 hours
6=5 or more hours

Variable: S1HRONLINE
Item wording: chatting or surfing online?
1=Less than 1 hour
2=1 to 2 hours
3=2 to 3 hours
4=3 to 4 hours
5=4 to 5 hours
6=5 or more hours

Routing: Go to S1 E16.
Note: S1HRMHOMEWK was not administered to respondents who previously indicated that they were not taking a math class in fall 2009; likewise, S1HRSHOMEWK was not administered to respondents who previously indicated that they were not taking a science class in fall 2009.
~~~~~~

Screen: S1 E16
Question wording: Are you participating in any of the following programs?

Variable: S1TALENTSRCH
Item wording: Talent Search
1=Yes
0=No

Variable: S1UPWARDBND
Item wording: Upward Bound
1=Yes
0=No

Variable: S1GEARUP
Item wording: Gear Up
1=Yes
0=No

Variable: S1AVID
Item wording: AVID (Advancement in Individual Determination)
1=Yes
0=No

Variable: S1MESA
Item wording: MESA (Mathematics, Engineering, Science Achievement)
~~~~~~

1=Yes
0=No

Routing: If Y_SGRP=1 then go to Introduction to Section F;
Else if Y_SGRP=2 then go to END.
Note: So as to more evenly distribute item non-response resulting from an inability to complete the student questionnaire within the allotted time, the survey instrument rotated the order in which certain sections of the student questionnaire were administered. Y_SGRP=1 indicates that student questionnaire sections were administered in the following order: A, B, C, D, E, F, G; Y_SGRP=2 indicates that the student questionnaire sections were administered in the following order: A, B, D, C, G, F, E.
~~~~~~

Section F: Plans for Postsecondary Education

~~~~~~
Screen: Introduction to Section F
Question wording: Now we are going to ask you a few questions about your plans for school and college as you progress through high school.
Routing: Go to S1 F01.
~~~~~~
Screen: S1 F01
Question wording: Including this year, how many years of math do you expect to take during high school?

Variable: S1MYRS
1=One year
2=Two years
3=Three years
4=Four or more years

Routing: if (S1MYRS=(1 or missing) and S1MFALL09=(1 or missing)) go to S1 F04;
else go to S1 F02.
~~~~~~
Screen: S1 F02
Question wording: What are the reasons you plan to take more math courses during high school? (Check all that apply.)

Variable: S1MREASREQ
Item wording: Taking more math courses is required to graduate
0=No
1=Yes

Variable: S1MREASPAR
Item wording: Your parents will want you to
0=No
1=Yes

Variable: S1MREASTCHR
Item wording: Your teachers will want you to
0=No
1=Yes

Variable: S1MREASCNSL
Item wording: Your school counselor will want you to
0=No
1=Yes

Variable: S1MREASGOOD
Item wording: You are good at math
0=No
1=Yes

Variable: S1MREASJOB
Item wording: You will need more math courses for the type of career you want
0=No

1=Yes
Variable: S1MREASLIKE
Item wording: Most students who are like you take a lot of math courses
0=No
1=Yes
Variable: S1MREASENJOY
Item wording: You enjoy studying math
0=No
1=Yes
Variable: S1MREASCLG
Item wording: Taking more math courses will be useful for getting into college
0=No
1=Yes
Variable: S1MREASUSE
Item wording: Taking more math courses will be useful in college
0=No
1=Yes
Variable: S1MREASFRND
Item wording: Your friends are going to take more math courses
0=No
1=Yes
Variable: S1MREASOTH
Item wording: Some other reason
0=No
1=Yes
Variable: S1MREASNOT
Item wording: You don't know why, you just probably will
0=No
1=Yes
Routing: Go to S1 F03.
~~~~~~
Screen: S1 F03
Question wording: Do you plan to enroll in...
Variable: S1APCALC
Item wording: an Advanced Placement (AP) calculus course?
1=Yes
2=No
3=You haven't decided yet
4=You don't know what this is
Variable: S1IBCALC
Item wording: an International Baccalaureate (IB) calculus course?
1=Yes
2=No
3=You haven't decided yet
4=You don't know what this is
Routing: Go to S1 F04.
~~~~~~
Screen: S1 F04
Question wording: Including this year, how many years of science do you expect to take during high school?
Variable: S1SYRS
1=One year
2=Two years
3=Three years
4=Four or more years
Routing: if (S1SYRS=(1 or missing) and S1SFALL09=(1 or missing)) go to S1 F07;

else go to S1 F05.
~~~~~~

Screen: S1 F05
Question wording: What are the reasons you plan to take more science courses during high school? (Check all that apply.)

Variable: S1SREASREQ
Item wording: Taking more science courses is required to graduate
0=No
1=Yes

Variable: S1SREASPAR
Item wording: Your parents will want you to
0=No
1=Yes

Variable: S1SREASTCHR
Item wording: Your teachers will want you to
0=No
1=Yes

Variable: S1SREASCNSL
Item wording: Your school counselor will want you to
0=No
1=Yes

Variable: S1SREASGOOD
Item wording: You are good at science
0=No
1=Yes

Variable: S1SREASJOB
Item wording: You will need more science courses for the type of career you want
0=No
1=Yes

Variable: S1SREASLIKE
Item wording: Most students who are like you take a lot of science courses
0=No
1=Yes

Variable: S1SREASENJOY
Item wording: You enjoy studying science
0=No
1=Yes

Variable: S1SREASCLG
Item wording: Taking more science courses will be useful for getting into college
0=No
1=Yes

Variable: S1SREASUSE
Item wording: Taking more science courses will be useful in college
0=No
1=Yes

Variable: S1SREASFRND
Item wording: Your friends are going to take more science courses
0=No
1=Yes

Variable: S1SREASOTH
Item wording: Some other reason
0=No
1=Yes

Variable: S1SREASNOT
Item wording: You don't know why, you just probably will
0=No
~~~~~~

1=Yes
Routing: go to S1 F06.
~~~~~~
Screen: S1 F06
Question wording: Do you plan to enroll in...
Variable: S1APS
Item wording: an Advanced Placement (AP) science course?
1=Yes
2=No
3=You haven't decided yet
4=You don't know what this is
Variable: S1IBSCI
Item wording: an International Baccalaureate (IB) science course?
1=Yes
2=No
3=You haven't decided yet
4=You don't know what this is
Routing: go to S1 F07.
~~~~~~
Screen: S1 F07
Question wording: An "education plan" or a "career plan" is a series of activities and courses that you will need to complete in order to get into college or be successful in your future career.
Have you put together...
Variable: S1PLAN
1=a combined education and career plan
2=an education plan only
3=a career plan only or
4=none of these?
Routing: If S1PLAN = 1, 2, or 3 go to S1 F08;
Else go to S1 F09.
~~~~~~
Screen: S1 F08
Question wording: Who helped you put your [education and career/education/career] plan together? (Check all that apply.)
Note: Question wording was customized in the survey instrument based on whether the respondent indicated they had put together a combined education and career plan, an education plan only, or a career plan only.
Variable: S1PLANCNSL
Item wording: A counselor
0=No
1=Yes
Variable: S1PLANTCHR
Item wording: A teacher
0=No
1=Yes
Variable: S1PLANPRNT
Item wording: Your parents
0=No
1=Yes
Variable: S1PLANOTH
Item wording: Someone else
0=No
1=Yes
Variable: S1PLANNOONE
Item wording: No one
0=No
~~~~~~

1=Yes
Routing: Go to S1 F09.
~~~~~~
Screen: S1 F09
Question wording: Have you taken or are you planning to take...
Variable: S1PSAT
Item wording: the PSAT?
0=No
1=Yes
2=You haven't decided yet
3=You don't know what this is
Variable: S1SAT
Item wording: the SAT?
0=No
1=Yes
2=You haven't decided yet
3=You don't know what this is
Variable: S1ACT
Item wording: American College Testing Service (ACT) test?
0=No
1=Yes
2=You haven't decided yet
3=You don't know what this is
Variable: S1AP
Item wording: an Advanced Placement (AP) test?
0=No
1=Yes
2=You haven't decided yet
3=You don't know what this is
Variable: S1IBTEST
Item wording: a test for the International Baccalaureate (IB)?
0=No
1=Yes
2=You haven't decided yet
3=You don't know what this is
Routing: Go to S1 F10.
~~~~~~
Screen: S1 F10
Question wording: How sure are you that you will graduate from high school?
Variable: S1SUREHSGRAD
1=Very sure you'll graduate
2=You'll probably graduate
3=You probably won't graduate
4=Very sure you won't graduate
Routing: if Y_SGRP=1 go to Introduction to Section G;
If Y_SGRP=2 go to Introduction to Section E.
Note: So as to more evenly distribute item non-response resulting from an inability to complete the student questionnaire within the allotted time, the survey instrument rotated the order in which certain sections of the student questionnaire were administered. Y_SGRP=1 indicates that student questionnaire sections were administered in the following order: A, B, C, D, E, F, G; Y_SGRP=2 indicates that the student questionnaire sections were administered in the following order: A, B, D, C, G, F, E.

~~~~~~

Section G: Life After High School

~~~~~~
Screen: Introduction to Section G
Question wording: Now we are going to ask you a few questions about your future life after high school. We understand that you may not have thought a lot about some of these questions or you may not have all of the information right now. If you are unsure about how to answer a question, please make your best guess. Your thoughts are very important to us..
Routing: Go to S1 G01.
~~~~~~
Screen: S1 G01
Question wording: As things stand now, how far in school do you think you will get?
Variable: S1EDUEXPECT
1=Less than high school
2=High school diploma or GED
3=Start but not complete an Associate's degree
4=Complete an Associate's degree
5=Start but not complete a Bachelor's degree
6=Complete a Bachelor's degree
7=Start but not complete a Master's degree
8=Complete a Master's degree
9=Start but not complete a Ph.D., M.D., law degree, or other high level professional degree
10=Complete a Ph.D., M.D., law degree, or other high level professional degree
11=Don't know
Routing: If S1EDUEXPECT =5,6,7,8,9,10 then go to S1 G02; else go to S1 G03
~~~~~~
Screen: S1 G02
Question wording: How sure are you that you will go on to college to pursue a Bachelor's degree after you leave high school?
Variable: S1SURECLG
1=Very sure you'll go
2=You'll probably go
3=You probably won't go
4=Very sure you won't go
Routing: Go to S1 G03.
~~~~~~
Screen: S1 G03
Question wording: Whatever your plans, do you think you have the ability to complete a Bachelor's degree?
Variable: S1ABILITYBA
4=Definitely
3=Probably
2=Probably not
1=Definitely not
Routing: go to S1 G04.
~~~~~~
Screen: S1 G04
Question wording: Would you be disappointed if you did not graduate from college with a Bachelor's degree by the time you are 30 years old?
Variable: S1BAAGE30
1=Yes
0=No
Routing: Go to S1 G05.

~~~~~~

Screen: S1 G05
Question wording: What do you plan to do during your first year after high school?
(check all that apply.)

Variable: S1FYAA
Item wording: Enroll in an Associate's degree program in a two-year community college or technical institute
0=No
1=Yes

Variable: S1FYBA
Item wording: Enroll in a Bachelor's degree program in a college or university
0=No
1=Yes

Variable: S1FYLICENSE
Item wording: Obtain a license or certificate in a career field
0=No
1=Yes

Variable: S1FYAPPR
Item wording: Attend a registered apprenticeship program
0=No
1=Yes

Variable: S1FYMILITARY
Item wording: Join the armed services
0=No
1=Yes

Variable: S1FYJOB
Item wording: Get a job
0=No
1=Yes

Variable: S1FYFAMILY
Item wording: Start a family
0=No
1=Yes

Variable: S1FYTRAVEL
Item wording: Travel
0=No
1=Yes

Variable: S1FYVOLUN
Item wording: Do volunteer or missionary work
0=No
1=Yes

Variable: S1FYNOTSURE
Item wording: Not sure what you want to do
0=No
1=Yes

Routing: IF S1FYBA = 1, go to S1 G06;
ELSE go to S1 G15.

~~~~~~

Screen: S1 G06
Question wording: Are you more likely to attend a public or private 4-year college, or have you not thought about this yet?

Variable: S1PUBPRV
1=Public
2=Private
3=Haven't thought about this

Routing: IF 1 go to S1 G07;

IF 2 go to S1 G08;
IF 3 or missing go to S1 G15.
~~~~~~

Screen: S1 G07
Question wording: Are you more likely to attend an in-state or out of state 4-year college, or have you not thought about it yet?
Variable: S1INOUTST
1=In-state
2=Out of state
3=Haven't thought about this
Routing: IF 1 or 2 go to S1 G08;
IF 3 or missing go to S1 G15.
~~~~~~

Screen: S1 G08
Question wording: Have you gotten information about the cost of tuition and mandatory fees at a specific [in-state public/out-of-state public/private] college?
Note: Question wording was customized in the survey instrument based on whether the respondent indicated they were more likely to attend an in-state public college, an out-of-state public college, or a private college.
Variable: S1TUITION
1=Yes
0=No
Routing: If S1TUITION = 0 or missing go to S1 G15;
Else if 1 and S1PUBPRV=1 and S1INOUTST=1 then go to S1 G09;
Else if 1 and S1PUBPRV=1 and S1INOUTST=2 then go to S1 G13;
Else if 1 and S1PUBPRV=2 then go to S1 G11;
Else go to S1 G15.
~~~~~~

Screen: S1 G09
Question wording: What is the cost of one year's tuition and mandatory fees at that public 4-year college in your state?
Include the cost of courses and required fees such as student activity fees and student health fees. Do not include optional expenses such as room and board.
Variable: S1COSTIN
Routing: If answered go to S1 G10;
Else go to S1 G18.
~~~~~~

Screen: S1 G10
Question wording: Is that tuition and mandatory fees only, or does that also include other fees such as room and board?
Variable: S1FEEIN
1=Tuition and mandatory fees only
2=Tuition, mandatory fees, and other fees
Routing: Go to S1 G18.
~~~~~~

Screen: S1 G11
Question wording: What is the cost of one year's tuition and mandatory fees at that private 4-year college?
Include the cost of courses and required fees such as student activity fees and student health fees. Do not include optional expenses such as room and board.
Variable: S1COSTPRV
Routing: If answer provided, go to S1 G12;
Else go to S1 G15.
~~~~~~

~~~~~~

Screen: S1 G12
Question wording: Is that tuition and mandatory fees only, or does that also include other fees such as room and board?
Variable: S1FEEPRV
1=Tuition and mandatory fees only
2=Tuition, mandatory fees, and other fees
Routing: Go to S1 G15.

~~~~~~

Screen: S1 G13
Question wording: What is the cost of one year's tuition and mandatory fees at that out-of-state public 4-year college?
Include the cost of courses and required fees such as student activity fees and student health fees. Do not include optional expenses such as room and board.
Variable: S1COSTOUT
Routing: If answer provided go to S1 G14;
Else go to S1 G15.

~~~~~~

Screen: S1 G14
Question wording: Is that tuition and mandatory fees only, or does that also include other fees such as room and board?
Variable: S1FEEOUT
1=Tuition and mandatory fees only
2=Tuition, mandatory fees, and other fees
Routing: Go to S1 G15.

~~~~~~

Screen: S1 G15
Question wording: What is your best estimate of the cost of one year's tuition and mandatory fees at a public 4-year college in your state?
Include the cost of courses and required fees such as student activity fees and student health fees. Do not include optional expenses such as room and board.
Variable: S1ESTIN
Routing: if missing go to S1 G18;
else go to S1 G16.

~~~~~~

Screen: S1 G16
Question wording: Is that tuition and mandatory fees only, or does that also include other fees such as room and board?
Variable: S1ESTFEE
Item wording: Is that tuition and mandatory fees only, or does that also include other fees such as room and board?
1=Tuition and mandatory fees only
2=Tuition, mandatory fees, and other fees
Routing: go to S1 G17.

~~~~~~

Screen: S1 G17
Question wording: How confident are you in the accuracy of your estimate of the cost of one year's tuition and mandatory fees at a public 4-year college in your state? Are you...
Variable: S1ESTCONF
1=very confident
2=somewhat confident or
3=not at all confident?
Routing: go to S1 G18.

~~~~~~

Screen: S1 G18
Question wording: As things stand now, what is the job or occupation that you expect or plan to have at age 30?
Variable: S1OCC30
Routing: If no response or doesn't know what occupation they expect/plan to have at age 30, then go to S1 G20;
Else go to S1 G19.

~~~~~~

Screen: S1 G19
Question wording: How much have you thought about this choice? Have you thought about it...
Variable: S1OCC30THINK
1=not at all
2=a little
3=somewhat or
4=a lot?
Routing: Go to S1 G20.

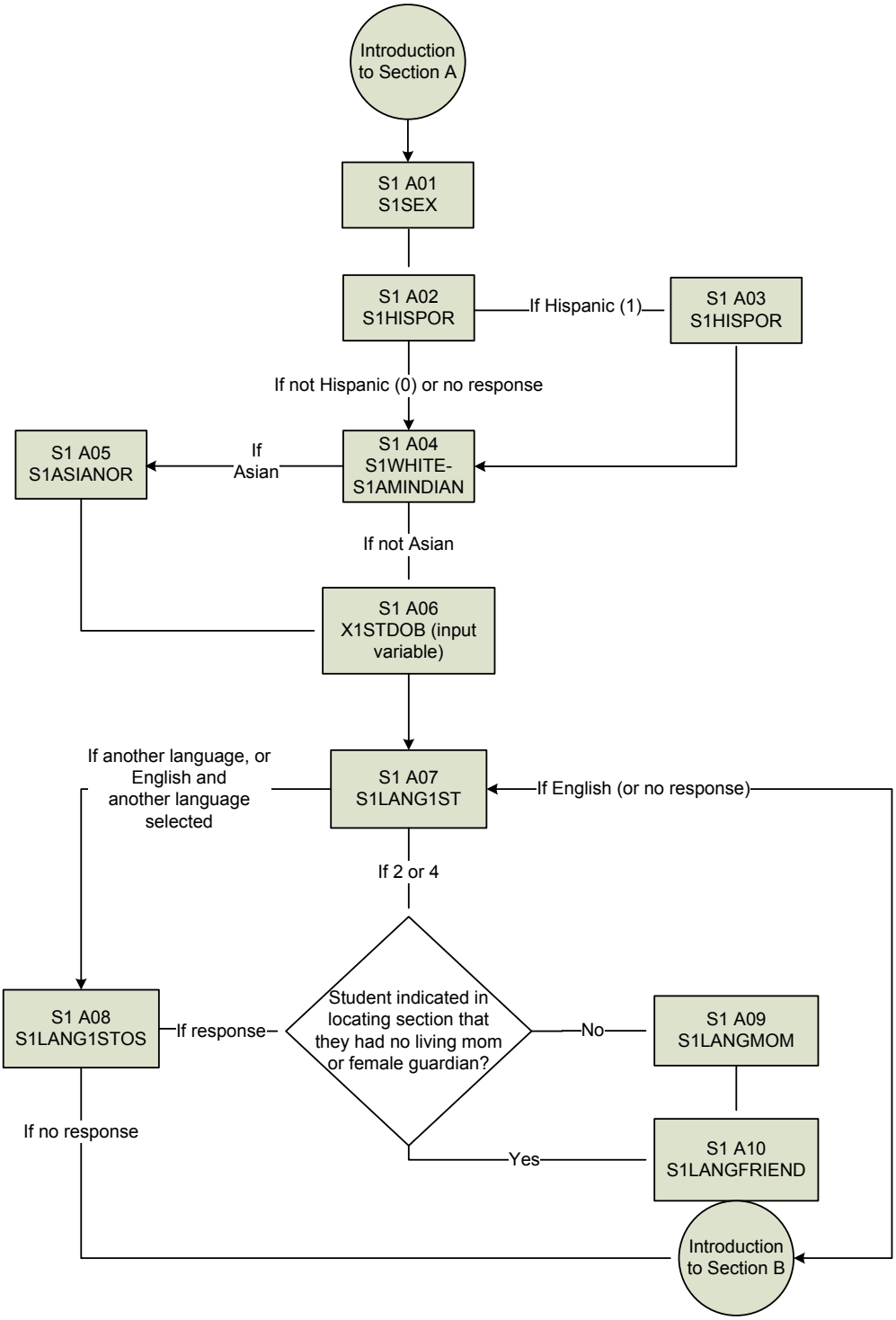
~~~~~~

Screen: S1 G20
Question wording: When you talk about your plans for the future, would you say you talk...
Variable: S1TALKFUTURE
1=mostly to your parents
2=more to your parents than your friends
3=to your parents and your friends about the same
4=more to your friends than your parents
5=mostly to your friends or
6=you don't talk to your parents or to your friends about your plans for the future?
Routing: If Y_SGRP=1 then go to END;
If Y_SGRP=2 then go to Introduction to Section F.
Note: So as to more evenly distribute item non-response resulting from an inability to complete the student questionnaire within the allotted time, the survey instrument rotated the order in which certain sections of the student questionnaire were administered. Y_SGRP=1 indicates that student questionnaire sections were administered in the following order: A, B, C, D, E, F, G; Y_SGRP=2 indicates that the student questionnaire sections were administered in the following order: A, B, D, C, G, F, E.

~~~~~~

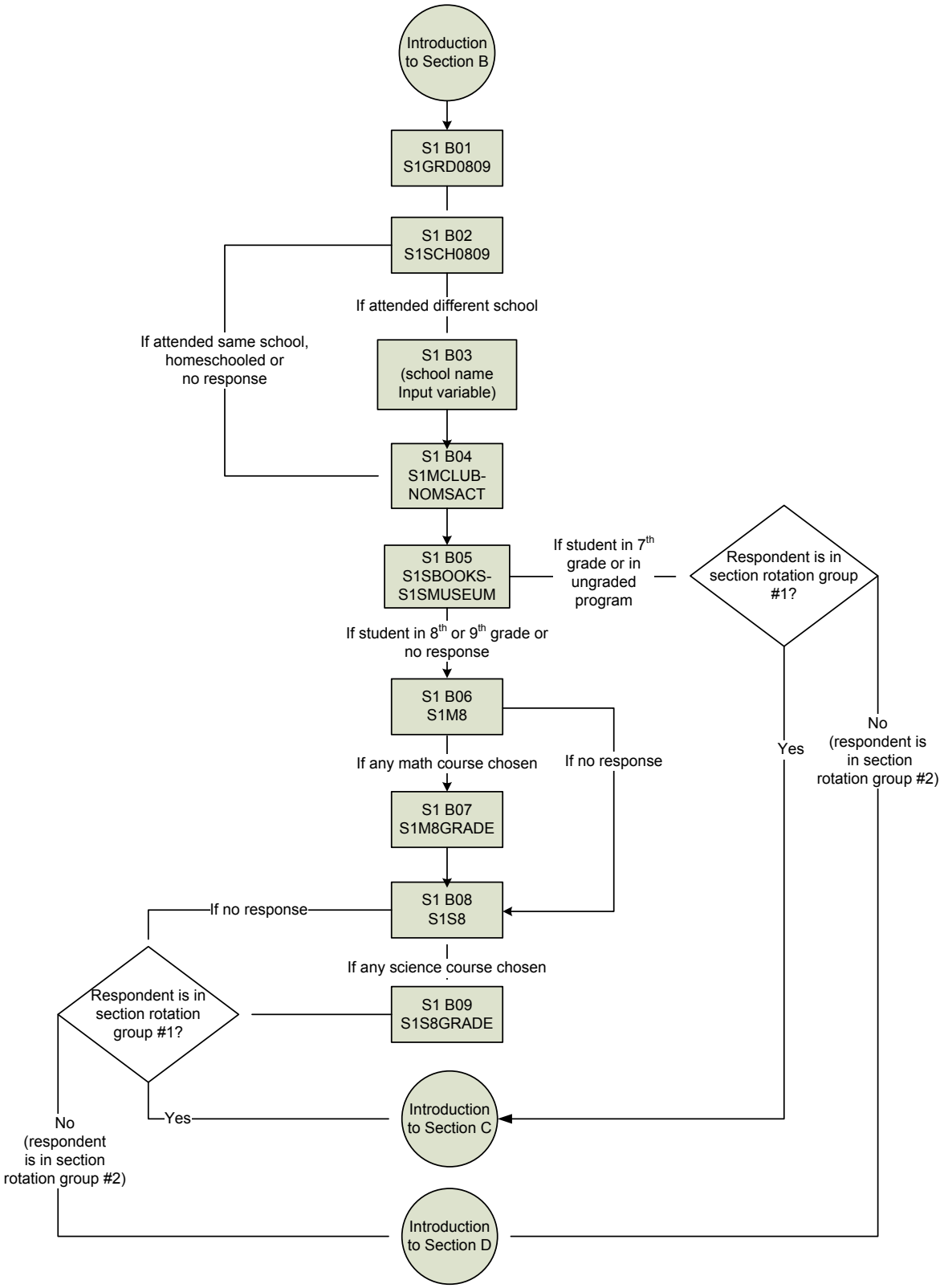
Student Flowchart

HSLS Student Questionnaire Flowchart with Form Names
Section A



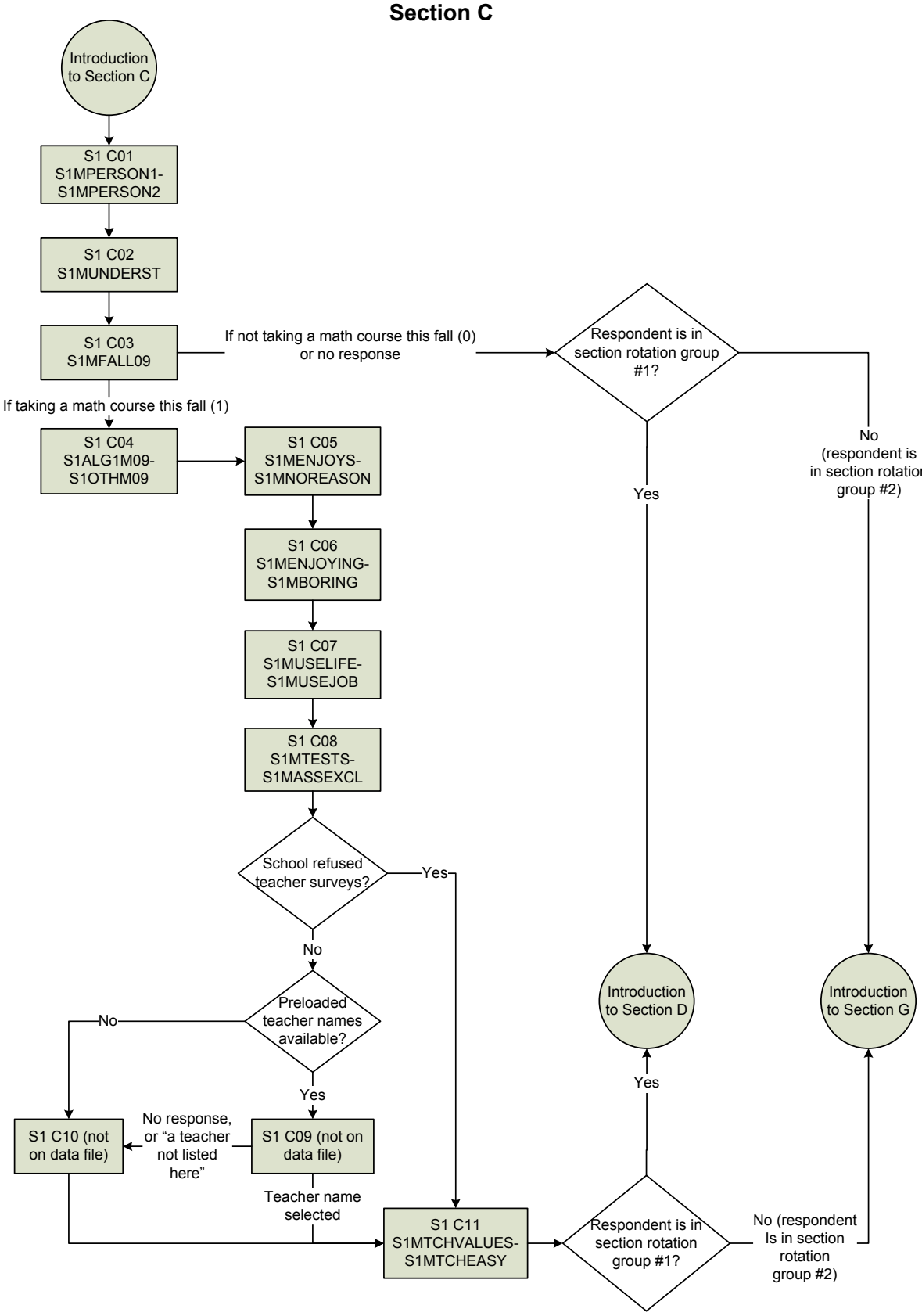
HSLS Student Questionnaire Flowchart with Form Names

Section B

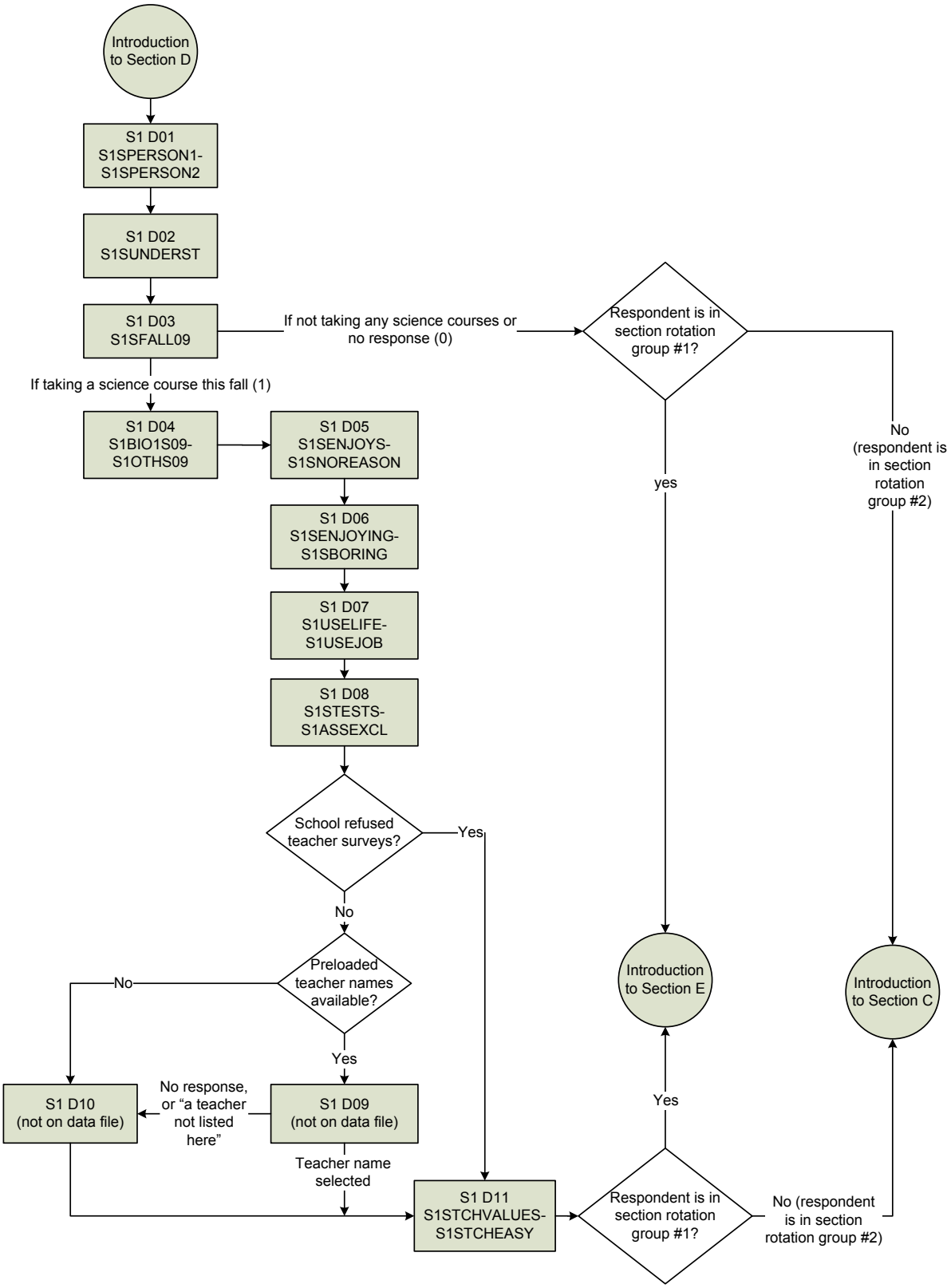


HSLS Student Questionnaire Flowchart with Form Names

Section C

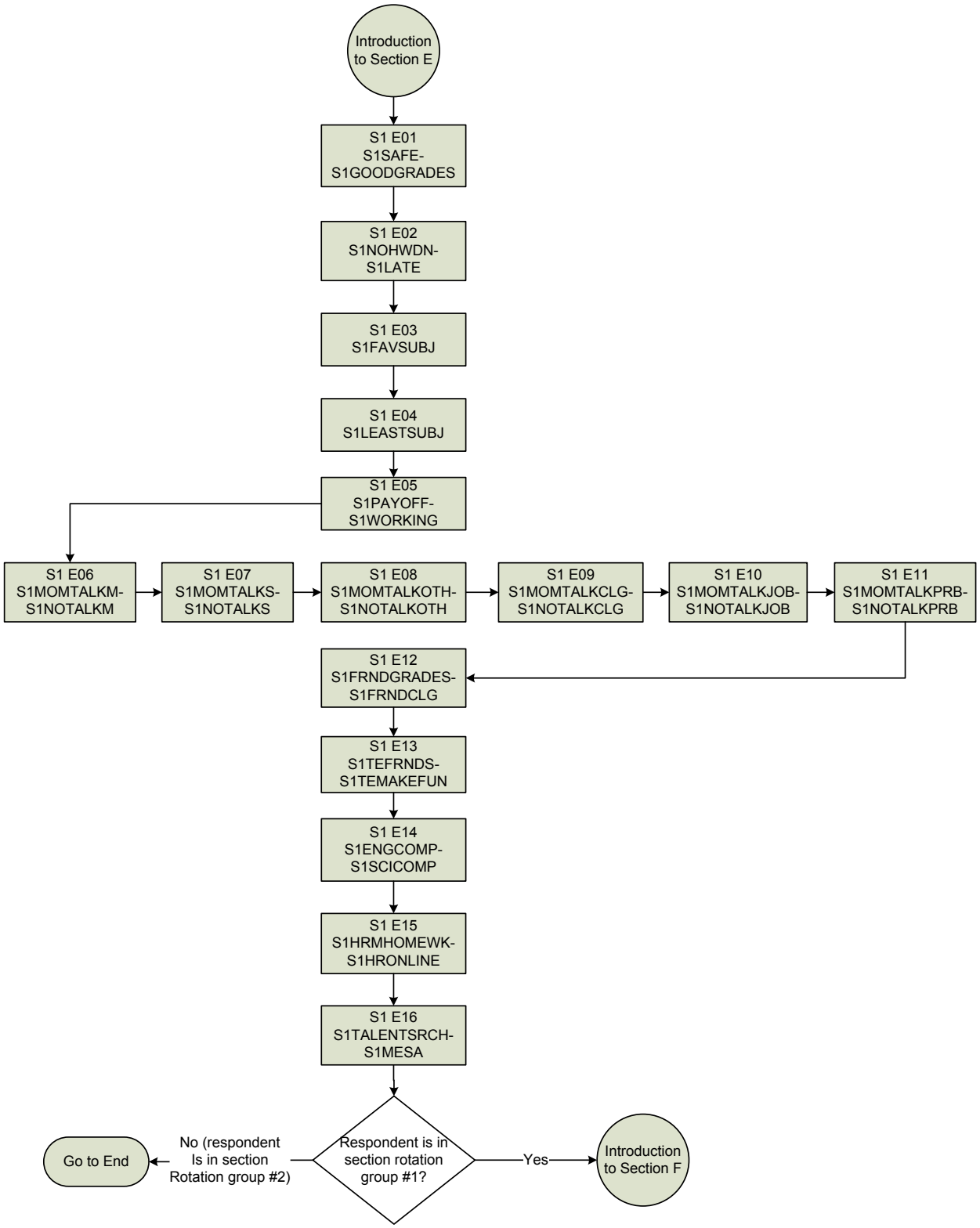


HSLS Student Questionnaire Flowchart with Form Names
Section D

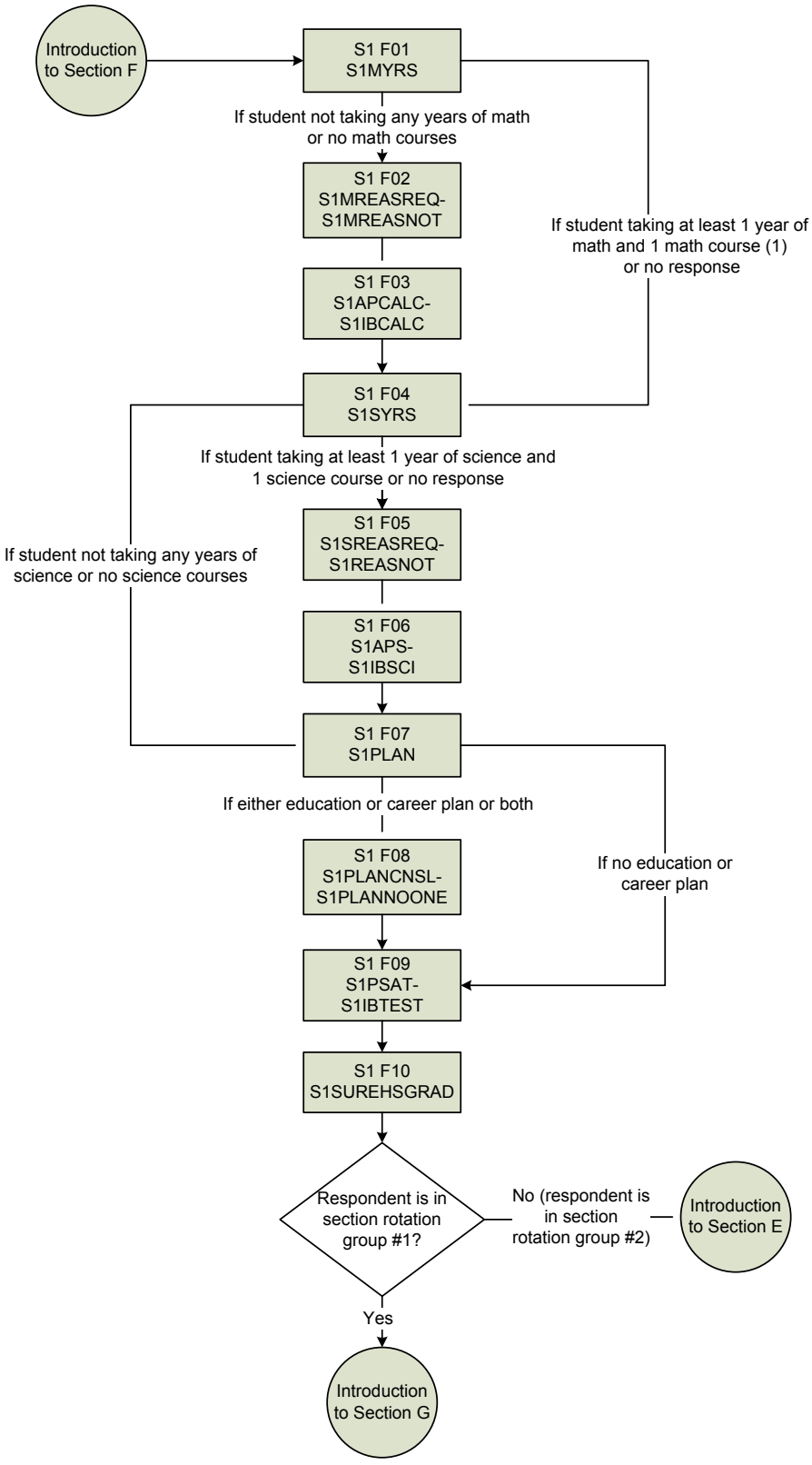


HSLS Student Questionnaire Flowchart with Form Names

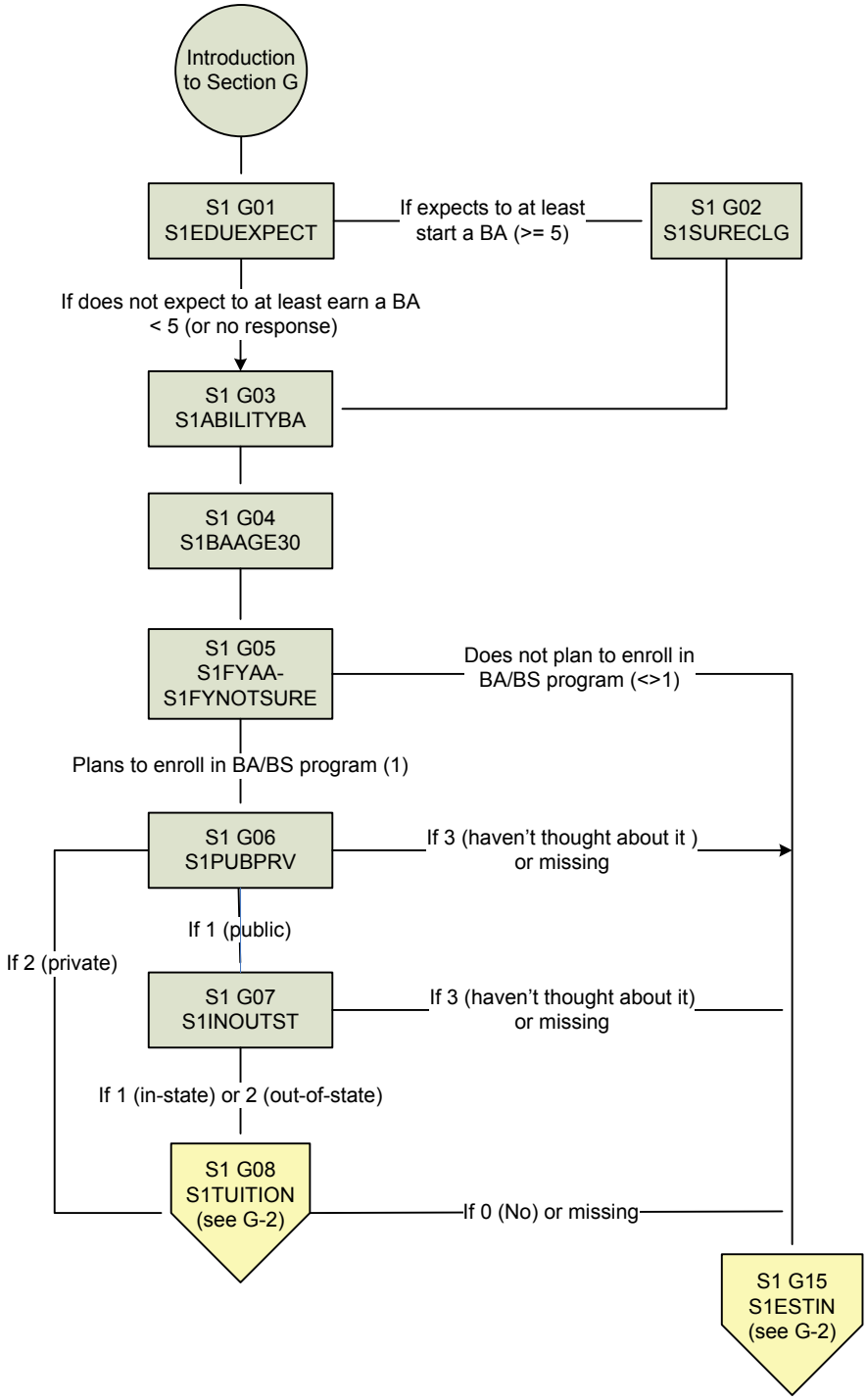
Section E



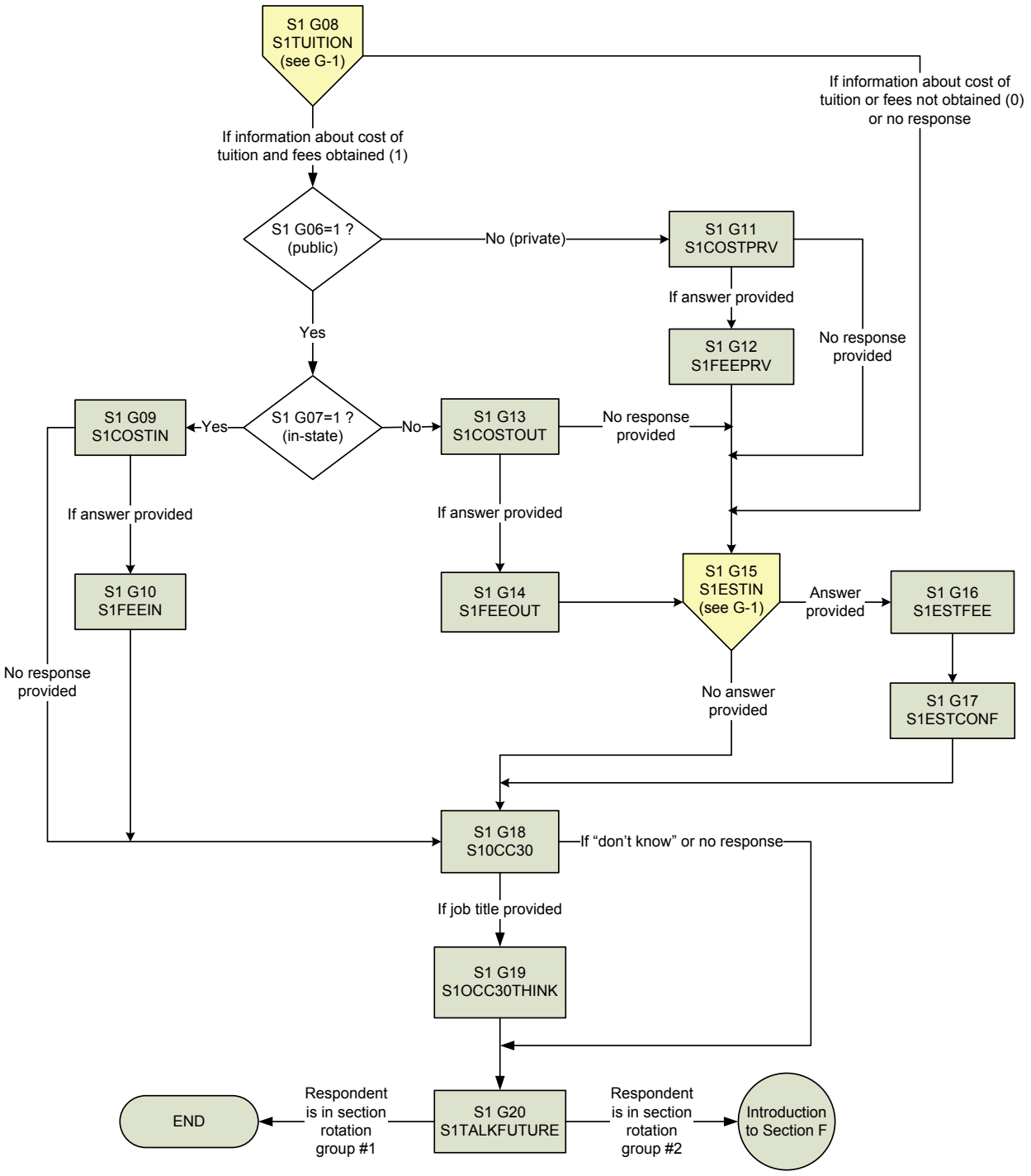
HSLS Student Questionnaire Flowchart with Form Names
Section F



HSLS Student Questionnaire Flowchart with Form Names
Section G-1



HSLS Student Questionnaire Flowchart with Form Names
Section G-2



Parent Questionnaire and Flowchart

Section A: Family Structure

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Screen: P1 A01A
Pre-routing: If pre-loaded gender not available, skip P1 A01A and go to P1A01B.
Question wording: Just to confirm, our records indicate that [your 9th grader] is [male/female]. Is this correct?
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader"; question wording was also customized based on whether the sample member's school indicated the sample member was male or female.
Variable: not delivered as an individual variable, but used as an input to composite variable X1SEX
1=Yes
0=No
Routing: Go to Introduction to Section A.

~~~~~~

Screen: P1 A01B
Question wording: What is [your 9th grader]'s sex?
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".
Variable: not delivered as an individual variable, but used as an input to composite variable X1SEX
1=Male
2=Female
Routing: Go to Introduction to Section A.

~~~~~~

Screen: Introduction to Section A
Question wording: Now we have some questions about [your 9th grader]'s family.
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".
Routing: Go to P1 A02.

~~~~~~

Screen: P1 A02
Question wording: What is your relationship to [your 9th grader]?
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".
Variable: P1RELSHP
1=Biological mother
2=Biological father
3=Adoptive mother
4=Adoptive father
5=Stepmother
6=Stepfather
7=Foster mother
8=Foster father
9=Female partner of [your 9th grader]'s parent or guardian
10=Male partner of [your 9th grader]'s parent or guardian
11=Grandmother
12=Grandfather
13=Other female relative
14=Other male relative
15=Other female guardian
16=Other male guardian
Routing: If P1RELSHP = 1 - 10 then go to P1 A05;
Else go to P1 A03.

~~~~~~

Screen: P1 A03
Question wording: Does [your 9th grader] have biological, adoptive, step- or foster parents who live in your household?
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1HHPARENT
1=Yes, one parent in household
2=Yes, two parents in household
3=No parents in household

Routing: If P1HHPARENT=1 or 2 go to P1 A04;
Else go to P1 A05.

~~~~~~

Screen: P1 A04
Question wording: What [is this parent's relationship/are these parents' relationships] to [your 9th grader]?
Note: Question wording was customized in the survey instrument based on whether the parent respondent indicated there were one or two biological, adoptive, step-, or foster parents living in the household; question wording was also customized such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1HHPARREL1
Item wording: First Parent
1=Biological mother
2=Biological father
3=Adoptive mother
4=Adoptive father
5=Stepmother
6=Stepfather
7=Foster mother
8=Foster father

Variable: P1HHPARREL2
Item wording: Second Parent
1=Biological mother
2=Biological father
3=Adoptive mother
4=Adoptive father
5=Stepmother
6=Stepfather
7=Foster mother
8=Foster father

Routing: Go to P1 A07.

~~~~~~

Screen: P1 A05
Question wording: Do you have a spouse or partner who lives in the same household as you and [your 9th grader]?
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1SPOUSE
1=Yes, a spouse
2=Yes, a partner
3=No

Routing: If P1SPOUSE=1 or 2 go to P1 A06;
Else skip to P1MARSTAT.

~~~~~~

Screen: P1 A06
Question wording: What is your [spouse/partner]'s relationship to [your 9th grader]?

Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader", and either "spouse" or "partner" was displayed based on whether the respondent indicated they had a spouse or partner living in the same household.

Variable: P1SPSREL

1=Biological mother
2=Biological father
3=Adoptive mother
4=Adoptive father
5=Stepmother
6=Stepfather
7=Foster mother
8=Foster father
9=Female partner of 9th grader's parent or guardian
10=Male partner of 9th grader's parent or guardian
11=Grandmother
12=Grandfather
13=Other female relative
14=Other male relative
15=Other female guardian
16=Other male guardian

Routing: If P1SPOUSE=1 then go to P1 A08;
Else go to P1 A07.

~~~~~~

Screen: P1 A07

Question wording: [What is [your/this parent's] current marital status?/What is the marital relationship of these parents?]

Note: Question wording was customized in the survey instrument based on whether the respondent was parent #1, and based on whether there was a parent #2 living in the household. P1MARSTAT was not asked of parent respondents who previously indicated (in P1SPOUSE) that they had a spouse; however, P1MARSTAT was logically imputed to "married" for those respondents.

Variable: P1MARSTAT

1=Married
2=Divorced
3=Separated
4=Never Married
5=Widowed

Routing: Go to P1 A08.

~~~~~~

Screen: P1 A08

Question wording: We would like to know how many people live in your household including yourself, [any parents/guardians], and [your 9th-grader].
How many people living in your household are...

Note: Question wording was customized to reflect the relationship of parent #1 (and, where applicable, parent #2) to the parent questionnaire respondent; question wording was also customized such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1HHLT18

Item wording: under the age of 18?

Variable: P1HHGE18

Item wording: 18 years of age or older?

Routing: Go to P1 A09.

~~~~~~

Screen: P1 A09

Question wording: How much of the time does [your 9th grader] live with you?

Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1HHTIME
~~~~~~

1=All of the time
2=More than half of the time
3=Half of the time
4=Less than half of the time or
5=None of the time

Routing: If P1HHTIME > 1 then go to P1 A10;
Else go to P1 A11.

~~~~~~

Screen: P1 A10
Question wording: With whom does [he/she/your 9th-grader] live most of the time when not living with you?
Note: Question/response wording was customized in the survey instrument based on the sample member's gender.

Variable: P1HHOTHR
1=With another parent
2=With another adult relative
3=With a friend
4=At boarding school
5=With a nonrelated adult guardian(s)
6=By [himself/herself/himself or herself]
7=Other

Routing: Go to P1 A11.

~~~~~~

Screen: P1 A11
Question wording: Does [your 9th-grader] have any siblings who are currently attending [your 9th-grader's school] or have attended [your 9th-grader's school] within the past 5 years? Please include all brothers and sisters including adopted siblings, stepsiblings, and foster siblings.
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader", and the name of the sample member's school appeared in place of "your 9th-grader's school".

Variable: P1HSSIB
1=Yes
0=No

Routing: Go to P1 A12.

~~~~~~

Screen: P1 A12
Question wording: How many older siblings does [your 9th grader] have? Please include all older brothers and sisters including adopted siblings, stepsiblings, and foster siblings.
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1OLDERSIB
Item wording: (Please enter 0 if [your 9th grader] is an only child or the oldest.)

Routing: Go to Introduction to Section B.

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Section B: Family's Origin and Language

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Screen: Introduction to Section B
Question wording: Now we would like to learn about your family's origin.
Routing: Go to P1 B01.

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Screen: P1 B01
Question wording: [Are you/Is parent #1] Hispanic or [Latino/Latina]?
Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian.

Variable: P1HISP1
1=Yes
0=No
Routing: If P1HISP1=1 go to P1 B02;
Else go to P1 B03.
~~~~~~
Screen: P1 B02
Question wording: Which one of the following [are you/is parent #1]?
Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian; question wording was also customized based on parent #1's gender.
Variable: P1HISPOR1
1=Mexican, Mexican-American or Chicano/Chicana
2=Cuban
3=Dominican
4=Puerto Rican
5=Central American such as Guatemalan, Salvadoran, Nicaraguan, Costa Rican, Panamanian, or Honduran
6=South American such as Colombian, Argentinean, or Peruvian or
7=Other Hispanic or Latino/Latina
Routing: Go to P1 B03.
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Screen: P1 B03
Question wording: [In addition to learning about [your/parent #1's] Hispanic background, we would also like to know about [your/his/her] racial background.]
Which of the following choices describe [your/parent #1's] race? You may choose more than one. (Check all that apply.)
Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian; question wording was also customized based on parent #1's gender. The bracketed introductory statement above was displayed if the respondent indicated that they/parent #1 was of Hispanic/Latino origin.
Variable: P1WHITE1
Item wording: White
0=No
1=Yes
Variable: P1BLACK1
Item wording: Black or African American
0=No
1=Yes
Variable: P1ASIAN1
Item wording: Asian
0=No
1=Yes
Variable: P1PACISLE1
Item wording: Native Hawaiian or other Pacific Islander
0=No
1=Yes
Variable: P1AMINDIAN1
Item wording: American Indian or Alaska Native
0=No
1=Yes
Routing: If P1ASIAN1=1 then go to P1 B04;
Else go to P1 B05.
~~~~~~
Screen: P1 B04
Question wording: Which one of the following [are you/is parent #1]?
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Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian.

Variable: P1ASIANOR1

1=Chinese
2=Filipino
3=Southeast Asian such as Vietnamese or Thai
4=South Asian such as Asian Indian or Sri Lankan or
5=Other Asian

Routing: Go to P1 B05.

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Screen: P1 B05

Question wording: In what year [were you/was parent #1] born?

Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian.

Variable: P1YRBORN1

Routing: Go to P1 B06.

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Screen: P1 B06

Question wording: [Were you/was parent #1] born in the United States, in Puerto Rico or another U.S. territory, or in another country?

Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian.

Variable: P1USBORN1

1=United States
2=Puerto Rico or another U.S. territory
3=Another country

Routing: If P1USBORN1=3 then go to P1 B07;
Else if P1USBORN1=2 then go to P1 B08;
Else if P1SPOUSE = 1 or 2 then go to P1 B09;
Else if P1RELSHP=11-16 and P1HHPARENT= 1 or 2 then go to P1 B09;
Else go to P1 B17.

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Screen: P1 B07

Question wording: In which country [were you/was parent #1] born?

Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian.

Variable: P1COUNTRY1

Routing: Go to P1 B08.

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Screen: P1 B08

Question wording: In what year did [you/parent #1] come to the United States to stay permanently?

Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian.

Variable: P1USYR1

Routing: If P1SPOUSE = 1 or 2 then go to P1 B09;
Else if P1RELSHP=11-16 and P1HHPARENT= 1 or 2 then go to P1 B09;
Else go to P1 B17.

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Screen: P1 B09

Question wording: Is [parent #2] Hispanic or [Latino/Latina]?

Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian; question wording was also customized based on parent #2's gender.

Variable: P1HISP2

1=Yes
0=No
~~~~~~

Routing: If P1HISP2=1 then go to P1 B10;
Else go to P1 B11.
~~~~~~

Screen: P1 B10
Question wording: Which one of the following is [parent #2]?
Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian; response wording was also customized based on parent #2's gender.

Variable: P1HISPOR2
1=Mexican, Mexican-American or [Chicano/Chicana]
2=Cuban
3=Dominican
4=Puerto Rican
5=Central American such as Guatemalan, Salvadoran, Nicaraguan, Costa Rican, Panamanian, or Honduran
6=South American such as Colombian, Argentinean, or Peruvian or
7=Other Hispanic or [Latino/Latina]

Routing: Go to P1 B11.
~~~~~~

Screen: P1 B11
Question wording: [In addition to learning about [parent #2's] Hispanic background, we would also like to know about [parent #2's] racial background.]
Which of the following choices describe [parent #2's] race? You may choose more than one.
(Check all that apply.)
Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian; the bracketed introductory statement above was displayed if the respondent indicated that parent #2 was of Hispanic/Latino origin.

Variable: P1WHITE2
Item wording: White
0=No
1=Yes

Variable: P1BLACK2
Item wording: Black or African American
0=No
1=Yes

Variable: P1ASIAN2
Item wording: Asian
0=No
1=Yes

Variable: P1PACISLE2
Item wording: Native Hawaiian or other Pacific Islander
0=No
1=Yes

Variable: P1AMINDIAN2
Item wording: American Indian or Alaska Native
0=No
1=Yes

Routing: If P1ASIAN2=1 go to P1 B12;
Else go to P1 B13.
~~~~~~

Screen: P1 B12
Question wording: Which one of the following is [parent #2]?
Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian.

Variable: P1ASIANOR2
1=Chinese
~~~~~~

2=Filipino
3=Southeast Asian such as Vietnamese or Thai
4=South Asian such as Asian Indian or Sri Lankan or
5=Other Asian

Routing: Go to P1 B13.

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Screen: P1 B13

Question wording: In what year was [parent #2] born?

Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian.

Variable: P1YRBORN2

Routing: Go to P1 B14.

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Screen: P1 B14

Question wording: Was [parent #2] born in the United States, in Puerto Rico or another U.S. territory, or in another country?

Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian.

Variable: P1USBORN2

1=United States
2=Puerto Rico or another U.S. territory
3=Another country

Routing: If P1USBORN2=3 then go to P1 B15;
Else if P1USBORN2=2 then go to P1 B16;
Else go to P1 B17.

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Screen: P1 B15

Question wording: In which country was [parent #2] born?

Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian.

Variable: P1COUNTRY2

Routing: Go to P1 B16.

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Screen: P1 B16

Question wording: In what year did [parent #2] come to the United States to stay permanently?

Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian.

Variable: P1USYR2

Routing: Go to P1 B17.

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Screen: P1 B17

Question wording: Now we have a question about your 9th grader.
Was [your 9th grader] born in the United States, in Puerto Rico or another U.S. territory, or in another country?

Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1USBORN9

1=United States
2=Puerto Rico or another U.S. territory
3=Another country

Routing: If P1USBORN9=3 then go to P1 B18;
Else if P1USBORN9=2 then go to P1 B19
Else go to P1 B21.

~~~~~~

Screen: P1 B18

Question wording: In which country was [he/she] born?

Note: Question wording was customized in the survey instrument based on the sample member's gender.
Variable: P1COUNTRY9
Routing: Go to P1 B19.
~~~~~~

Screen: P1 B19
Question wording: In what year did [he/she] come to the United States to stay permanently?
Note: Question wording was customized in the survey instrument based on the sample member's gender.
Variable: P1USYR9
Routing: Go to P1 B20.
~~~~~~

Screen: P1 B20
Question wording: In what grade was [your 9th grader] placed when [he/she] started school in the United States?
Note: Question wording was customized based on the sample member's gender; question wording was also customized such that the sample member's name appeared in place of "your 9th-grader".
Variable: P1USGRADE
1=Pre-kindergarten
2=Kindergarten
3=1st grade
4=2nd grade
5=3rd grade
6=4th grade
7=5th grade
8=6th grade
9=7th grade
10=8th grade
11=9th grade
Routing: Go to P1 B21.
~~~~~~

Screen: P1 B21
Question wording: Is any language other than English regularly spoken in your home?
Variable: P1HOMELANG
1=Yes
0=No
Routing: If P1HOMELANG=1 then go to P1 B22;
Else go to P1 B27.
~~~~~~

Screen: P1 B22
Question wording: What languages other than English are regularly spoken in your home? (Check all that apply.)
Variable: P1SPANISH
Item wording: Spanish
0=No
1=Yes
Variable: P1EUROLANG
Item wording: A European language other than Spanish such as French, German or Russian
0=No
1=Yes
Variable: P1CHINESE
Item wording: A Chinese language
0=No
1=Yes
Variable: P1FILIPINO
Item wording: A Filipino language

0=No
1=Yes

Variable: P1SEASIAN
Item wording: A Southeast Asian language such as Vietnamese, Thai or Cambodian
0=No
1=Yes

Variable: P1SASIAN
Item wording: A South Asian language such as Hindi or Tamil
0=No
1=Yes

Variable: P1OTHRASIAN
Item wording: Another Asian language such as Japanese or Korean
0=No
1=Yes

Variable: P1MIDEAST
Item wording: A Middle Eastern language such as Arabic or Farsi
0=No
1=Yes

Variable: P1OTHRLANG
Item wording: Another language
0=No
1=Yes

Routing: Go to P1 B23.

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Screen: P1 B23
Question wording: Is English also regularly spoken in your home?

Variable: P1ENGLISH
1=Yes
0=No

Routing: If P1ENGLISH=1 and at least one language selected in previous question then go to P1 B24;
Else if more than one language selected in previous question then go to P1 B24;
Else go to P1 B26.

~~~~~~

Screen: P1 B24
Question wording: What language do you usually speak to [your 9th grader] in your home?
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader"; response options were also customized such that the only languages displayed were those which the respondent had previously indicated as being spoken in the home. If the parent respondent indicated that only one language was spoken in their home, and that language was a non-English language, P1RSPLANG was not asked but was logically imputed as being that non-English language.

Variable: P1RSPLANG
0=English
1=Spanish
2=A European language other than Spanish (such as French, German or Russian)
3=A Chinese language
4=A Filipino language
5=A Southeast Asian language (such as Vietnamese, Thai, or Cambodian)
6=A South Asian language (such as Hindi or Tamil)
7=An Asian language (such as Japanese or Korean)
8=A Middle Eastern language (such as Arabic or Farsi)
9=Another language

Routing: Go to P1 B25.

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Screen: P1 B25
Question wording: What language does [he/she] usually speak to you in your home?
~~~~~~

Note: Question wording was customized in the survey instrument based on the sample member's gender; response options were also customized such that the only languages displayed were those which the respondent had previously indicated as being spoken in the home. If the parent respondent indicated that only one language was spoken in their home, and that language was a non-English language, P1LANG9 was not asked but was logically imputed as being that non-English language.

Variable: P1LANG9

0=English
1=Spanish
2=A European language other than Spanish (such as French, German or Russian)
3=A Chinese language
4=A Filipino language
5=A Southeast Asian language (such as Vietnamese, Thai, or Cambodian)
6=A South Asian language (such as Hindi or Tamil)
7=An Asian language (such as Japanese or Korean)
8=A Middle Eastern language (such as Arabic or Farsi)
9=Another language

Routing: Go to P1 B26.

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Screen: P1 B26

Question wording: How difficult is it for you to participate in activities at [your 9th grader]'s school because you or member's of your family speak a language other than English? Would you say...

Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1DIFSCHLNG

1=very difficult
2=somewhat difficult or
3=not at all difficult?

Routing: Go to P1 B27.

~~~~~~

Screen: P1 B27

Question wording: Has [your 9th grader] ever been enrolled in a program for English language learners (ELLs) such as English as a Second Language (ESL), English immersion, or bilingual education?

Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1ELLEVER

1=Yes
2=No
3=Don't know

Routing: If P1ELLEVER=1 then go to P1 B28;
Else go to Introduction to Section C.

~~~~~~

Screen: P1 B28

Question wording: Is [he/she] currently enrolled in an English as a Second Language (ESL), English immersion, or bilingual education program?

Note: Question wording was customized in the survey instrument based on the sample member's gender.

Variable: P1ELLNOW

1=Yes
2=No
3=Don't know

Routing: Go to Introduction to Section C.
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Section C: Parent's Education and Occupation

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Screen: Introduction to Section C
Question wording: Next we would like some information about your family's educational background and occupations.
Routing: Go to P1 C01.
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Screen: P1 C01
Question wording: What is the highest level of education [you have/parent #1 has] completed?
Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian.
Variable: P1HIDEG1
1=Less than high school
2=High school diploma or GED
3=Associate's degree
4=Bachelor's degree
5=Master's degree
6=Educational Specialist diploma
7=Ph.D., M.D., law degree, or other high level professional degree
Routing: If P1HIDEG1>2, then go to P1 C02;
Else if P1HIDEG1 = 1 or 2 go to P1 C04;
Else if P1HIDEG1 = missing go to P1 C05.
~~~~~~
Screen: P1 C02
Question wording: What was the major field of study for [your/parent #1's] [highest degree completed]? (Please type [parent #1's] major in the space below and click on 'Search for Major'. Do not enter abbreviations.)
Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian; question wording was also customized such that the type of degree earned by parent #1 was displayed in place of "highest degree completed".
Variable: P1HIMAJV1
Item wording:
Variable: P1HIMAJ21
Item wording:
Variable: P1HIMAJ61
Item wording:
Routing: If P1HIDEG1>4 then go to P1 C03;
Else go to P1 C04.
~~~~~~
Screen: P1 C03
Question wording: What was the major field of study for [your/parent #1's] Bachelor's degree? (Please type [parent #1's] major in the space below and click on 'Search for Major'. Do not enter abbreviations.)
Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian.
Variable: P1BAMAJV1
Item wording:
Variable: P1BAMAJ21
Item wording:
Variable: P1BAMAJ61
Item wording:
Routing: if P1HIDEG1=7 then go to P1 C05;
else go to P1 C04.
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Screen: P1 C04
Question wording: [Have you/Has parent #1] started, but not completed, any work on a degree beyond [highest degree completed]?
(If [you have/parent #1 has] started more than one of the degrees listed below, please select the higher degree.)
Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian; question wording was also customized such that the type of degree earned by parent #1 was displayed in place of "highest degree earned". Response options were conditionally displayed based on parent 1's highest degree completed.

Variable: P1STARTDEG1

1=No, [you have/parent #1 has] not started any other degree
2=Yes, started but not completed an Associate's degree
3=Yes, started but not completed a Bachelor's degree
4=Yes, started but not completed a Master's degree
5=Yes, started but not completed an Education Specialist diploma
6=Yes, started but not completed a Ph.D., M.D., law degree, or other high level professional degree

Routing: Go to P1 C05.

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Screen: P1 C05
Question wording: During the past week, did [you/parent #1] work for pay or income? (If [you/parent #1] held a job but [was/were] not working because of temporary illness, vacation, strike, or jury duty answer "yes.")
Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian.

Variable: P1JOBNOW1

1=Yes
0=No

Routing: If P1JOBNOW1=yes go to P1 C07;
Else if no or missing go to P1 C06.

~~~~~~

Screen: P1 C06
Question wording: [Have you/Has parent #1] ever held a regular job for pay or income?
Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian. This item was not administered to respondents who indicated that parent #1 was currently working, but was logically imputed to 1 for such cases (i.e. when P1JOBNOW1=1).

Variable: P1JOBEVER1

1=Yes
0=No

Routing: If P1JOBEVER1=1 go to P1 C07;
Else if P1SPOUSE=1 or 2 then go to P1 C09;
Else if P1RELSHP=11-16 and P1HHPARENT=1 or 2 then go to P1 C09;
Else go to P1 C17.

~~~~~~

Screen: P1 C07
Question wording: About how many total hours per week [do/does/did] [you/he/she] usually work for pay or income, counting all jobs?
Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian; question wording was also customized based on whether parent #1 was currently working.

Variable: P1HOURS1

Routing: Go to P1 C08.

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Screen: P1 C08
Question wording: [What is / In [your/her/his] most recent job, what was] [your/her/his] job title? If [you/she/he] [have/has/had] more than one job, describe the one at which [you/she/he] [work/works/worked] the most hours. What [do/does/did] [you/she/he] actually do in that job? That is, what [are/were] [your/her/his] main activities or duties?"
Note: Question wording was customized in the survey instrument based on whether parent #1 was the respondent or some other parent/guardian; question wording was also customized based on parent #1's gender and whether they were currently working.

Variable: P1JOB2ONET1
Item wording:
Variable: P1JOB6ONET1
Item wording:
Variable: P1JOBDV1
Item wording:
Variable: P1JOBTV1
Item wording:

Routing: If P1SPOUSE = 1 or 2 then go to P1 C09;
Else if P1HHPARENT= 1 or 2 then go to P1 C09;
Else go to P1 C17.

~~~~~~

Screen: P1 C09
Question wording: What is the highest level of education [parent #2] has completed?
Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian.

Variable: P1HIDEG2
1=Less than high school
2=High school diploma or GED
3=Associate's degree
4=Bachelor's degree
5=Master's degree
6=Educational Specialist diploma
7=Ph.D., M.D., law degree, or other high level professional degree

Routing: If P1HIDEG2 > 2 then go to P1 C10;
Else if P1HIDEG2 = 1 or 2 then go to P1 C12;
Else if P1HIDEG2 = missing then go to P1 C13.

~~~~~~

Screen: P1 C10
Question wording: What was the major field of study for [parent #2's] [highest degree completed]? (Please type [parent #2's] major in the space below and click on 'Search for Major'. Do not enter abbreviations.)
Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian; question wording was also customized to reflect parent #2's highest degree completed.

Variable: P1HIMAJV2
Item wording:
Variable: P1HIMAJ22
Item wording:
Variable: P1HIMAJ62
Item wording:

Routing: If P1HIDEG2>4 then go to P1 C11;
Else go to P1 C12.

~~~~~~

Screen: P1 C11
Question wording: What was the major field of study for [parent #2's] Bachelor's degree?

(Please type [parent #2's] major in the space below and click on 'Search for Major'. Do not enter abbreviations.)
Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian.

Variable: P1BAMAJV2
Item wording:
Variable: P1BAMAJ62
Item wording:
Variable: P1BAMAJ22
Item wording:

Routing: if P1HIDEG2=7 then go to P1 C13;
else go to P1 C12.

~~~~~~

Screen: P1 C12
Question wording: Has [parent #2] started, but not completed, any work on a degree beyond [highest degree completed]?
(If [he/she] has started more than one of the degrees listed below, please select the higher degree.)
Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian; question wording was also customized based on parent #2's gender. Response options were conditionally displayed based on parent #2's highest degree completed.

Variable: P1STARTDEG2
1=No, [he/she] has not started any other degree
2=Yes, started but not completed an Associate's degree
3=Yes, started but not completed a Bachelor's degree
4=Yes, started but not completed a Master's degree
5=Yes, started but not completed an Education Specialist diploma
6=Yes, started but not completed a Ph.D., M.D., law degree, or other high level professional degree

Routing: Go to P1 C13.

~~~~~~

Screen: P1 C13
Question wording: During the past week, did [parent #2] work for pay or income?
(If [he/she] held a job but was not working because of temporary illness, vacation, strike, or jury duty answer "yes.")
Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian; question wording was also customized based on parent #2's gender.

Variable: P1JOBNOW2
1=Yes
0=No

Routing: If P1JOBNOW2=1 go to P1 C15;
Else go to P1 C14.

~~~~~~

Screen: P1 C14
Question wording: Has [he/she] ever held a regular job for pay or income?
Note: Question wording was customized in the survey instrument based on parent #2's gender. This item was not administered to respondents who indicated that parent #2 was currently working, but was logically imputed to 1 for such cases (i.e. when P1JOBNOW2=1)."

Variable: P1JOBEVER2
1=Yes
0=No

Routing: If P1JOBEVER2=1 go to P1 C15;
Else if P1JOBEVER2=0 or missing go P1INCOME.
~~~~~~

~~~~~~

Screen: P1 C15
Question wording: About how many total hours per week does [does/did] [parent #2] usually work for pay or income, counting all jobs?
Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian; question wording was also customized based on whether or not parent #2 was currently working.
Variable: P1HOURS2
Routing: Go to P1 C16.

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Screen: P1 C16
Question wording: [What is / In [parent #2] most recent job, what was] [parent #2's] job title? If [parent #2] [has/had] more than one job, describe the one at which [parent #2] [works/worked] the most hours. What [does/did] [parent #2] do in that job? That is, what [are/were] [parent #2's] main activities or duties?
Note: Question wording was customized in the survey instrument based on whether parent #2 was the respondent's spouse, partner, or some other parent/guardian; question wording was also customized based on whether or not parent #2 was currently working.
Variable: P1JOB2ONET2
Item wording:
Variable: P1JOB6ONET2
Item wording:
Variable: P1JOBDV2
Item wording:
Variable: P1JOBTV2
Item wording:
Routing: Go to P1 C17.

~~~~~~

Screen: P1 C17
Question wording: Income is a key family characteristic that factors into many research questions including how family finances affect students' ability to go to college. This information is critically important to the success of this study and will be kept completely confidential.
What was your total household income from all sources prior to taxes and deductions in calendar year 2008? Please include all income such as income from work, investments and alimony.
Variable: P1INCOME
Routing: If P1INCOME is missing go to P1 C18;
Else go to P1 C19.

~~~~~~

Screen: P1 C18
Question wording: We understand that you may not be able to provide an exact number for your family's income. However, it would be extremely helpful if you would indicate which of the following ranges best estimates your total household income from all sources prior to taxes and deductions in calendar year 2008. Please include all income such as income from work, investments and alimony.
Variable: P1INCOMECAT
1=$15,000 or less
2=$15,001 - $35,000
3=$35,001 - $55,000
4=$55,001 - $75,000
5=$75,001 - $95,000
6=$95,001 - $115,000
7=$115,001 - $135,000
8=$135,001 - $155,000
9=$155,001 - $175,000
10=$175,001 - $195,000
11=$195,001 - $215,000
12=$215,001 - $235,000
13=More than $235,000

Routing: Go to P1 C19.
~~~~~~

Screen: P1 C19
Question wording: Do you...
Variable: P1OWNHOME
1=pay mortgage towards or own your home
2=rent your home or
3=have some other arrangement?
Routing: Go to Introduction to Section D.
~~~~~~

Section D: Previous Educational Experiences

~~~~~~

Screen: Introduction to Section D
Question wording: Now we have some questions about [your 9th grader]'s previous educational experiences.
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".
Routing: Go to P1 D01.
~~~~~~

Screen: P1 D01
Question wording: Since starting kindergarten, has [your 9th grader] repeated any grades?
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".
Variable: P1REPEATGRD
1=Yes
0=No
Routing: If P1REPEATGRD=1 then go to P1 D02;
Else go to P1 D03.
~~~~~~

Screen: P1 D02
Question wording: What grades did [he/she] repeat?
(Check all that apply.)
Note: Question wording was customized in the survey instrument based on the sample member's gender.
Variable: P1REPEATGK
Item wording: Kindergarten
0=No
1=Yes
Variable: P1REPEATG1
Item wording: 1st Grade
0=No
1=Yes
Variable: P1REPEATG2
Item wording: 2nd Grade
0=No
1=Yes
Variable: P1REPEATG3
Item wording: 3rd Grade
0=No
1=Yes
Variable: P1REPEATG4
Item wording: 4th Grade
0=No
1=Yes
~~~~~~

Variable: P1REPEATG5
Item wording: 5th Grade
0=No
1=Yes
Variable: P1REPEATG6
Item wording: 6th Grade
0=No
1=Yes
Variable: P1REPEATG7
Item wording: 7th Grade
0=No
1=Yes
Variable: P1REPEATG8
Item wording: 8th Grade
0=No
1=Yes
Variable: P1REPEATG9
Item wording: 9th Grade
0=No
1=Yes
Routing: Go to P1 D03.
~~~~~~
Screen: P1 D03
Question wording: Has a doctor, health care provider, teacher, or school official ever told you that [your 9th grader] has any of the following conditions?
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".
Variable: P1SLD
Item wording: Specific learning disability
1=Yes
0=No
Variable: P1DD
Item wording: Any developmental delay that affects [his/her] ability to learn
1=Yes
0=No
Variable: P1AUTISM
Item wording: Autism, Asperger's Disorder, pervasive developmental disorder, or other autism spectrum disorder
1=Yes
0=No
Variable: P1EAREYE
Item wording: Hearing problems or vision problems that cannot be corrected with glasses or contact lenses
1=Yes
0=No
Variable: P1JOINT
Item wording: Bone, joint, or muscle problems
1=Yes
0=No
Variable: P1INTELLECT
Item wording: Intellectual disability or mental retardation
1=Yes
0=No
Variable: P1ADHD
Item wording: Attention Deficit Disorder or Attention Deficit Hyperactive Disorder, that is, ADD or ADHD
~~~~~~

1=Yes
0=No

Routing: Go to P1 D04.

~~~~~~

Screen: P1 D04

Question wording: Does [your 9th grader] currently receive Special Educational Services? Students receiving these services often have an Individualized Education Plan (IEP).

Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1SPECIALED

1=Yes
2=No
3=Don't know

Routing: Go to P1 D05.

~~~~~~

Screen: P1 D05

Question wording: Is [your 9th grader] currently taking medication for ADD or ADHD?

Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1ADHDMED

1=Yes
0=No

Routing: Go to P1 D06.

~~~~~~

Screen: P1 D06

Question wording: Compared with other 9th graders, would you say [your 9th grader] experiences a lot, a little, or no difficulty in the following areas?

Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1LEARN

Item wording: Learning, understanding, or paying attention

1=A lot of difficulty
2=A little difficulty
3=No difficulty

Variable: P1SPEAK

Item wording: Speaking, communicating, or being understood

1=A lot of difficulty
2=A little difficulty
3=No difficulty

Variable: P1MOOD

Item wording: Feeling anxious or depressed

1=A lot of difficulty
2=A little difficulty
3=No difficulty

Variable: P1ACTOUT

Item wording: Behavior problems, such as acting-out, fighting, bullying, or arguing

1=A lot of difficulty
2=A little difficulty
3=No difficulty

Variable: P1FRIEND

Item wording: Making and keeping friends

1=A lot of difficulty
2=A little difficulty
3=No difficulty

Routing: Go to P1 D07.
~~~~~~

~~~~~~

Screen: P1 D07
Question wording: Since starting kindergarten, has [your 9th grader] skipped any grades?
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1SKIPGRD
1=Yes
0=No

Routing: If P1SKIPGRD=1 then go to P1 D08;
Else go to P1 D09.

~~~~~~

Screen: P1 D08
Question wording: What grades did [he/she] skip?
(Check all that apply.)
Note: Question wording was customized in the survey instrument based on the sample member's gender.

Variable: P1SKIPGK
Item wording: Kindergarten
0=No
1=Yes

Variable: P1SKIPG1
Item wording: 1st Grade
0=No
1=Yes

Variable: P1SKIPG2
Item wording: 2nd Grade
0=No
1=Yes

Variable: P1SKIPG3
Item wording: 3rd Grade
0=No
1=Yes

Variable: P1SKIPG4
Item wording: 4th Grade
0=No
1=Yes

Variable: P1SKIPG5
Item wording: 5th Grade
0=No
1=Yes

Variable: P1SKIPG6
Item wording: 6th Grade
0=No
1=Yes

Variable: P1SKIPG7
Item wording: 7th Grade
0=No
1=Yes

Variable: P1SKIPG8
Item wording: 8th Grade
0=No
1=Yes

Routing: Go to P1 D09.

~~~~~~

Screen: P1 D09
Question wording: Is [your 9th grader] currently enrolled in any honors classes?
~~~~~~

Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1HONORS

1=Yes
0=No

Routing: Go to P1 D10.

~~~~~~

Screen: P1 D10

Question wording: How many times has [your 9th grader] changed schools since [he/she] entered kindergarten? Do not count changes that occurred as a result of promotion to the next grade or level, for instance, a move from an elementary school to a middle school or from a middle school to a high school in the same district.

Note: Question wording was customized based on the sample member's gender; question wording was also customized such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1CHANGESCH

Item wording: (Please enter 0 if [your 9th grader] has not changed schools except for promotion to the next grade or level.)

Routing: Go to P1 D11.

~~~~~~

Screen: P1 D11

Question wording: Since starting kindergarten, has [your 9th grader] ever stopped going to school for a period of a month or more other than for illness, injury or vacation?

Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1DROPOUT

1=Yes
0=No

Routing: Go to P1 D12.

~~~~~~

Screen: P1 D12

Question wording: Since starting kindergarten, has [he/she] ever been suspended or expelled from school? Do not count detentions.

Note: Question wording was customized in the survey instrument based on the sample member's gender.

Variable: P1SUSPEND

1=Yes
0=No

Routing: Go to P1 D13.

~~~~~~

Screen: P1 D13

Question wording: During the last school year (2008-2009), how many times were you or another family member contacted by the school about [your 9th grader]'s...

Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1BEHAVE

Item wording: problem behavior in school?

1=Never
2=Once or twice
3=Three or four times
4=More than four times

Variable: P1ATTEND

Item wording: poor attendance record at school?

1=Never
2=Once or twice
3=Three or four times
4=More than four times

Variable: P1PERFORM
Item wording: poor academic performance?
1=Never
2=Once or twice
3=Three or four times
4=More than four times
Routing: Go to Introduction to Section E.
~~~~~~

Section E: Parent's Involvement

~~~~~~
Screen: Introduction to Section E
Question wording: Next we have some questions about your involvement in [your 9th grader]'s school, education and [his/her] home life.
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".
Routing: If sampling roster indicates sample member attends a public school, go to P1 E01;
Else go to P1 E02.
~~~~~~
Screen: P1 E01
Question wording: Is [your 9th-grader's school] a regularly assigned school or a school that you chose?
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader", and the name of the sample member's school appeared in place of "your 9th-grader's school".
Variable: P1SCHCHOICE
1=Assigned
2=Chosen, or
3=[your 9th grader] was assigned to [your 9th-grader's school], but you would have chosen it if you had a choice.
Routing: Go to P1 E02.
~~~~~~
Screen: P1 E02
Question wording: Since the beginning of this school year (2009-2010), have you or other adults in your household...
Variable: P1SCHMTG
Item wording: attended a general school meeting such as an open house or a back-to-school night?
1=Yes
0=No
Variable: P1PTOMTG
Item wording: attended a meeting of the parent-teacher organization or association?
1=Yes
0=No
Variable: P1PTCONFER
Item wording: gone to a regularly scheduled parent-teacher conference with [your 9th grader]'s teacher?
1=Yes
0=No
Variable: P1SCHEVENT
Item wording: attended a school or class event such as a play, dance, sports event or science fair because of [your 9th grader]?
1=Yes
0=No
Variable: P1VOLUNTEER
Item wording: served as a volunteer in [your 9th grader]'s classroom or elsewhere in the school?
1=Yes

0=No

Variable: P1FUNDRAISE

Item wording: participated in fundraising for the school?

1=Yes

0=No

Variable: P1COUNSELOR

Item wording: met with a school counselor in person?

1=Yes

0=No

Routing: Go to P1 E03.

~~~~~~

Screen: P1 E03

Question wording: During this school year, about how many days in an average week do you or another adult in your household help [your 9th grader] with homework? Would you say...

Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1HWOFTEN

1=never

2=less than once a week

3=1 or 2 days a week

4=3 or 4 days a week or

5=5 or more days a week?

Routing: Go to P1 E04.

~~~~~~

Screen: P1 E04

Question wording: How confident do you feel about your ability to help [your 9th grader] with the homework [he/she] has this year in each of the following subjects?

Note: Question wording was customized based on the sample member's gender; question wording was also customized such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1MTHHWEFF

Item wording: Math

1=Very confident

2=Somewhat confident

3=Not at all confident

Variable: P1SCIHWEFF

Item wording: Science

1=Very confident

2=Somewhat confident

3=Not at all confident

Variable: P1ENGHWEFF

Item wording: English or language arts

1=Very confident

2=Somewhat confident

3=Not at all confident

Routing: Go to P1 E05.

~~~~~~

Screen: P1 E05

Question wording: In general, how would you compare males and females in the following subjects?

Variable: P1MTHCOMP

Item wording: Math

1=Females are much better

2=Females are somewhat better

3=Females and males are the same

4=Males are somewhat better

5=Males are much better

Variable: P1SCICOMP
~~~~~~

Item wording: Science
1=Females are much better
2=Females are somewhat better
3=Females and males are the same
4=Males are somewhat better
5=Males are much better

Variable: P1ENGCOMP
Item wording: English or language arts
1=Females are much better
2=Females are somewhat better
3=Females and males are the same
4=Males are somewhat better
5=Males are much better

Routing: Go to P1 E06.

~~~~~~

Screen: P1 E06

Question wording: During the last 12 months, has [your 9th-grader] participated in any of the following activities outside of school?
(Check all that apply.)
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1ARTS
Item wording: Music, dance, art, or theater
0=No
1=Yes

Variable: P1SPORTS
Item wording: Organized sports supervised by an adult
0=No
1=Yes

Variable: P1RELIGGRP
Item wording: Religious youth group or religious instruction
0=No
1=Yes

Variable: P1CLUB
Item wording: Scouting or another group or club activity
0=No
1=Yes

Variable: P1ACADEMIC
Item wording: Academic instruction outside of school such as from a Saturday Academy, learning center, personal tutor or summer school program
0=No
1=Yes

Variable: P1CAMPMS
Item wording: A math or science camp
0=No
1=Yes

Variable: P1CAMPOTH
Item wording: Another camp
0=No
1=Yes

Variable: P1NOOUTSCH
Item wording: None of these
0=No
1=Yes

Routing: Go to P1 E07.
~~~~~~

~~~~~~

Screen: P1 E07
Question wording: During the last 12 months, which of the following activities have you or another family member done with [your 9th grader]?
(Check all that apply.)
Note: Question/item wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1MUSEUM
Item wording: Visited a zoo, planetarium, natural history museum, transportation museum, or a similar museum
0=No
1=Yes

Variable: P1COMPUTER
Item wording: Worked or played on a computer together
0=No
1=Yes

Variable: P1FIXED
Item wording: Built or fixed something such as a vehicle or appliance
0=No
1=Yes

Variable: P1SCIFAIR
Item wording: Attended a school science fair
0=No
1=Yes

Variable: P1SCIPROJ
Item wording: Helped [your 9th grader] with a school science fair project
0=No
1=Yes

Variable: P1STEMDISC
Item wording: Discussed a program or article about math, science, or technology
0=No
1=Yes

Variable: P1LIBRARY
Item wording: Visited a library
0=No
1=Yes

Variable: P1SHOW
Item wording: Gone to a play, concert, or other live show
0=No
1=Yes

Variable: P1NOACT
Item wording: None of these
0=No
1=Yes

Routing: Go to Introduction to Section F.
~~~~~~

Section F: 9th Grader's Future

~~~~~~

Screen: Introduction to Section F
Question wording: Now we have several questions about [your 9th grader]'s future.
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".
Routing: Go to P1 F01.
~~~~~~

~~~~~~

Screen: P1 F01
Question wording: If there were no barriers, how far in school would you want [your 9th grader] to go?
Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1EDUASPIRE

1=Less than high school
2=High school diploma or GED
3=Start but not complete an Associate's degree
4=Complete an Associate's degree
5=Start but not complete a Bachelor's degree
6=Complete a Bachelor's degree
7=Start but not complete a Master's degree
8=Complete a Master's degree
9=Start but not complete a Ph.D., M.D., law degree, or other high level professional degree
10=Complete a Ph.D., M.D., law degree, or other high level professional degree

Routing: Go to P1 F02.

~~~~~~

Screen: P1 F02
Question wording: As things stand now, how far in school do you think [he/she] will actually get?
Note: Question wording was customized in the survey instrument based on the sample member's gender.

Variable: P1EDUEXPECT

1=Less than high school
2=High school diploma or GED
3=Start but not complete an Associate's degree
4=Complete an Associate's degree
5=Start but not complete a Bachelor's degree
6=Complete a Bachelor's degree
7=Start but not complete a Master's degree
8=Complete a Master's degree
9=Start but not complete a Ph.D., M.D., law degree, or other high level professional degree
10=Complete a Ph.D., M.D., law degree, or other high level professional degree
11=Don't know

Routing: Go to P1 F03.

~~~~~~

Screen: P1 F03
Question wording: Whatever [your 9th grader]'s plans, do you think [he/she] has the ability to complete a Bachelor's degree? Would you say...
Note: Question wording was customized based on the sample member's gender; question wording was also customized such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1ABLEBA

1=definitely
2=probably
3=probably not or
4=definitely not?

Routing: Go to P1 F04.

~~~~~~

Screen: P1 F04
Question wording: Have you or anyone in your family talked with a counselor or teacher about the academic requirements for admission to a college or a technical institute after high school?

Variable: P1ADMITREQ

1=Yes
0=No

Routing: If P1EDUEXPECT>2 then go to P1 F05;
Else go to P1 F16.

~~~~~~

Screen: P1 F05
Question wording: Do you think [your 9th grader] will start [his/her] college education at...
Note: Question wording was customized based on the sample member's gender; question wording was also customized such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1TYPEPS
1=a technical institute
2=a community college or other Associate's granting school besides a technical institute
3=a Bachelor's granting 4-year college or
4=you have not thought about this yet?

Routing: Go to P1 F06.

~~~~~~

Screen: P1 F06
Question wording: When do you think [he/she] will start [his/her] education after high school?
Note: Question wording was customized in the survey instrument based on the sample member's gender.

Variable: P1START
1=Within 3 months after completing high school
2=Within 6 months after completing high school
3=Within one year after completing high school
4=More than one year after completing high school

Routing: If P1TYPEPS=3 and P1START = 1, 2, or 3 then go to P1 F07;
Else go to P1 F16.

~~~~~~

Screen: P1 F07
Question wording: Would you say [he/she] is more likely to attend a public or private 4-year college, or have you not thought about this yet?
Note: Question wording was customized in the survey instrument based on the sample member's gender.

Variable: P1PUBPRV
1=Public
2=Private
3=Haven't thought about this yet

Routing: If P1PUBPRV=1 then go to P1 F08;
Else if P1PUBPRV=2 go to P1 F09;
Else go to P1 F16.

~~~~~~

Screen: P1 F08
Question wording: Is [he/she] more likely to attend an in-state or out-of-state public college, or have you not thought about this yet?
Note: Question wording was customized in the survey instrument based on the sample member's gender.

Variable: P1INOUTST
1=In-state
2=Out-of-state
3=Haven't thought about this yet

Routing: If P1INOUTST = 1 or 2 go to P1 F09;
Else go to P1 F16.

~~~~~~

Screen: P1 F09
Question wording: Have you gotten information about the cost of tuition and mandatory fees at a specific [in-state public/out-of-state public/private] college?
Note: Question wording was customized in the survey instrument based on whether the respondent indicated that their 9th-grader was more likely to attend an in-state public, out-of-state public, or private college.

Variable: P1TUITION
~~~~~~

1=Yes
0=No

Routing: If P1TUITION=1 and P1PUBPRV=1 and P1INOUTST=1 go to P1 F10;
Else if P1TUITION=1 and P1PUBPRV=1 and P1INOUTST=2 then go to P1 F14;
Else if P1TUITION=1 and P1PUBPRV=2 then go to P1 F12;
Else go to P1 F16.

~~~~~~

Screen: P1 F10
Question wording: What is the cost of one year's tuition and mandatory fees at that public 4-year college in your state?
Variable: P1COSTIN
Routing: If answer provided, go to P1 F11;
Else if P1EDUEXPECT > 2 go to P1 F19;
Else go to Locating Section of parent interview (not included in this facsimile).

~~~~~~

Screen: P1 F11
Question wording: Is that tuition and mandatory fees only, or does that also include other fees such as room and board?
Variable: P1FEEIN
1=Tuition and mandatory fees only
2=Tuition, mandatory fees, and other fees
Routing: If P1EDUEXPECT > 2 then go to P1 F19;
Else go to Locating Section of parent interview (not included in this facsimile).

~~~~~~

Screen: P1 F12
Question wording: What is the cost of one year's tuition and mandatory fees at that private 4-year college? Include the cost of courses and required fees such as student activity fees and student health fees. Do not include optional expenses such as room and board.
Variable: P1COSTPRV
Routing: If answer provided, go to P1 F13;
Else go to P1 F16.

~~~~~~

Screen: P1 F13
Question wording: Is that tuition and mandatory fees only, or does that also include other fees such as room and board?
Variable: P1FEEPRV
1=Tuition and mandatory fees only
2=Tuition, mandatory fees, and other fees
Routing: Go to P1 F16.

~~~~~~

Screen: P1 F14
Question wording: What is the cost of one year's tuition and mandatory fees at that out-of-state public 4-year college? Include the cost of courses and required fees such as student activity fees and student health fees. Do not include optional expenses such as room and board.
Variable: P1COSTOUT
Routing: If answer provided, go to P1 F15;
Else go to P1 F16.

~~~~~~

Screen: P1 F15
Question wording: Is that tuition and mandatory fees only, or does that also include other fees such as room and board?
Variable: P1FEEOUT
1=Tuition and mandatory fees only
2=Tuition, mandatory fees, and other fees
Routing: Go to P1 F16.

~~~~~~

Screen: P1 F16
Question wording: What is your best estimate of the cost of one year's tuition and mandatory fees at a public 4-year college in your state? Include the cost of courses and required fees such as student activity fees and student health fees. Do not include optional expenses such as room and board.
Variable: P1ESTIN
Routing: If answer provided, go to P1 F17;
else if P1EDUEXPECT>2 go to P1 F19;
else go to Locating Section of parent interview (not included in facsimile).

~~~~~~

Screen: P1 F17
Question wording: Is that tuition and mandatory fees only, or does that also include other fees such as room and board?
Variable: P1ESTFEE
1=Tuition and mandatory fees only
2=Tuition, mandatory fees, and other fees
Routing: Go to P1 F18.

~~~~~~

Screen: P1 F18
Question wording: How confident are you in the accuracy of your estimate of the cost of one year's tuition and mandatory fees at a public 4-year college in your state? Would you say...
Variable: P1ESTCONF
1=very confident
2=somewhat confident, or
3=not at all confident?
Routing: If P1EDUEXPECT>2 go to P1 F19;
Else go to Locating Section of parent interview (not included in facsimile).

~~~~~~

Screen: P1 F19
Question wording: Do you or does anyone in your family plan to help [your 9th grader] pay for [his/her] education after high school?
Note: Question wording was customized based on the sample member's gender; question wording was also customized such that the sample member's name appeared in place of "your 9th-grader".
Variable: P1HELPPAY
1=Yes
2=No
3=You have not thought about this yet
Routing: If yes go to P1 F20;
Else go to Locating Section of parent interview (not included in facsimile).

~~~~~~

Screen: P1 F20
Question wording: What grade was [he/she] in when you or someone in your family began to financially prepare for [his/her] education after high school? Would you say...
Note: Question wording was customized in the survey instrument based on the sample member's gender.
Variable: P1PREPPAY
1=before 1st grade
2=between the 1st and 6th grades
3=in the 7th, 8th, or 9th grades, or
4=you have not begun to prepare?
Routing: If P1PREPPAY = 1, 2, or 3 go to P1 F21;
Else go to Locating Section of parent interview (not included in facsimile).

~~~~~~

Screen: P1 F21
Question wording: About how much money have you set aside for [his/her] future educational needs?

Note: Question wording was customized in the survey instrument based on the sample member's gender.

Variable: P1SAVEDPAY

1=None
2=$2,000 or less
3=$2,001-$5,000
4=$5,001-$10,000
5=$10,001-$15,000
6=$15,001-$25,000
7=$25,001-$35,000
8=$35,001-$60,000
9=More than $60,000

Routing: Go to P1 F22.

~~~~~~

Screen: P1 F22

Question wording: Have you or anyone in your family opened any type of account to save for [your 9th grader]'s college education, for example, a 529 plan, a Coverdell Education Savings Account or Education IRA, or a prepaid tuition account?

Note: Question wording was customized in the survey instrument such that the sample member's name appeared in place of "your 9th-grader".

Variable: P1ACCTPAY

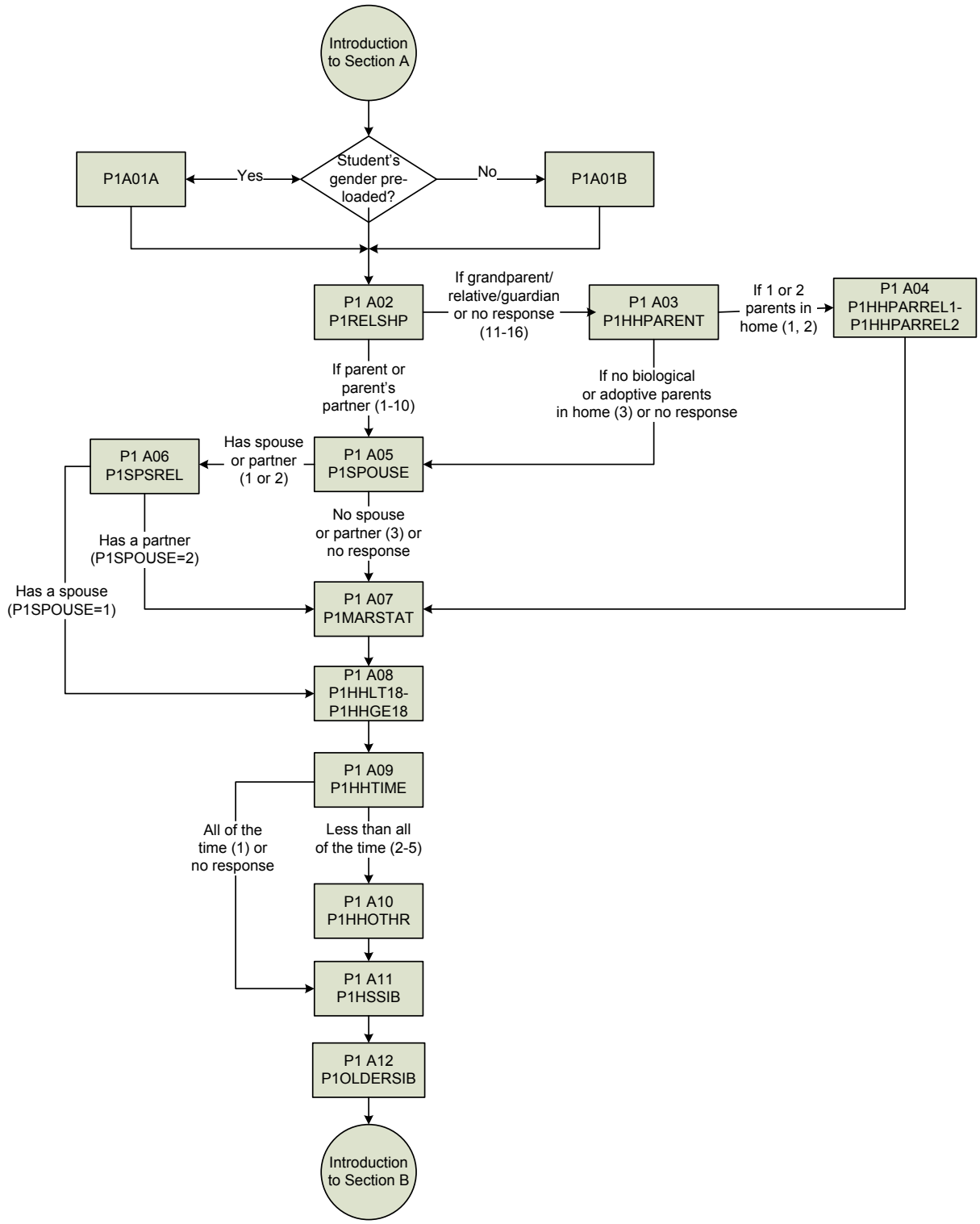
1=Yes
0=No

Routing: Go to Locating Section of parent interview (not included in facsimile).

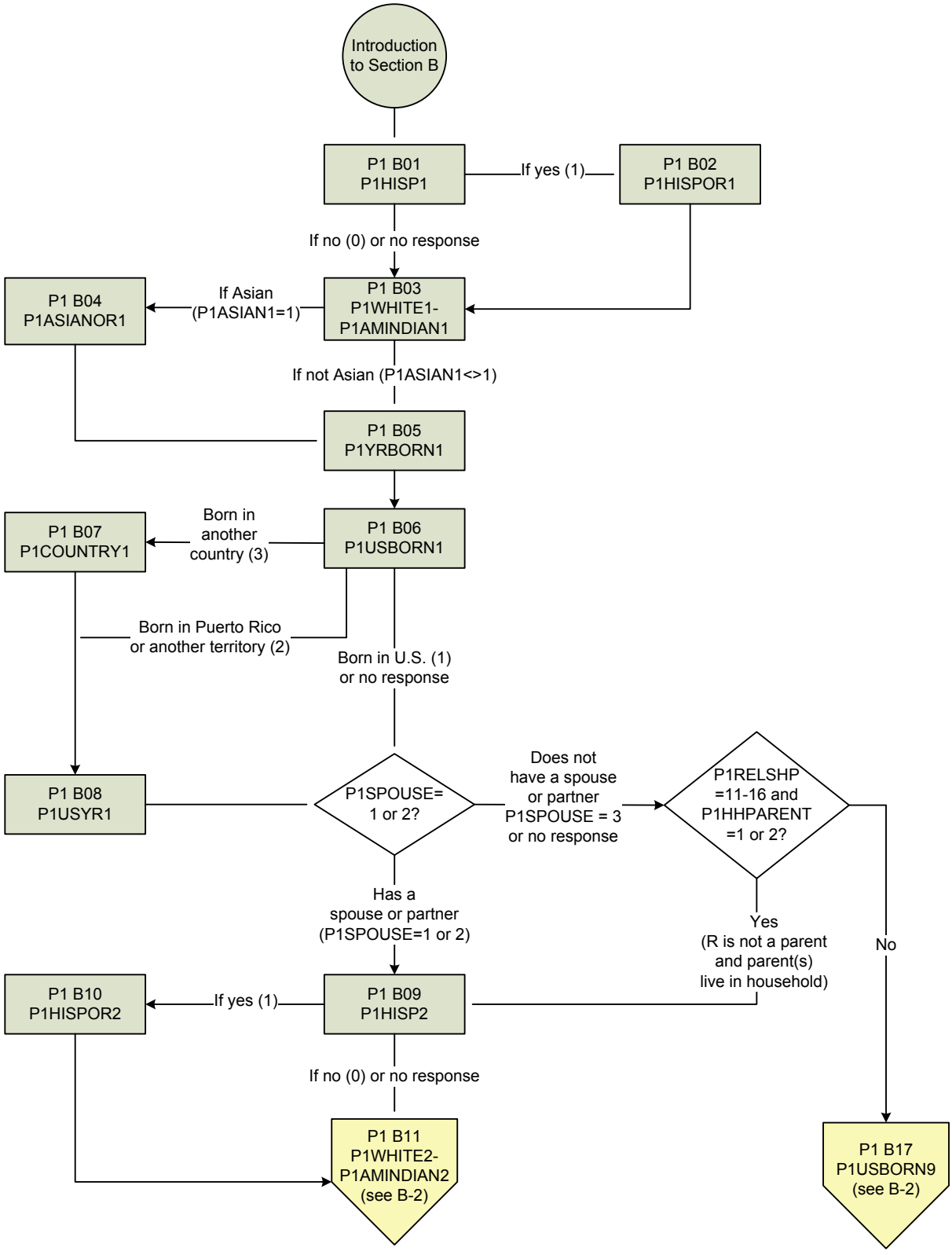
~~~~~~

Parent Flowchart

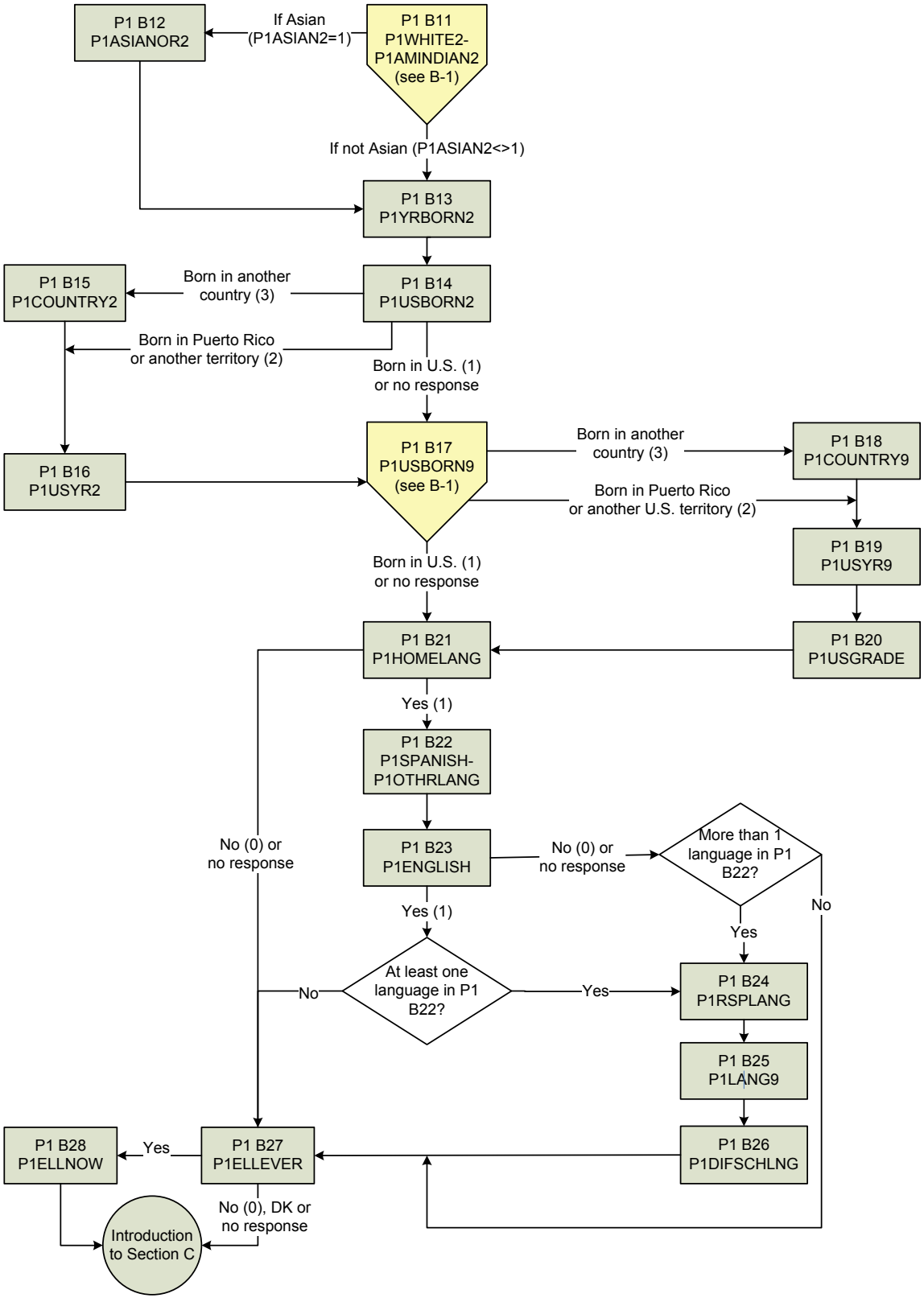
HSLS Parent Questionnaire Flowchart with Form Names
Section A



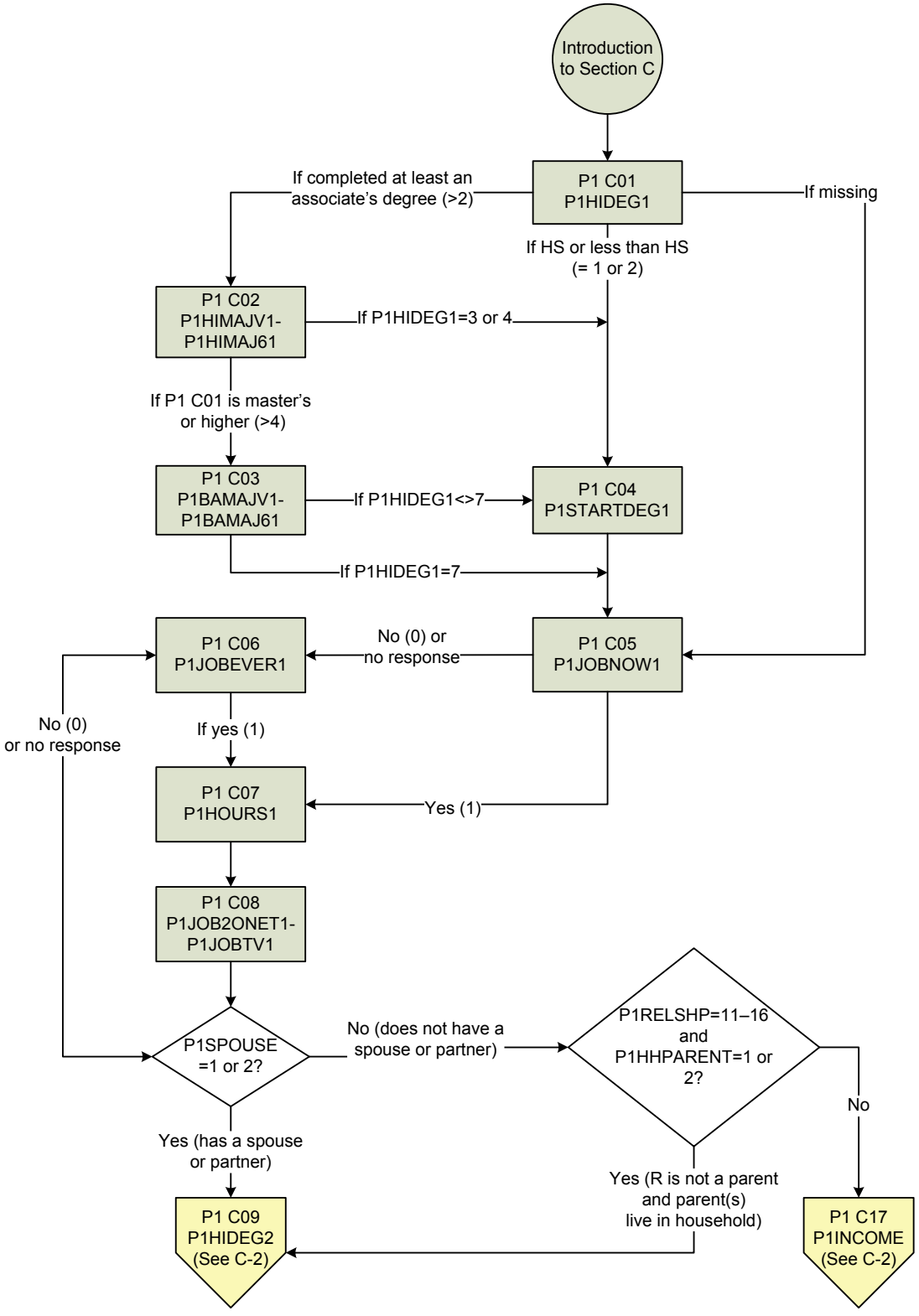
HSLS Parent Questionnaire Flowchart with Form Names
Section B-1



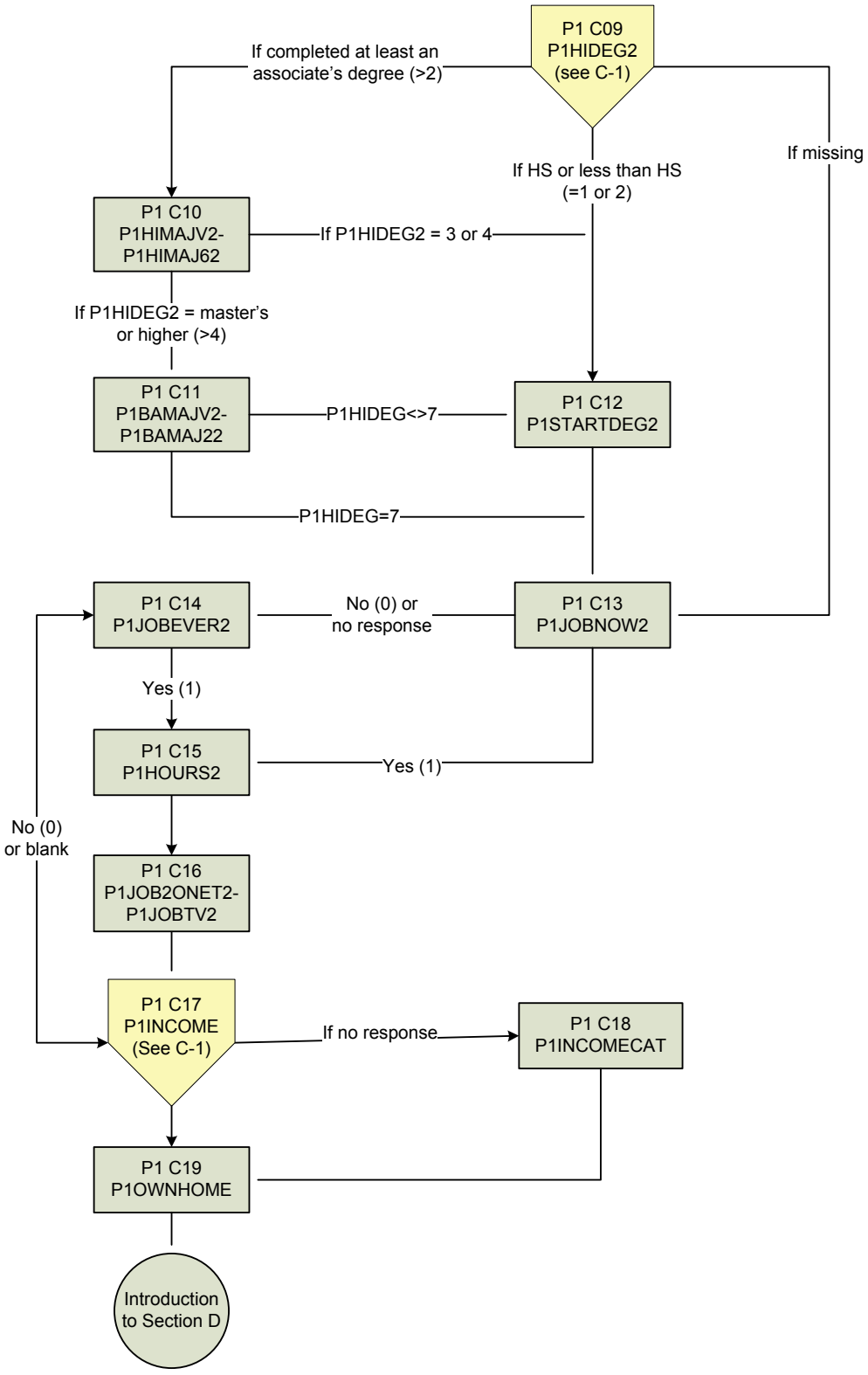
HSLS Parent Questionnaire Flowchart with Form Names
Section B-2



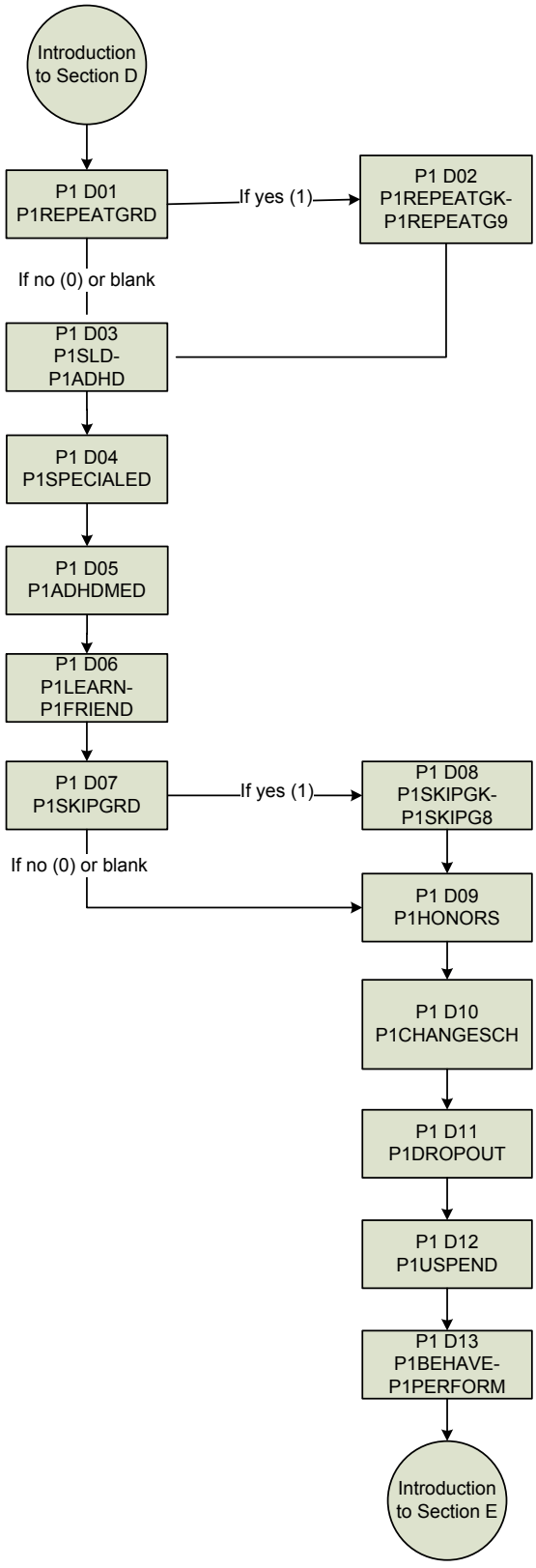
HSLS Parent Questionnaire Flowchart with Form Names
Section C-1



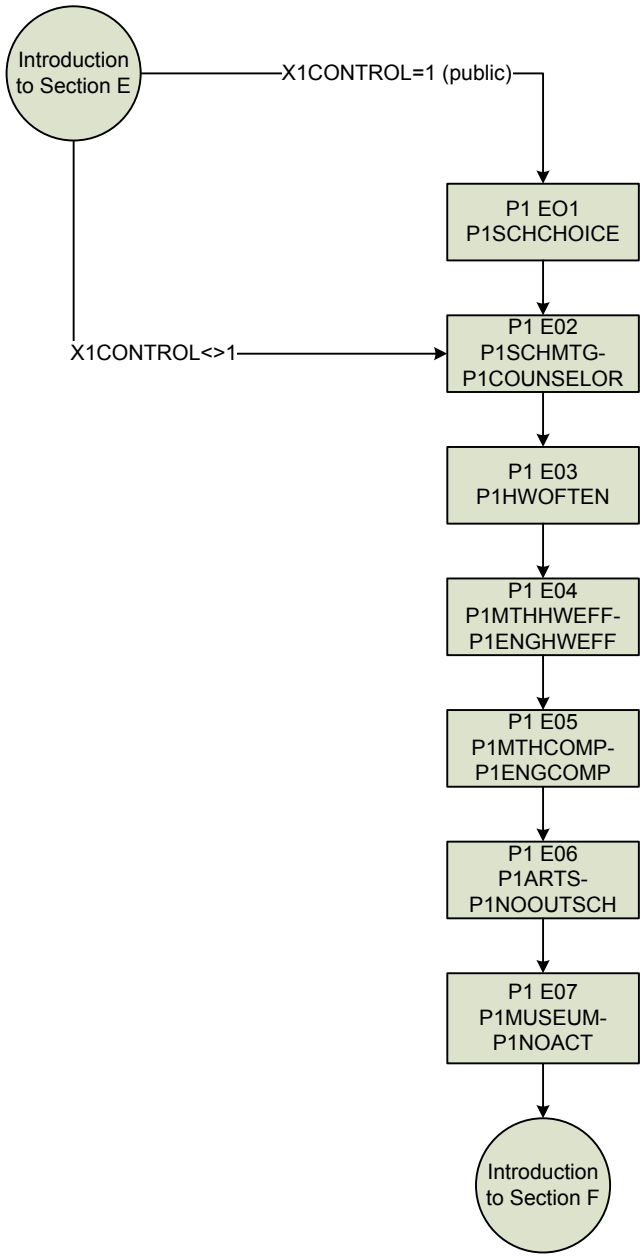
HSLS Parent Questionnaire Flowchart with Form Names
Section C-2



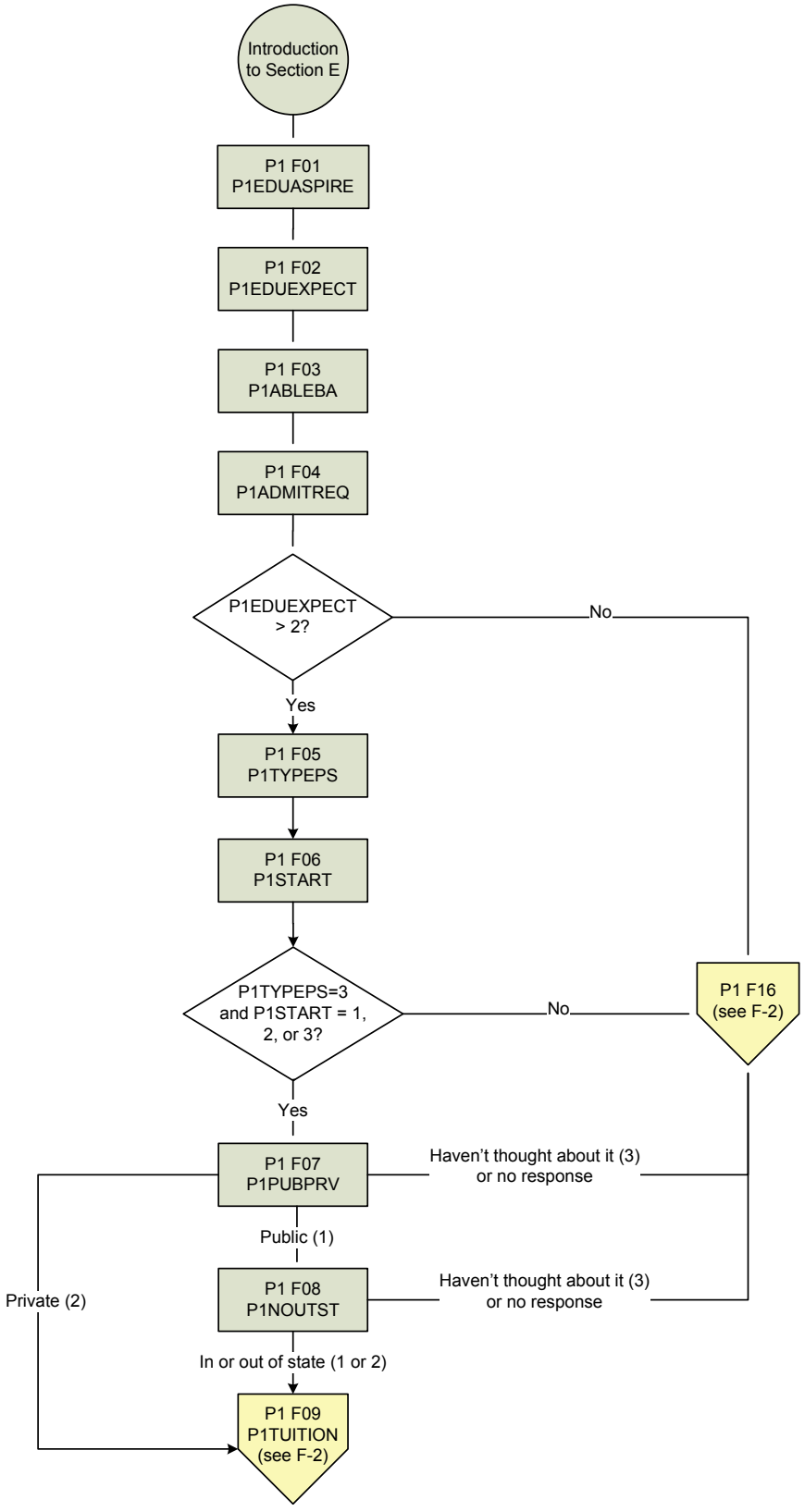
HSLS Parent Questionnaire Flowchart with Form Names
Section D



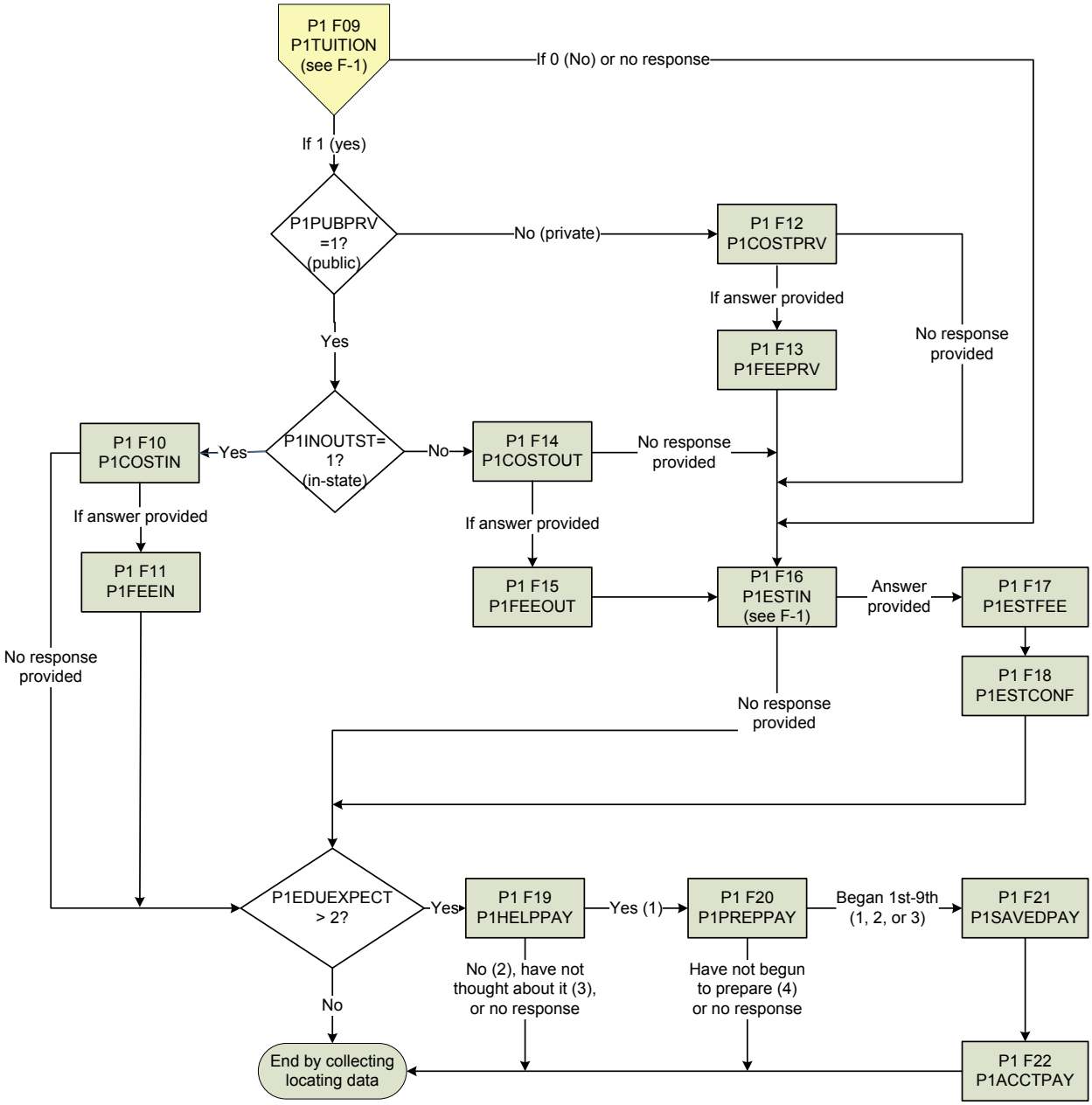
HSLS Parent Questionnaire Flowchart with Form Names
Section E



HSLS Parent Questionnaire Flowchart with Form Names
Section F-1



HSLS Parent Questionnaire Flowchart with Form Names
Section F-2



Administrator Questionnaire and Flowchart

Section A: School Characteristics

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Variable: A1GRADE8
Item wording: 8th Grade
0=No
1=Yes
Variable: A1GRADE9
Item wording: 9th Grade
0=No
1=Yes
Variable: A1GRADE10
Item wording: 10th Grade
0=No
1=Yes
Variable: A1GRADE11
Item wording: 11th Grade
0=No
1=Yes
Variable: A1GRADE12
Item wording: 12th Grade
0=No
1=Yes
Variable: A1GRADE13
Item wording: Any grade level higher than 12
0=No
1=Yes
Variable: A1UNGRADED
Item wording: Ungraded
0=No
1=Yes

Routing: Go to A1 A02.

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Screen: A1 A02
Question wording: Our records indicate that [your school] is a [public/private] school. Is this correct?
Note: Question wording was customized in the survey instrument such that the respondent's school name appeared in place of "your school", and such that "public" or "private" was conditionally displayed based on sampling information. Although the actual survey instrument included this question with yes/no response options, pre-loaded school control information was combined with the administrator's yes/no response to produce A1SCHCONTROL values of 1=Public and 2=Private.
Variable: A1SCHCONTROL
1=Public
2=Private

Routing: If private school then go to A1 A03;
Else if public school go to A1 A05.

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Screen: A1 A03
Question wording: Does this school have a religious orientation or purpose?
Variable: A1RELIGIOUS
0=No
1=Yes

Routing: If A1RELIGIOUS=1 then go to A1 A04;
Else if A1RELIGIOUS=0 or missing then go to A1 A05.

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Routing: Go to A1 A11.

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Screen: A1 A11

Question wording: What kind of academic calendar does [your school] have for grades 9 through 12?

Note: Question wording was customized in the survey instrument such that the respondent's school name appeared in place of "your school".

Variable: A1CALENDAR

1=Semester calendar
2=Trimester calendar
3=Quarter calendar
4=Other calendar

Routing: go to A1 A12.

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Screen: A1 A12

Question wording: How are courses scheduled in [your school] for grades 9 through 12? Would you say...

Note: Question wording was customized in the survey instrument such that the respondent's school name appeared in place of "your school".

Variable: A1SCHEDULE

1=traditional scheduling only (no block scheduling)
2=block scheduling only such as 4x4 or A/B, or
3=both traditional and block scheduling?

Routing: If A1SCHEDULE = 1, 3, or missing, go to A1 A13;
else if A1SCHEDULE=2 go to A1 A14.

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Screen: A1 A13

Question wording: How many minutes long are courses on the traditional schedule at [your school] for grades 9 through 12?

Note: Question wording was customized in the survey instrument such that the respondent's school name appeared in place of "your school".

Variable: A1TRADMINS

Routing: If A1SCHEDULE = 1 or missing go to A1 A18;
Else go to A1 A14.

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Screen: A1 A14

Question wording: Which of the following types of courses are block scheduled for grades 9 through 12? (Check all that apply.)

Variable: A1ACADBLOCK

Item wording: Academic courses

0=No
1=Yes

Variable: A1VOCBLOCK

Item wording: Vocational or technical courses

0=No
1=Yes

Variable: A1OTHRBLOCK

Item wording: Other courses

0=No
1=Yes

Routing: If A1ACADBLOCK=1 then go to A1 A15;
Else if A1VOCBLOCK=1 then go to A1 A16;
Else if A1OTHRBLOCK=1 then go to A1 A17;
Else go to A1 A18.

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1=Yes

Variable: A1MSSUMMER

Item wording: Partner with community colleges or universities that offer math or science summer programs or camps for high school students

0=No

1=Yes

Variable: A1MSAFTERSCH

Item wording: Sponsor a math or science after-school program

0=No

1=Yes

Variable: A1MSMENTOR

Item wording: Pair students with mentors in math or science

0=No

1=Yes

Variable: A1MSSPEAKER

Item wording: Bring in guest speakers to talk to students about math or science

0=No

1=Yes

Variable: A1MSFLDTRIP

Item wording: Take students on math- or science-relevant field trips such as to a city aquarium or planetarium

0=No

1=Yes

Variable: A1MSPRGMS

Item wording: Tell students about regional or state math or science contests, math or science web sites and blogs, or other math or science programs online or in your community, such as a 21st Century Community Learning Center program or Girls Incorporated Operation SMART

0=No

1=Yes

Variable: A1MESA

Item wording: Partner with Mathematics Engineering Science Achievement (MESA) or a similar enrichment-model program in your community or state that provides math or science academic development activities and services to students

0=No

1=Yes

Variable: A1MSPDLEARN

Item wording: Require teacher professional development in how students learn math or science

0=No

1=Yes

Variable: A1MSPDINTRST

Item wording: Require teacher professional development in increasing student interest in math or science

0=No

1=Yes

Variable: A1MSOTHER

Item wording: Something else

0=No

1=Yes

Variable: A1MSNONE

Item wording: This school does not offer any of these programs or activities or anything else that is similar.

0=No

1=Yes

Routing: go to A1 A26.

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Else go to A1 A27.

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Screen: A1 A27

Question wording: On what basis are 9th graders who are struggling academically recommended to receive assistance?

(Check all that apply.)

Variable: A1G9ABSENTEE
Item wording: Absentee record
0=No
1=Yes

Variable: A1G9GRADES
Item wording: Having poor or failing grades
0=No
1=Yes

Variable: A1G9BEHIND
Item wording: Being behind on credits
0=No
1=Yes

Variable: A1G9BEHAVE
Item wording: Having disciplinary problems
0=No
1=Yes

Variable: A1G9TCHREF
Item wording: Teacher's referral
0=No
1=Yes

Variable: A1G9CNSLREF
Item wording: Counselor's referral
0=No
1=Yes

Variable: A1G9PRNTREF
Item wording: Parental request
0=No
1=Yes

Variable: A1G9REQUEST
Item wording: Student request
0=No
1=Yes

Variable: A1G9OTHER
Item wording: Another way
0=No
1=Yes

Routing: Go to Introduction to Section B.
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Section B: Student Population

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Screen: Introduction to Section B
Question wording: Now we would like to ask you some questions about your school's student population. Some questions may request information that is time-consuming to report with exact numbers. For those questions, informed estimates are acceptable.
Routing: Go to A1 B01.

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Screen: A1 B01
Question wording: What is your high school's current enrollment expressed as a percentage of capacity such as 90 percent filled or 105 percent filled?
Variable: A1CAPACITY
Routing: go to A1 B02.

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Screen: A1 B02
Question wording: Which of the following programs or courses does [your school] offer on-site? (Check all that apply.)
Note: Question wording was customized in the survey instrument such that the respondent's school name appeared in place of "your school".

Variable: A1OFFERALT
Item wording: Alternative program
0=No
1=Yes

Variable: A1OFFERDOPRV
Item wording: Dropout prevention program
0=No
1=Yes

Variable: A1OFFERAP
Item wording: College Board Advanced Placement (AP) courses
0=No
1=Yes

Variable: A1OFFERNONE
Item wording: None of these
0=No
1=Yes

Routing: go to A1 B03.

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Screen: A1 B03
Question wording: What percentage of the total student body in [your school]...
(Please enter '0' if none.)
Note: Question wording was customized in the survey instrument such that the respondent's school name appeared in place of "your school". Item wording was customized as follows: for item A1ALTPROG, [bracketed text] was shown if A1OFFERALT=1; for item A1DROPOUTPRV, [bracketed text] was shown if A1OFFERDOPRV=1; for item A1AP, [bracketed text] was shown in A1OFFERAP=1.

Variable: A1FREELUNCH
Item wording: receives free or reduced-price lunch?

Variable: A1ELL
Item wording: are English language learners?
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Variable: A1SPECIALED
Item wording: receives Special Education services for students with disabilities?
Variable: A1ALTPROG
Item wording: are enrolled in an alternative program [either at your school or] off-site?
Variable: A1DROPOUTPRV
Item wording: are enrolled in a dropout prevention program [either at your school or] off-site?
Variable: A1AP
Item wording: are enrolled in College Board Advanced Placement (AP) courses [either at your school or] off-site?

Routing: go to A1 B04.

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Screen: A1 B04
Question wording: What percentage of the total student body in [your school] are members of the following groups? Please count each student only once.
(Please round your responses to the nearest whole number, and enter '0' for any group not present at your school. You may exclude any students whose race is not known. Your responses should sum to 100.)
Note: Question wording was customized in the survey instrument such that the respondent's school name appeared in place of "your school".
Variable: A1HISPSTU
Item wording: Hispanic or Latino/Latina
Variable: A1WHITESTU
Item wording: White, non-Hispanic
Variable: A1BLACKSTU
Item wording: Black or African American, non-Hispanic
Variable: A1ASIANPISTU
Item wording: Asian or Pacific Islander
Variable: A1AMINDIANST
Item wording: American Indian or Alaska Native

Routing: Go to A1 B05.

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Screen: A1 B05
Question wording: What percentage of [your school]'s 2009-2010 9th-grade class is repeating 9th grade?
Note: Question wording was customized in the survey instrument such that the respondent's school name appeared in place of "your school".
Variable: A1REPEATG9

Routing: Go to A1 B06.

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Screen: A1 B06
Question wording: What percentage of 9th-grade students who were enrolled in your school in September of 2008 returned to your school in September of 2009?
Variable: A1RETURN09

Routing: go to A1 B07.

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Screen: A1 B07
Question wording: For the following question your answers should sum to 100%. Please round to whole numbers and answer '0' if there are no students in a category. What percentage of last year's 12th-grade class...
Variable: A14YRDEGREE
Item wording: went on to 4-year, bachelor's degree-granting colleges?

Variable: A12YRDEGREE
Item wording: went on to 2-year, associate's degree-granting colleges or technical institutes?
Variable: A1WORK
Item wording: entered the labor market?
Variable: A1MILITARY
Item wording: joined the military?
Variable: A1DIDOTHER
Item wording: did something else?
Routing: go to Introduction to Section C.
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Section C: School's Teachers

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Screen: Introduction to Section C
Question wording: Now, we have a few questions about the teachers at your school. Some questions may request information that is time-consuming to report with exact numbers. For those questions, informed estimates are acceptable.
Routing: Go to A1 C01.
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Screen: A1 C01
Question wording: How many teachers work full-time and how many work part-time at [your school]?
Note: Question wording was customized in the survey instrument such that the respondent's school name appeared in place of "your school".
Variable: A1FTTCHRS
Item wording: full-time teachers
Variable: A1PTTCHRS
Item wording: part-time teachers
Routing: Go to A1 C02.
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Screen: A1 C02
Question wording: For each of the following subject areas, please indicate the number of full-time teachers and part-time teachers that instruct high school students in [your school]. Please give your best estimate. If a teacher works full-time in [your school], but divides his or her time between subject areas, consider that teacher as part-time in each subject area.
(Please enter '0' if none.)
Note: Question wording was customized in the survey instrument such that the respondent's school name appeared in place of "your school".
Variable: A1FTMTCHRS
Item wording: Math (full-time)
Variable: A1PTMTCHRS
Item wording: Math (part-time)
Variable: A1FTSTCHRS
Item wording: Science (full-time)
Variable: A1PSCTCHRS
Item wording: Science (part-time)
Variable: A1FTOTHTCHRS
Item wording: All other subjects (full time)
Variable: A1PTOTHTCHRS
Item wording: All other subjects (part time)
Routing: Go to A1 C03.

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Section D: Courses Offered

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Screen: Introduction to Section D
Question wording: Now we have a few questions about courses offered by your high school.
Routing: Go to A1 D01.
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Screen: A1 D01
Question wording: Which of the following math and computer sciences courses are offered onsite at your high school?
(Check all that apply.)

Variable: A1ONPREALG
Item wording: PreAlgebra
0=No
1=Yes

Variable: A1ONRMTH
Item wording: Review or Remedial Math
0=No
1=Yes

Variable: A1ONINTMTH1
Item wording: Integrated Math I
0=No
1=Yes

Variable: A1ONINTMTH2
Item wording: Integrated Math II or above
0=No
1=Yes

Variable: A1ONALGP1P2
Item wording: Algebra I, part 1 and part 2
0=No
1=Yes

Variable: A1ONALG1
Item wording: Algebra I
0=No
1=Yes

Variable: A1ONALG2
Item wording: Algebra II
0=No
1=Yes

Variable: A1ONGEOM
Item wording: Geometry
0=No
1=Yes

Variable: A1ONTRIG
Item wording: Trigonometry
0=No
1=Yes

Variable: A1ONALG3
Item wording: Algebra III
~~~~~~

0=No
1=Yes

Variable: A1ONANGEOM
Item wording: Analytic Geometry
0=No
1=Yes

Variable: A1ONCLC
Item wording: Calculus
0=No
1=Yes

Variable: A1ONCLCAPAB
Item wording: AP Calculus, AB
0=No
1=Yes

Variable: A1ONCLCAPBC
Item wording: AP Calculus, BC
0=No
1=Yes

Variable: A1ONCLCAPIB
Item wording: Calculus IB
0=No
1=Yes

Variable: A1ONCMPSCI
Item wording: Computer Science
0=No
1=Yes

Variable: A1ONCMPSCIA
Item wording: AP Computer Science, A
0=No
1=Yes

Variable: A1ONCMPSCIB
Item wording: AP Computer Science, AB
0=No
1=Yes

Variable: A1ONSTATS
Item wording: Statistics or Probability
0=No
1=Yes

Variable: A1ONSTATSAP
Item wording: AP Statistics
0=No
1=Yes

Routing: If all items are checked yes, go to A1 D03;
Else go to A1 D02.

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Screen: A1 D02
Question wording: Which of the following courses are offered for credit to your school's students through other means, such as at another high school, community college or as an online course? (Check all that apply.)
Note: Only items that were not checked on the previous Screen (A1 D01) were displayed on this Screen.

Variable: A1OFFPREALG
Item wording: PreAlgebra
~~~~~~

0=No
1=Yes

Variable: A1OFFRMTH
Item wording: Review or Remedial Math
0=No
1=Yes

Variable: A1OFFINTMTH1
Item wording: Integrated Math I
0=No
1=Yes

Variable: A1OFFINTMTH2
Item wording: Integrated Math II or above
0=No
1=Yes

Variable: A1OFFALGP1P2
Item wording: Algebra I, part 1 and part 2
0=No
1=Yes

Variable: A1OFFALG1
Item wording: Algebra I
0=No
1=Yes

Variable: A1OFFALG2
Item wording: Algebra II
0=No
1=Yes

Variable: A1OFFGEOM
Item wording: Geometry
0=No
1=Yes

Variable: A1OFFTRIG
Item wording: Trigonometry
0=No
1=Yes

Variable: A1OFFALG3
Item wording: Algebra III
0=No
1=Yes

Variable: A1OFFANGEOM
Item wording: Analytic Geometry
0=No
1=Yes

Variable: A1OFFCLC
Item wording: Calculus
0=No
1=Yes

Variable: A1OFFCLCAPAB
Item wording: AP Calculus, AB
0=No
1=Yes

Variable: A1OFFCLCAPBC
Item wording: AP Calculus, BC

0=No
1=Yes

Variable: A1OFFCMPSCI
Item wording: Computer Science
0=No
1=Yes

Variable: A1OFFCLCAPIB
Item wording: Calculus IB
0=No
1=Yes

Variable: A1OFFMPSCIA
Item wording: AP Computer Science, A
0=No
1=Yes

Variable: A1OFFCMPSCIB
Item wording: AP Computer Science, AB
0=No
1=Yes

Variable: A1OFFSTATS
Item wording: Statistics or Probability
0=No
1=Yes

Variable: A1OFFSTATSAP
Item wording: AP Statistics
0=No
1=Yes

Variable: A1NOMTHO
Item wording: None of these
0=No
1=Yes

Routing: Go to A1 D03.

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Screen: A1 D03

Question wording: Which of the following science courses are offered onsite at your high school? (Check all that apply.)

Variable: A1ONGENSCI
Item wording: General Science
0=No
1=Yes

Variable: A1ONPHYSCI
Item wording: Physical Science
0=No
1=Yes

Variable: A1ONERTHSCI
Item wording: Earth Science
0=No
1=Yes

Variable: A1ONENVSCI
Item wording: Environmental Science
0=No
1=Yes
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Variable: A1ONTECH
Item wording: Principles of Technology
0=No
1=Yes
Variable: A1ONBIO1
Item wording: Biology I
0=No
1=Yes
Variable: A1ONLIFESCI
Item wording: Life Science
0=No
1=Yes
Variable: A1ONCHEM1
Item wording: Chemistry I
0=No
1=Yes
Variable: A1ONPHYS1
Item wording: Physics I
0=No
1=Yes
Variable: A1ONINTGSCI1
Item wording: Integrated Science I
0=No
1=Yes
Variable: A1ONINTGSCI2
Item wording: Integrated Science II or above
0=No
1=Yes
Variable: A1ONANATOMY
Item wording: Anatomy or Physiology
0=No
1=Yes
Variable: A1ONENVAP
Item wording: AP Environmental Science
0=No
1=Yes
Variable: A1ONADVBIO
Item wording: AP or IB Advanced Biology or Biology II
0=No
1=Yes
Variable: A1ONADVCHEM
Item wording: AP or IB Advanced Chemistry or Chemistry II
0=No
1=Yes
Variable: A1ONADVPHYS
Item wording: AP or IB Advanced Physics or Physics II
0=No
1=Yes
Variable: A1ONOTHBIO
Item wording: Other biological sciences such as botany, marine biology, or zoology
0=No
1=Yes

Variable: A1ONOTHPSCI
Item wording: Other physical sciences such as astronomy or electronics
0=No
1=Yes
Variable: A1ONOTHESCI
Item wording: Other earth or environmental sciences such as ecology, geology, oceanography, or meteorology
0=No
1=Yes

Routing: If all items are checked yes, go to A1 D05;
Else go to A1 D04.

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Screen: A1 D04
Question wording: Which of the following courses are offered for credit to your school's students through other means, such as at another high school, community college or as an online course? (Check all that apply.)
Note: Only items that were not checked on the previous Screen (A1 D03) were displayed on this Screen.

Variable: A1OFFGENSCI
Item wording: General Science
0=No
1=Yes
Variable: A1OFFPHYSCI
Item wording: Physical Science
0=No
1=Yes
Variable: A1OFFERTHSCI
Item wording: Earth Science
0=No
1=Yes
Variable: A1OFFTECH
Item wording: Principles of Technology
0=No
1=Yes
Variable: A1OFFBIO1
Item wording: Biology I
0=No
1=Yes
Variable: A1OFFLSCI
Item wording: Life Science
0=No
1=Yes
Variable: A1OFFCHEM1
Item wording: Chemistry I
0=No
1=Yes
Variable: A1OFFPHYS1
Item wording: Physics I
0=No
1=Yes
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Variable: A1OFFINTSCI1
Item wording: Integrated Science I
0=No
1=Yes
Variable: A1OFFINTSCI2
Item wording: Integrated Science II or above
0=No
1=Yes
Variable: A1OFFENVSCI
Item wording: Environmental Science
0=No
1=Yes
Variable: A1OFFANATOMY
Item wording: Anatomy or Physiology
0=No
1=Yes
Variable: A1OFFENVAP
Item wording: AP Environmental Science
0=No
1=Yes
Variable: A1OFFADVBIO
Item wording: AP or IB Advanced Biology or Biology II
0=No
1=Yes
Variable: A1OFFADVCHEM
Item wording: AP or IB Advanced Chemistry or Chemistry II
0=No
1=Yes
Variable: A1OFFADVPHYS
Item wording: AP or IB Advanced Physics or Physics II
0=No
1=Yes
Variable: A1OFFOTHPSCI
Item wording: Other physical sciences such as astronomy or electronics
0=No
1=Yes
Variable: A1OFFOTHBIO
Item wording: Other biological sciences such as botany, marine biology, or zoology
0=No
1=Yes
Variable: A1OFFOTHESCI
Item wording: Other earth or environmental sciences such as ecology, geology, oceanography, or meteorology
0=No
1=Yes
Variable: A1NOSCIO
Item wording: None of these
0=No
1=Yes

Routing: go to A1 D05.

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Variable: A1PACISLE
Item wording: Native Hawaiian or other Pacific Islander
0=No
1=Yes
Variable: A1AMINDIAN
Item wording: American Indian or Alaska Native
0=No
1=Yes
Routing: go to A1 E03.
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Variable: A1STUABSENT
Item wording: Student absenteeism
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
Variable: A1CUT
Item wording: Student class cutting
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
Variable: A1TCHRABSENT
Item wording: Teacher absenteeism
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
Variable: A1DROPOUT
Item wording: Students dropping out
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
Variable: A1APATHY
Item wording: Student apathy
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
Variable: A1PRNTINV
Item wording: Lack of parental involvement
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
Variable: A1UNPREP
Item wording: Students come to school unprepared to learn
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
Variable: A1HEALTH
Item wording: Poor student health
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem

Variable: A1RESOURCES
Item wording: Lack of resources and materials for teachers
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem

Routing: Go to A1 E18.

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Screen: A1 E18

Question wording: To the best of your knowledge how often do the following types of problems occur at your high school?

Variable: A1CONFLICT
Item wording: Physical conflicts among students
1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens

Variable: A1ROBBERY
Item wording: Robbery or theft
1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens

Variable: A1VANDALISM
Item wording: Vandalism
1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens

Variable: A1DRUGUSE
Item wording: Student use of illegal drugs while at school
1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens

Variable: A1ALCOHOL
Item wording: Student use of alcohol while at school
1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens
~~~~~~

Variable: A1DRUGSALE
Item wording: The sale of drugs on the way to or from school or on school grounds
1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens

Variable: A1WEAPONS
Item wording: Student possession of weapons
1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens

Variable: A1PHYSABUSE
Item wording: Physical abuse of teachers
1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens

Variable: A1TENSION
Item wording: Student racial tensions
1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens

Variable: A1BULLY
Item wording: Student bullying
1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens

Variable: A1VERBAL
Item wording: Student verbal abuse of teachers
1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens

Variable: A1MISBEHAVE
Item wording: Student in-class misbehavior
1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens

Variable: A1DISRESPECT

Item wording: Student acts of disrespect for teachers

1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens

Variable: A1GANG

Item wording: Student gang activities

1=Daily
2=At least once a week
3=At least once a month
4=On occasion
5=Never happens

Routing: End administrator interview.

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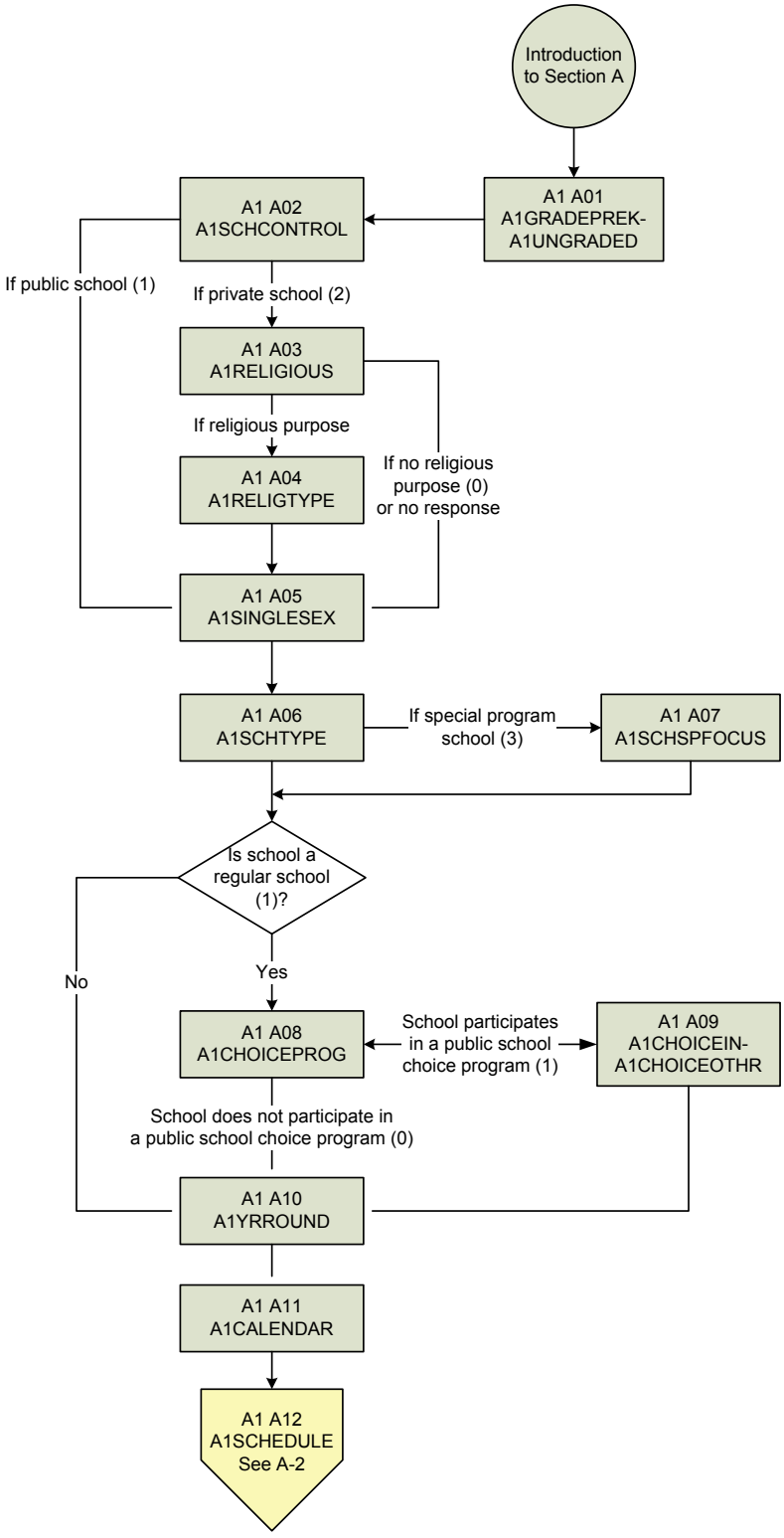
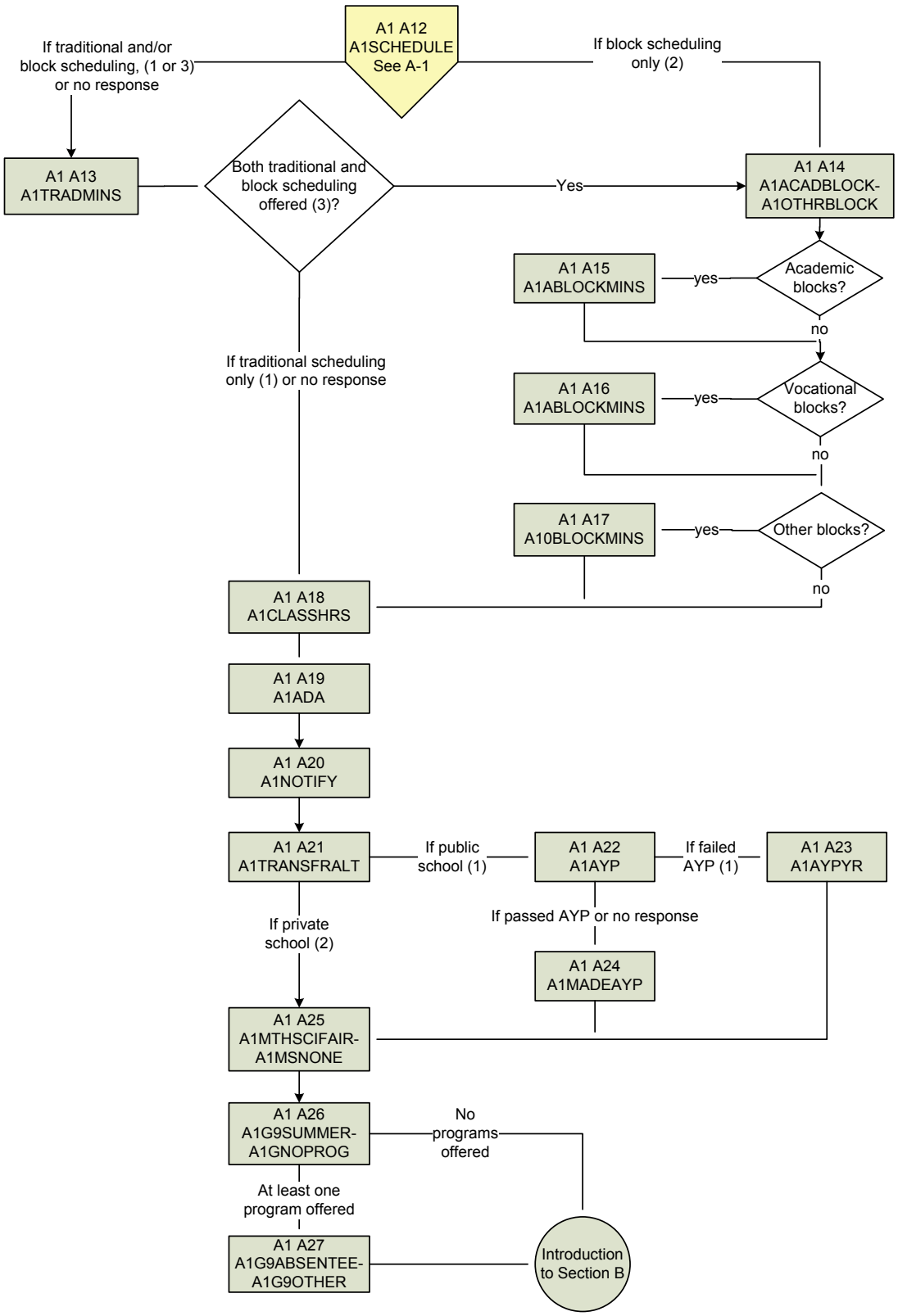
Administrator Flowchart

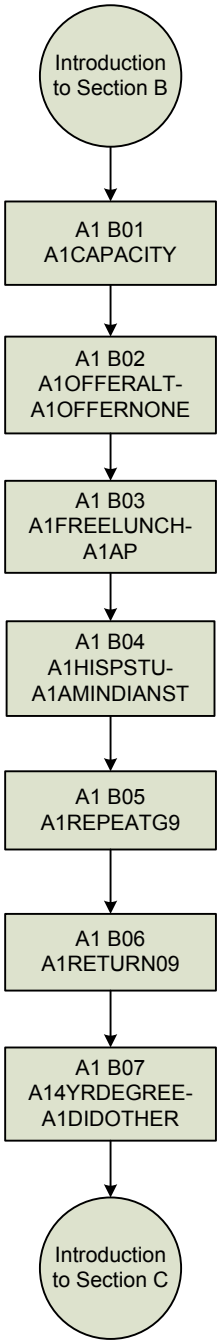
HSLS School Administrator Questionnaire Flowchart with Form Names
Section A-1



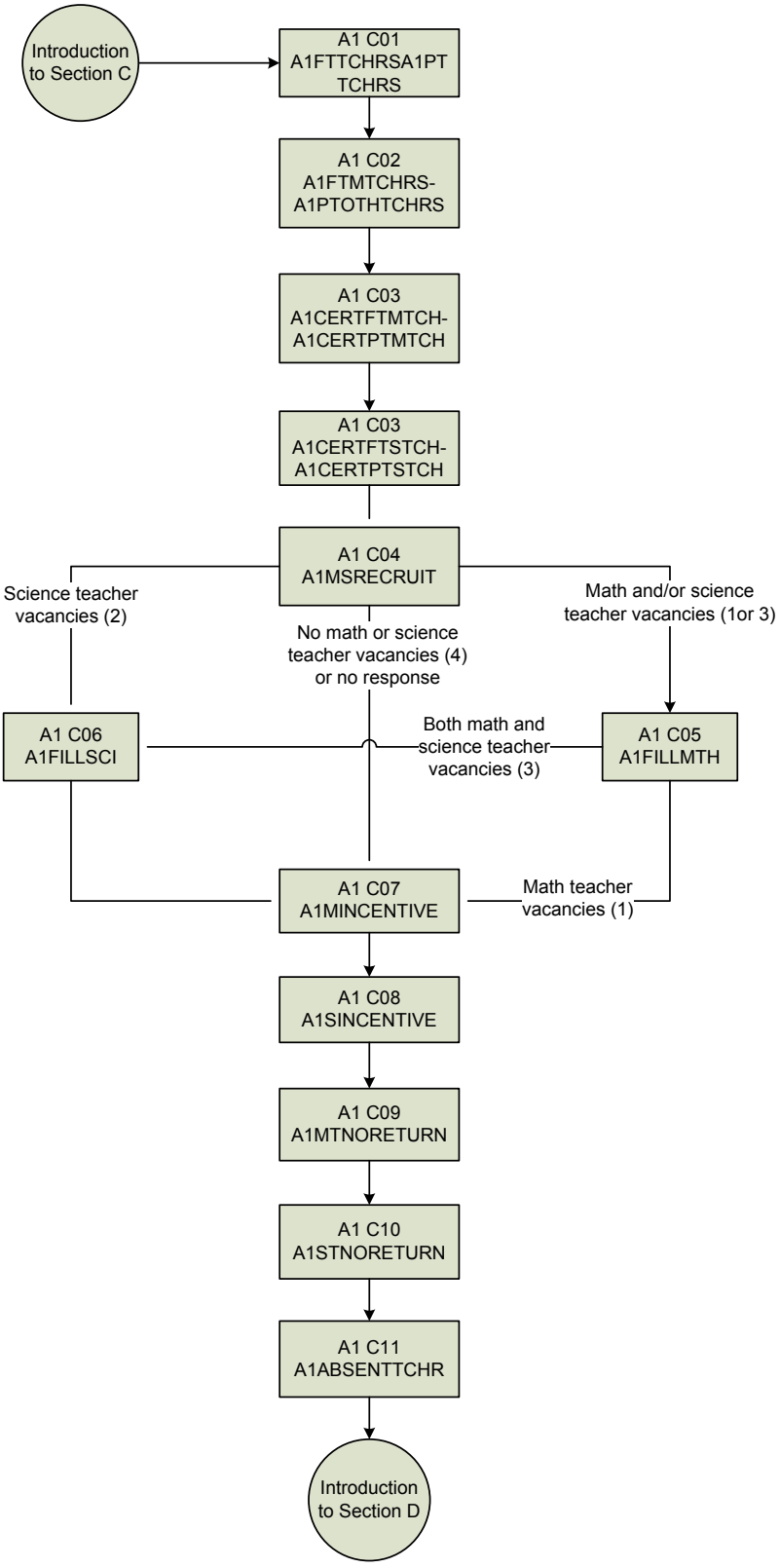
HSLS School Administrator Questionnaire Flowchart with Form Names
Section A-2



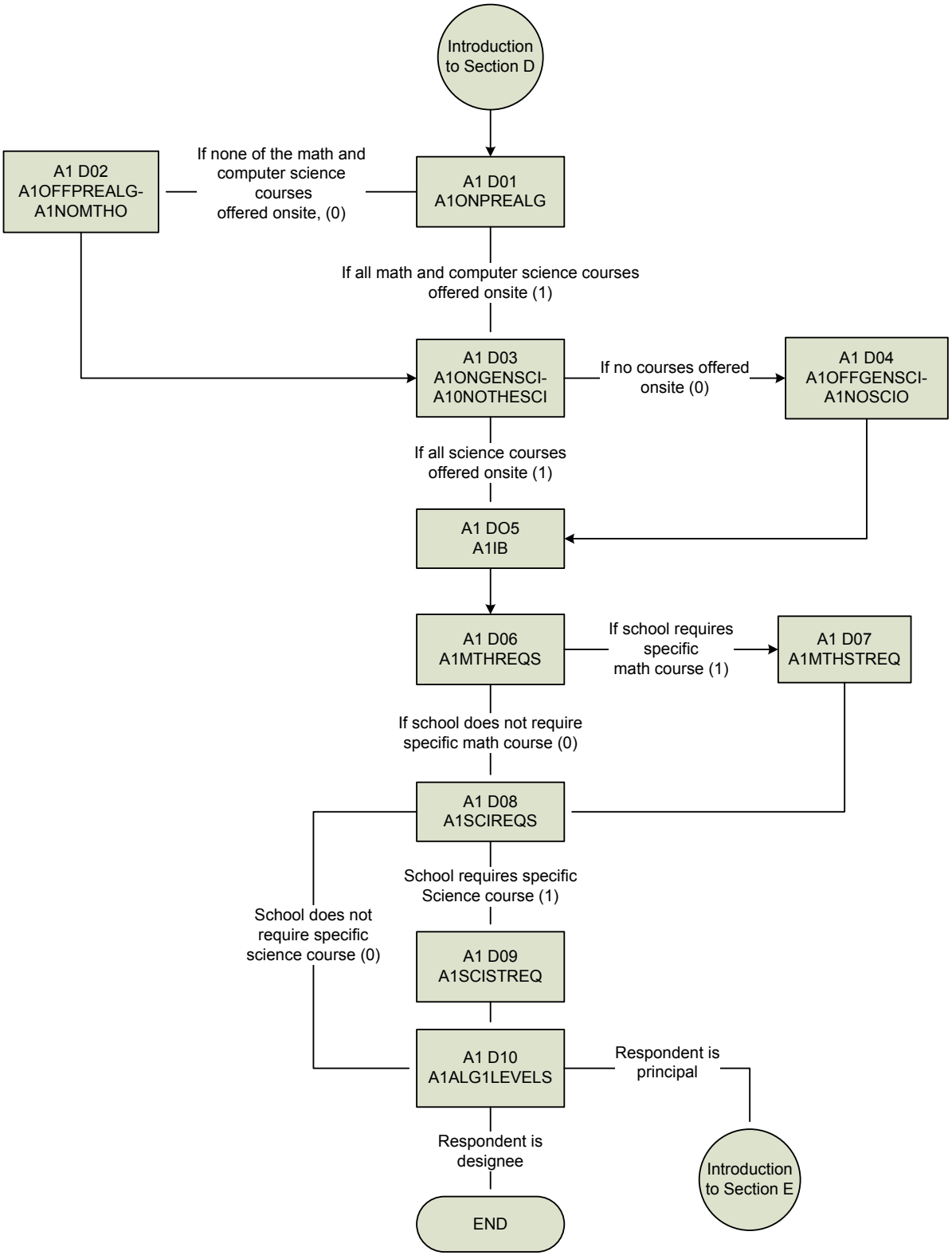
HSLS School Administrator Questionnaire Flowchart with Form Names
Section B



HSLS School Administrator Questionnaire Flowchart with Form Names
Section C

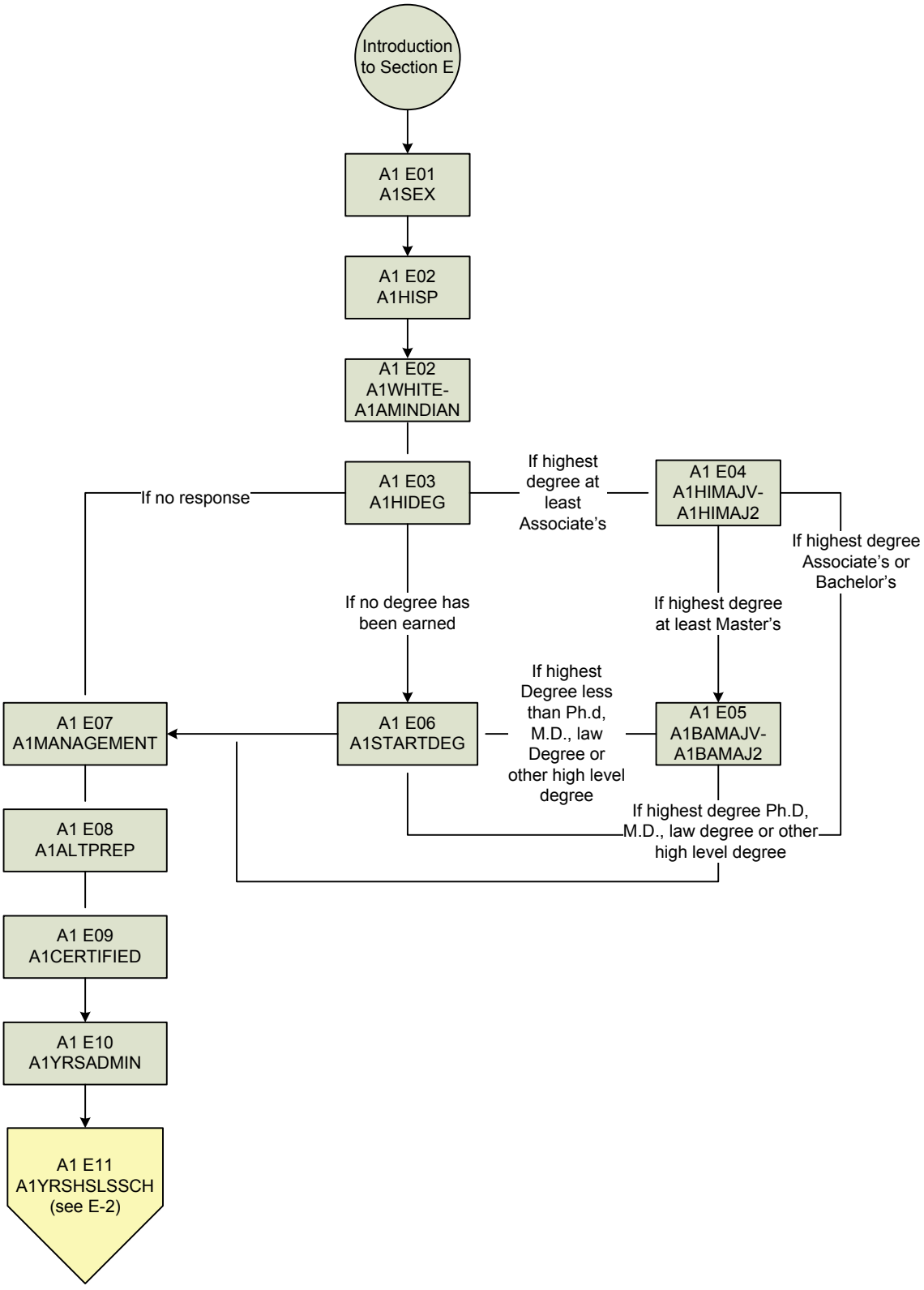


HSLS School Administrator Questionnaire Flowchart with Form Names
Section D

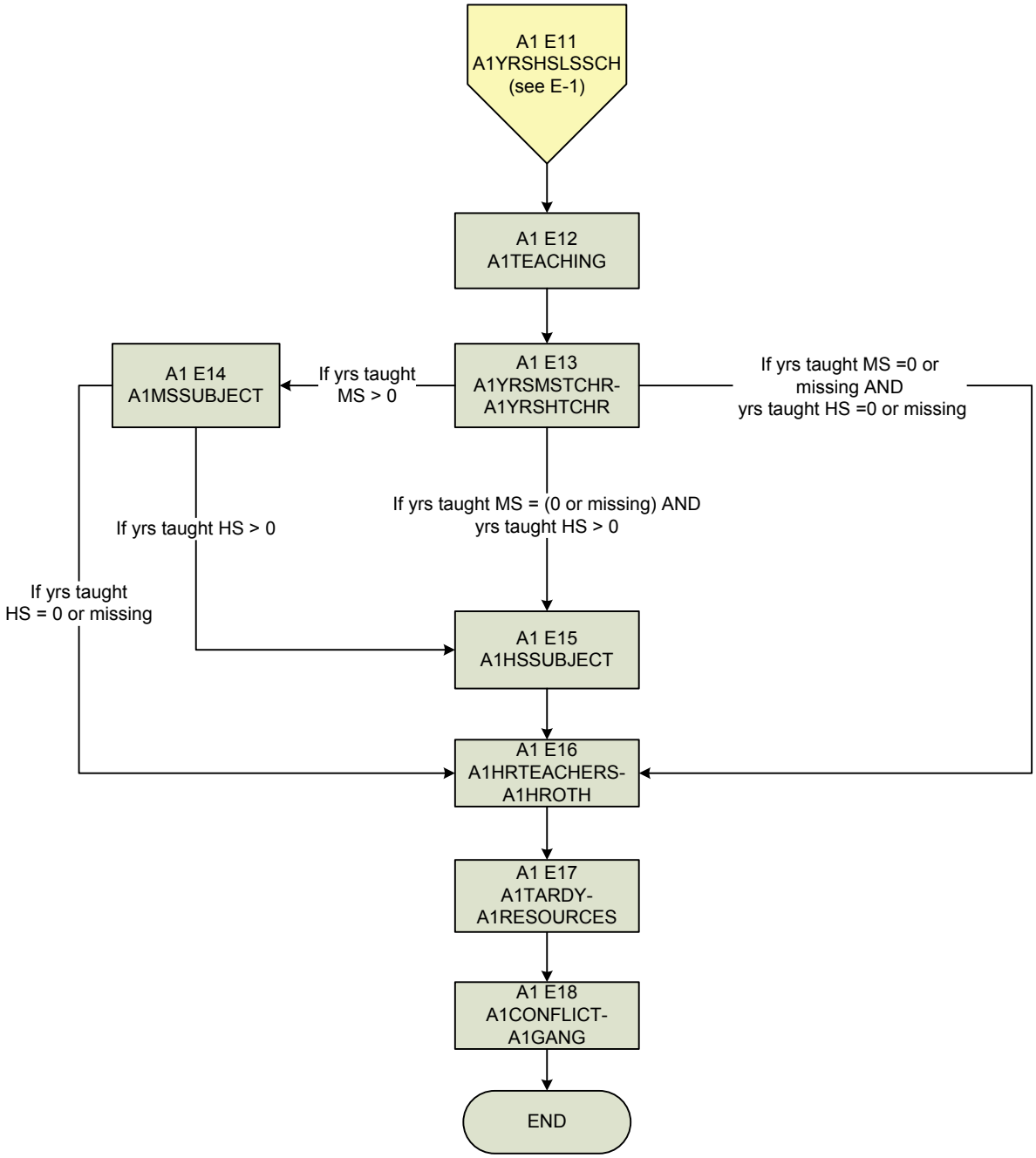


HSLS School Administrator Questionnaire Flowchart with Form Names

Section E-1



HSLS School Administrator Questionnaire Flowchart with Form Names
Section E-2



Counselor Questionnaire and Flowchart

Section A: Staffing and Practices

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Screen: Introduction to Section B
Question wording: First we have some questions about staffing and common practices in the counseling department of your school.
Routing: Go to C1 A01.

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Screen: C1 A01
Question wording: Including yourself, how many full-time and part-time counselors work with high school students at [your school]?
Note: Question wording was customized in the survey instrument such that the respondent's school name appeared in place of "your school".
Variable: C1FTCNSL
full-time counselor(s)
Variable: C1PTCNSL
part-time counselor(s)
Routing: Go to C1 A02.

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Screen: C1 A02
Question wording: Of the [X] full-time and [X] part-time counselors assigned to high school students, how many are certified as high school counselors?
Note: Question wording was customized in the survey instrument such that the respondent's school name appeared in place of "your school", and the total number of full-time/part-time high school counselor(s) was filled based on respondent's previous responses, where applicable.
Variable: C1FTCERTCNSL
certified full-time high school counselor(s)
Variable: C1PTCERTCNSL
certified part-time high school counselor(s)
Routing: Go to C1 A03.

~~~~~~

Screen: C1 A03
Question wording: On average, what is the caseload for a counselor in this school?
Variable: C1CASELOAD
Routing: Go to C1 A04.

~~~~~~

Screen: C1 A04
Question wording: Which of the following best describes how counselors are assigned to students at this school? Would you say counselors are assigned...
Variable: C1ASSIGNMENT
1=to all students at this school
2=to a specific grade level such as a 9th grade counselor
3=to an incoming class of 9th graders and remain with them throughout their high school years such as a counselor for the class of 2013
4=to a group of students whose last names fall within a slice of the alphabet such as all students with last names from "A to D"
5=to small learning communities such as schools-within-a-school, pods, and houses or
6=in another way?
Routing: Go to C1 A05.
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Variable: C1HRSTESTING
Item wording: Academic testing
1=5% or less
2=6%-10%
3=11%-20%
4=21%-50%
5=More than 50%

Variable: C1HRSNONCNSL
Item wording: Non-counseling activities such as hall or lunch duty, substitute teaching, bus duty, etc.
1=5% or less
2=6%-10%
3=11%-20%
4=21%-50%
5=More than 50%

Variable: C1HRSOTHCNSL
Item wording: Other counseling activities
1=5% or less
2=6%-10%
3=11%-20%
4=21%-50%
5=More than 50%

Routing: Go to C1 A06.

~~~~~~

Screen: C1 A06

Question wording: Which one of the following goals does your school's counseling program emphasize the most? Would you say...

Variable: C1GOAL1
1=helping students plan and prepare for their work roles after high school
2=helping students with personal growth and development
3=helping students plan and prepare for postsecondary schooling
4=helping students improve their achievement in high school

Routing: If C1GOAL1 is nonmissing, go to C1 A07.
Else go to C1 A09.

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Screen: C1 A07

Question wording: Of the three goals remaining, which one does your school's counseling program emphasize most? Would you say...

Note: Response options were customized such that the three goals not previously selected by the respondent (for C1GOAL1) were the only options displayed in this question.

Variable: C1GOAL2
1=helping students plan and prepare for their work roles after high school
2=helping students with personal growth and development
3=helping students plan and prepare for postsecondary schooling
4=helping students improve their achievement in high school

Routing: If C1GOAL2 is nonmissing, go to C1 A08.
Else go to C1 A09.

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Variable: C1TRANPRNT
Item wording: High school counselors present information to middle grade students' parents or guardians about high school courses and registration
0=No
1=Yes
Variable: C1TRANPLCY
Item wording: High school counselors place 8th grade students into 9th grade courses based on school or district placement policies
0=No
1=Yes
Variable: C1TRANPRES
Item wording: High school counselors present information to middle grade students about high school courses and registration
0=No
1=Yes
Variable: C1TRANCOTH
Item wording: Counselors assist in some other way
0=No
1=Yes
Variable: C1TRANNOT
Item wording: Counselors do not assist students in the transition from middle school to high school.
0=No
1=Yes

Routing: Go to C1 A12.

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Variable: C1TRANADMIN
Item wording: Middle school and high school administrators meet together on articulation and programs
0=No
1=Yes
Variable: C1TRANTCHRS
Item wording: Middle school and high school teachers meet together on courses and requirements
0=No
1=Yes
Variable: C1TRANBUDDY
Item wording: Buddy or big brother or big sister programs pair new students with older ones at entry
0=No
1=Yes
Variable: C1TRANLRNCOM
Item wording: Ninth-graders are placed in small learning communities or 9th Grade Academies
0=No
1=Yes
Variable: C1TRANSUMMER
Item wording: Parents or guardians and/or students visit the high school during the summer before students enter high school
0=No
1=Yes
Variable: C1TRANFALL
Item wording: Parents or guardians visit high school for orientation in the fall after children have entered
0=No
1=Yes
Variable: C1TRANSOTH
Item wording: Your school assists in some other way
0=No
1=Yes
Variable: C1TRANNONE
Item wording: No assistance is offered to students transitioning from middle school to high school.
0=No
1=Yes

Routing: Go to C1 A13.

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Screen: C1 A13
Question wording: Are students in your high school required to have a career or education plan?
Variable: C1PLAN
1=Yes, a combined career and education plan
2=Yes, a career plan only
3=Yes, an education plan only
4=Neither a career plan nor an education plan

Routing: If C1PLAN = 1, 2 or 3 go to C1 A14;
Else go to Introduction to Section B.
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Variable: C1ENRICHMENT
Item wording: Enrichment experiences such as Odyssey of the Mind, Science Olympiad, Academic Decathlon, math or science clubs, math or science teams
0=No
1=Yes
Variable: C1APCOURSE
Item wording: Advanced Placement, college or university courses
0=No
1=Yes
Variable: C1SCHOLARSHP
Item wording: Scholarships for students to attend special events, programs, or classes
0=No
1=Yes
Variable: C1SUMMER
Item wording: Summer activities or programs
0=No
1=Yes
Variable: C1OTHSUPPORT
Item wording: Your school supports high school students in other ways
0=No
1=Yes
Variable: C1NOSUPPORT
Item wording: There are no programs to support high school students.
0=No
1=Yes

Routing: Go to C1 B17.

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Screen: C1 B17

Question wording: Does your school offer summer school enrichment courses that allow students to get ahead academically? One example would be a geometry course that would allow students taking algebra in the 9th grade to take calculus in the 12th grade.

Variable: C1GETAHEAD
1=Yes
0=No

Routing: If Yes go to C1 B18;
Else go to C1 B19.

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Screen: C1 B18

Question wording: To whom does your school offer these summer school enrichment courses? (Check all that apply.)

Variable: C1STRUGGLE
Item wording: Struggling students
0=No
1=Yes
Variable: C1AVERAGE
Item wording: Average students
0=No
1=Yes

Variable: C1HIGH
Item wording: High achieving students
0=No
1=Yes
Routing: Go to C1 B19.
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Variable: C1INFORM
Item wording: inform parents or guardians about mathematics or science higher education or career opportunities?
1=Yes
0=No
Variable: C1ENCCLG
Item wording: encourage students who might not be considering college to do so?
1=Yes
0=No
Routing: Go to C1 B21.
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Variable: C1MALTSCH
Item wording: Referral to an alternative or continuing education school
1=Required
2=Available, but not required
3=Not available at school
Routing: Go to C1 B24.
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Variable: C1DISCPROB
Item wording: Disciplinary problems
0=No
1=Yes
Variable: C1DOPREVOTHR
Item wording: On another basis
0=No
1=Yes
Routing: Go to C1 B26.
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Variable: C1INFOSESSN
Item wording: Holds information sessions for students and parents or guardians
0=No
1=Yes
Variable: C1FINANCEAID
Item wording: Assists students with finding financial aid for college
0=No
1=Yes
Variable: C1DUALENROLL
Item wording: Provides opportunities to participate in concurrent or dual enrollment
0=No
1=Yes
Variable: C1BEHAVIOR
Item wording: Offers a counseling curriculum that leads to positive academic behaviors
0=No
1=Yes
Variable: C1ASSISTOTH
Item wording: Your school takes other steps
0=No
1=Yes
Variable: C1NOSTEPS
Item wording: Your school does not take any steps to assist students with the transition from high school to college.
0=No
1=Yes

Routing: Go to C1 B29.

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Screen: C1 B29
Question wording: Is career technical education offered in your district on-site or off-site such as at an area vocational-technical school?
Variable: C1CTE
1=On-site only
2=Off-site only
3=On-site and off-site
4=Neither on-site nor off-site

Routing: If C1CTE=1, 2, or 3 go to C1 B30;
Else go to C1 B32.

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Screen: C1 B30
Question wording: Are Career Clusters, Pathways, or Programs of Study (POS) offered to students in [your school]?
Note: Question wording was customized in the survey instrument such that the respondent's school name appeared in place of "your school".
Variable: C1CLUSTER
1=Yes
0=No

Routing: If Yes, go to C1 B31;
Else go to C1 B32.

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Variable: C1ASSEMBLIES
Item wording: Vocational oriented assemblies and speakers in classes
0=No
1=Yes
Variable: C1VOCTECH
Item wording: Vocational-technical courses that are not part of a formal program
0=No
1=Yes
Variable: C1JOBVISIT
Item wording: Job site visits or field trips
0=No
1=Yes
Variable: C1JOBSHADOW
Item wording: Job shadowing such as extended observations of a worker
0=No
1=Yes
Variable: C1JOBSIM
Item wording: Simulations such as Singer or SRA Job experience kits
0=No
1=Yes
Variable: C1JOBTEST
Item wording: Tests for career planning purposes such as interest inventories or vocational aptitude tests
0=No
1=Yes
Variable: C1JOBSKILLS
Item wording: Training in job seeking skills
0=No
1=Yes
Variable: C1JOBINFOCMP
Item wording: Use of computerized career information resources
0=No
1=Yes
Variable: C1JOBINFONON
Item wording: Use of non-computerized career information resources
0=No
1=Yes
Variable: C1HSTOWRKOTH
Item wording: The school assists students in other ways
0=No
1=Yes
Variable: C1HSTOWORKNO
Item wording: There are no options offered to assist students with the transition from high school to work.
0=No
1=Yes

Routing: Go to Introduction to Section C.

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Section C: Math and Science Placement

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Screen: Introduction to Section C
Question wording: Now we have some questions about factors associated with students' mathematics and science course placement.
Routing: Go to C1 C01.

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Screen: C1 C01
Question wording: Are all 9th grade students in your school placed in the same mathematics course while in the 9th grade? If all 9th grade students are placed in the same math course (such as Algebra I or Geometry), but with different teachers or different class periods, please answer "yes."

Variable: C1G9MSAME
1=Yes
0=No

Routing: If C1G9MSAME = Yes, go to C1 C03;
Else go to C1 C02.

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Screen: C1 C02
Question wording: How important is each of the following factors in placing a typical 9th grade student into a mathematics course?

Variable: C1G9MMSCNSL
Item wording: Middle school counselor recommendation
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9MHSCNSL
Item wording: High school counselor recommendation
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9MMSTCHR
Item wording: Middle school teacher recommendation
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9MMSCOURS
Item wording: Courses taken in middle school
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9MMSACHV
Item wording: Achievement in middle school courses

1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9MENDTST
Item wording: Results of district or state end-of-year or end-of-course exams
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9MPLACTST
Item wording: Results of placement tests
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9MSTNDTST
Item wording: Results of standardized tests
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9MPLAN
Item wording: Student career or education plan
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9MSELECT
Item wording: Student and/or parent or guardian selection
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Routing: Go to C1 C03.

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Screen: C1 C03
Question wording: After 9th grade, are all high school students within the same grade placed in the same mathematics course? If all students within a grade (10, 11, or 12) are placed in the same math course, but with different teachers or different class periods please answer "yes."

Variable: C1UPPERMSAME
1=Yes
0=No

Routing: If C1UPPERMSAME = Yes go to C1 C05;
Else go to C1 C04.

~~~~~~

Screen: C1 C04
Question wording: How important is each of the following factors in placing typical students into grades 10 through 12 mathematics courses?

Variable: C1UPMGRADES
Item wording: Prior grades including grades from a prerequisite class

1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1UPMPLACTST
Item wording: Results of placement tests
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1UPMTCHR
Item wording: Previous year's teacher recommendation
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1UPMSELECT
Item wording: Student and/or parent or guardian selection
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1UPMPLAN
Item wording: Student career or education plan
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1UPMSCHED
Item wording: Master schedule considerations
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Routing: Go to C1 C05.

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Screen: C1 C05
Question wording: Are all 9th grade students in your school placed in the same science course while in the 9th grade? If all 9th grade students are placed in the same science course (such as Biology I or Earth Science), but with different teachers or different class periods, please answer "yes."

Variable: C1G9SSAME
1=Yes
0=No

Routing: If C1G9SSAME = Yes go to C1 C07;
Else go to C1 C06.

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Screen: C1 C06
Question wording: How important is each of the following factors in placing a typical 9th grade student into a science course?

Variable: C1G9SMSCNSL
Item wording: Middle school counselor recommendation

1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9SHSCNSL
Item wording: High school counselor recommendation
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9SMSTCHR
Item wording: Middle school teacher recommendation
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9SMSCOURS
Item wording: Courses taken in middle school
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9SMSACHV
Item wording: Achievement in middle school courses
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9SENDTST
Item wording: Results of district or state end-of-year or end-of-course exams
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9SPLACTST
Item wording: Results of placement tests
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9SSTNDTST
Item wording: Results of standardized tests
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1G9SPLAN
Item wording: Student career or education plan
1=Not at all important
2=A little important
3=Somewhat important

4=Very important

Variable: C1G9SSELECT

Item wording: Student and/or parent or guardian selection

1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Routing: Go to C1 C07.

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1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Variable: C1UPSSCHED
Item wording: Master schedule considerations
1=Not at all important
2=A little important
3=Somewhat important
4=Very important

Routing: Go to Introduction to Section D.

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Section D: Opinions and Background

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Screen: Introduction to Section D
Question wording: Now we have some questions about your opinions regarding the counseling program in your school as well as some questions about your background in the counseling profession.
Routing: Go to C1 D01.

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Screen: C1 D01
Question wording: To what extent do you agree or disagree with each of the following statements about the teachers in your school? Teachers in this school...

Variable: C1TTEACHING
Item wording: set high standards for teaching.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: C1TLEARNING
Item wording: set high standards for students' learning.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: C1TBELIEVE
Item wording: believe all students can do well.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: C1TGIVEUP
Item wording: have given up on some students.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: C1TCARE
Item wording: care only about smart students.
~~~~~~

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: C1TEXPECT

Item wording: expect very little from students.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: C1TWORKHARD

Item wording: work hard to make sure all students are learning.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: Go to C1 D02.

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Variable: C1CWORKHARD
Item wording: work hard to make sure all students are learning.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: Go to C1 D03.

~~~~~~

Screen: C1 D03

Question wording: To what extent do you agree or disagree with each of the following statements about your school's principal? The principal in this school...

Variable: C1PLEARNING
Item wording: sets high standards for students' learning.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: C1PBELIEVE
Item wording: believes all students can do well.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: C1PGIVEUP
Item wording: has given up on some students.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: C1PCARE
Item wording: cares only about smart students.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: C1PEXPECT
Item wording: expects very little from students.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: C1PWORKHARD
Item wording: works hard to make sure all students are learning.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: Go to C1 D04.
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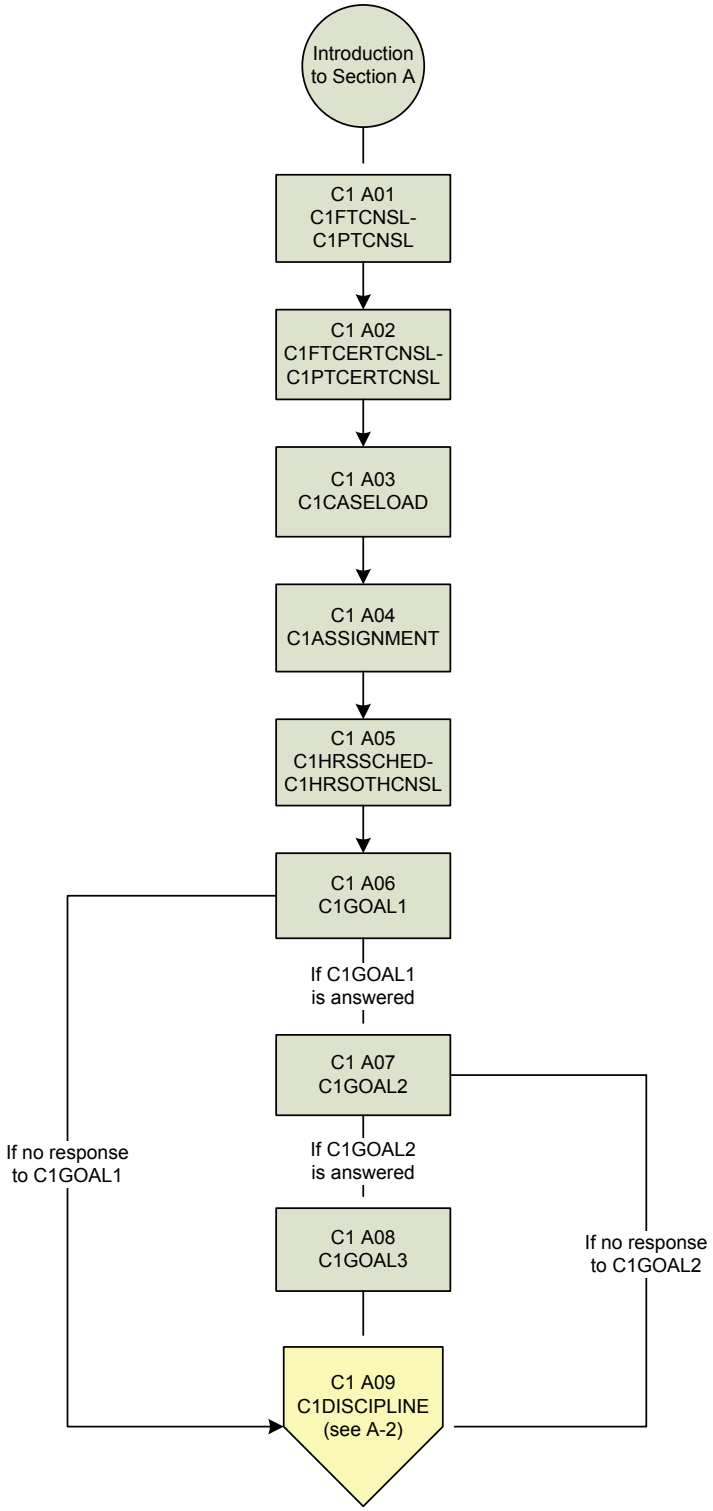
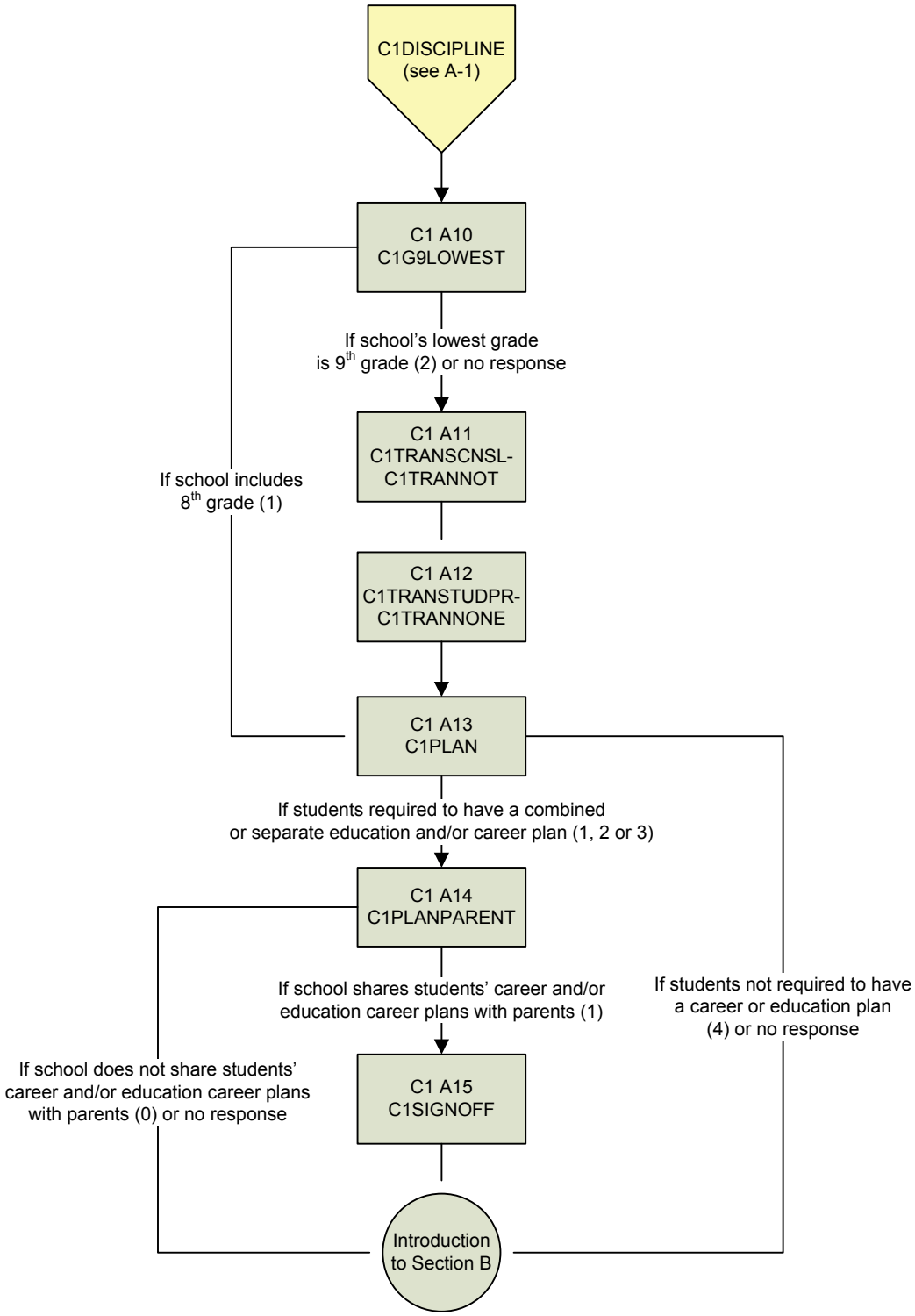
Counselor Flowchart

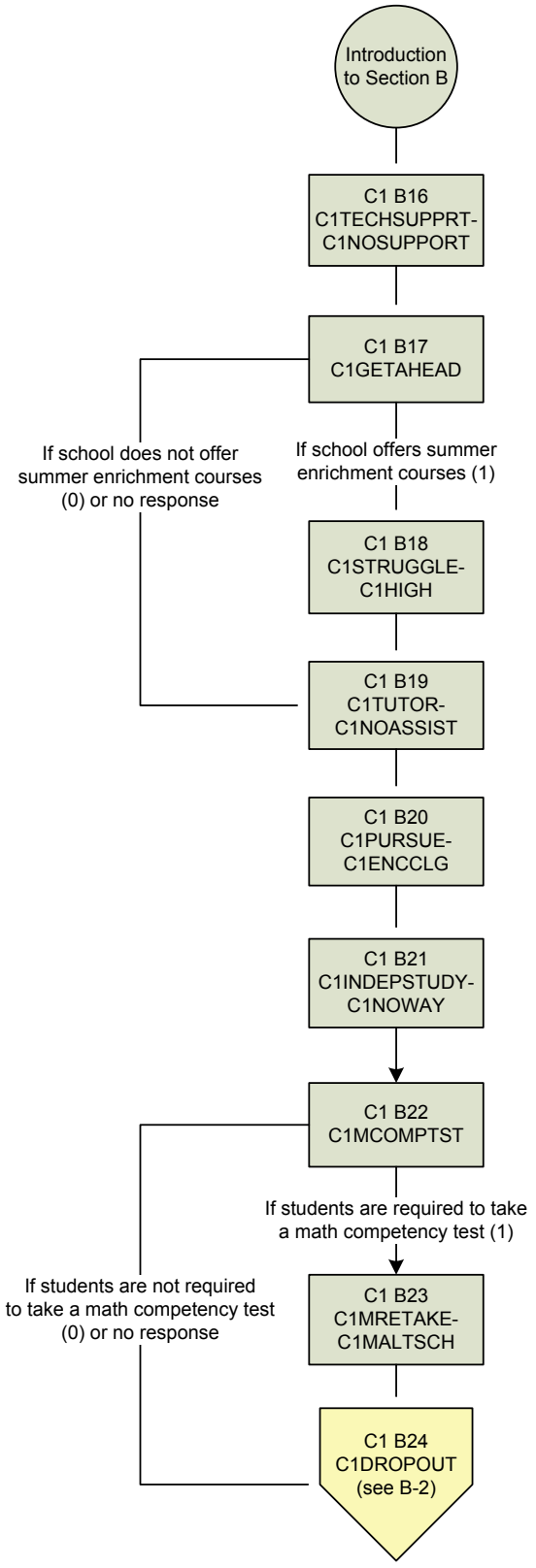
HSLS Counselor Questionnaire Flowchart Staffing, Practices, and Offerings
Section A-1



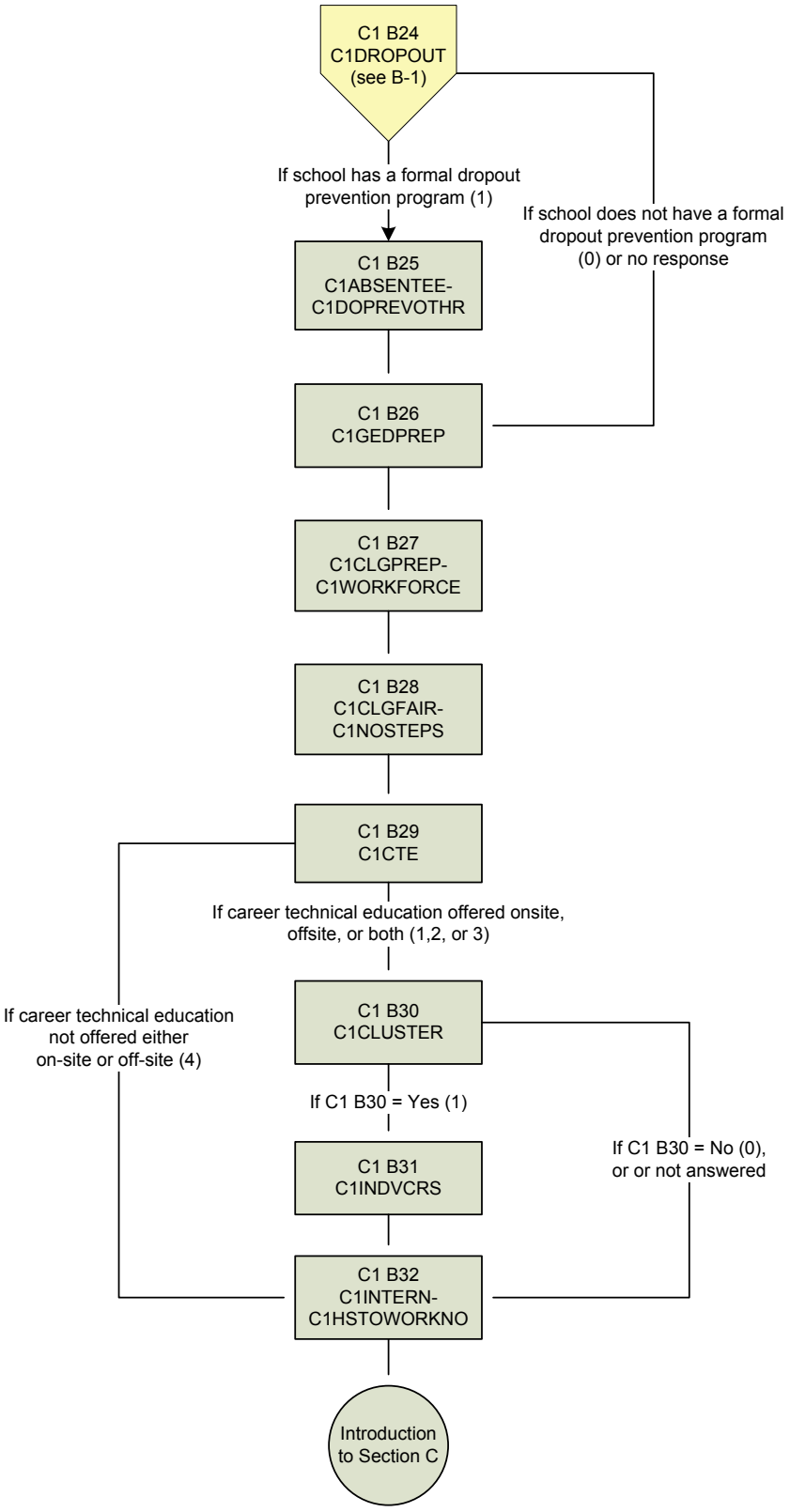
HSLS Counselor Questionnaire Flowchart Staffing, Practices, and Offerings
Section A-2



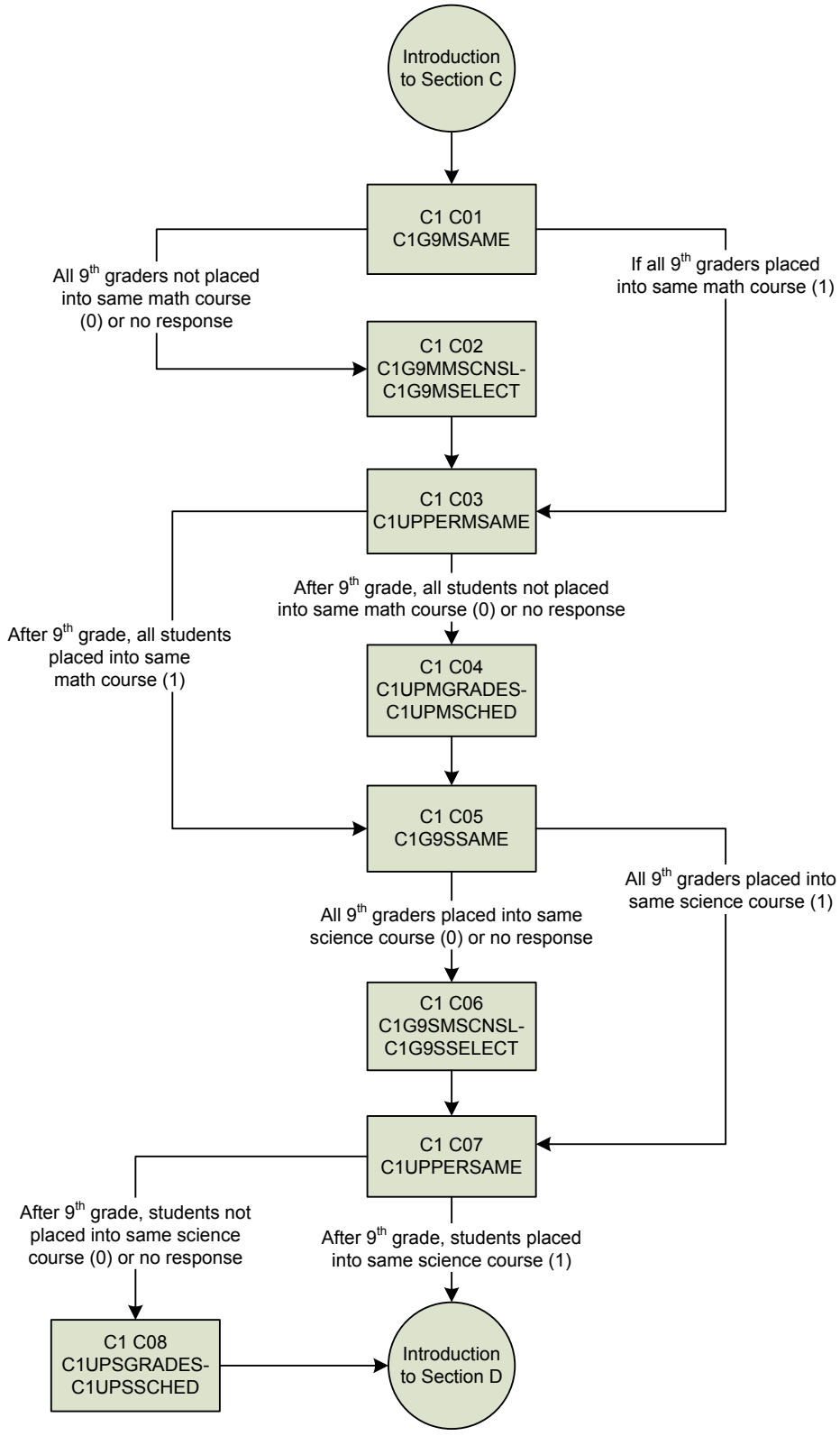
HSLS Counselor Questionnaire Flowchart Offerings
Section B-1



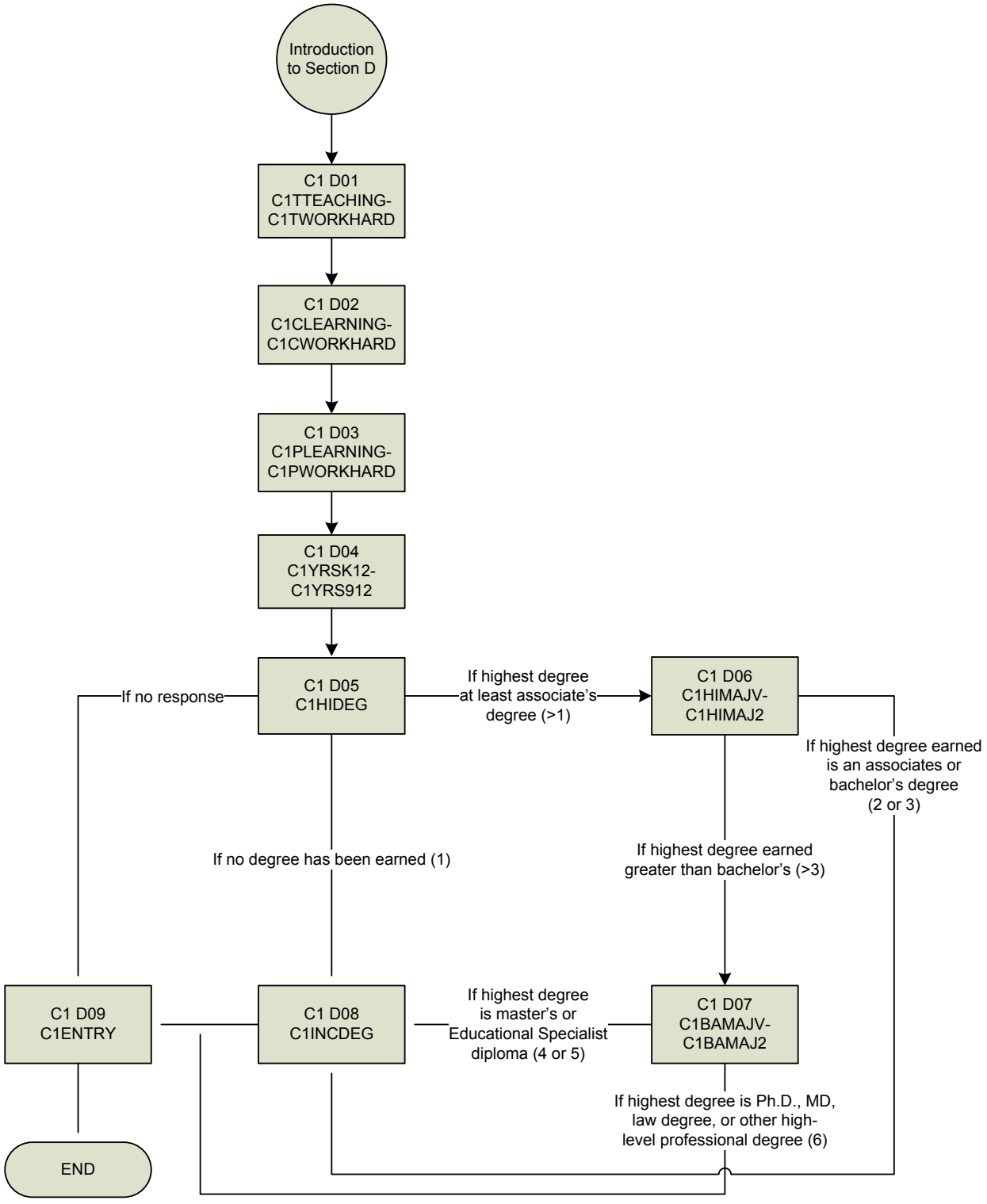
HSLS Counselor Questionnaire Flowchart Offerings
Section B-2



HSLS Counselor Questionnaire Flowchart Math and Science Course Placement
Section C



HSLS Counselor Questionnaire Flowchart Opinions and Background
Section D



Math Teacher Questionnaire and Flowchart

Section A: Teacher Background

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0=No
1=Yes

Variable: M1STATS
Item wording: Probability or Statistics
0=No
1=Yes

Variable: M1NOMATH
Item wording: None of these
0=No
1=Yes

Routing: go to M1 A15.

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Screen: M1 A15
Question wording: Did you work in a job in which you used college-level math before becoming a teacher?

Variable: M1MATHJOB
0=No
1=Yes

Routing: go to M1 A16.

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Screen: M1 A16
Question wording: Did you enter teaching through an alternative certification program?

Variable: M1ALTCERT
0=No
1=Yes

Routing: go to M1 A17.

~~~~~~

Screen: M1 A17
Question wording: Which of the following describes the math teaching certificate you currently hold in [your state]?
Note: Question wording was customized in the survey instrument such that the respondent's actual state was used in place of "your state".

Variable: M1CERTTYPE
1=Regular or standard state certificate or advanced professional certificate
2=Certificate issued after satisfying all requirements except the completion of a probationary teaching period
3=Certificate that requires some additional coursework or passing a test
4=Certificate issued to persons who must complete a certification program in order to continue teaching
5=You do not hold any of these certifications in this state

Routing: If 1<=M1CERTTYPE<=4 then go to M1 A18;
Else if go to M1 A19.

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Screen: M1 A18
Question wording: In which grades does this certificate allow you to teach math in [your state]? (Check all that apply.)
Note: Question wording was customized in the survey instrument such that the respondent's actual state was used in place of "your state".

Variable: M1CERTK5
Item wording: Kindergarten through 5th grade (any or all grades)

0=No
1=Yes

Variable: M1CERT68
Item wording: 6th through 8th grade (any or all grades)
0=No
1=Yes

Variable: M1CERT912
Item wording: 9th through 12th grade (any or all grades)
0=No
1=Yes

Routing: go to M1 A19.

~~~~~~

Screen: M1 A19
Question wording: Including this school year, how many years have you taught high school (grades 9-12) math at any school?

Variable: M1MTHYRS912

Routing: go to M1 A20.

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Screen: M1 A20
Question wording: The next two questions are about your years teaching [math / science / math, science,] or any other subject.
Including this school year, how many years have you taught...
Note: Question wording was customized in the survey instrument based on whether the respondent taught math, science, or both math and science.

Variable: M1TCHYRK8
Item wording: any grade K-8 at any school?

Variable: M1TCHYR912
Item wording: any grade 9-12 at any school?

Routing: go to M1 A21.

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Screen: M1 A21
Question wording: Including this school year, how many years have you taught any subject at any grade level at [your school]?
Note: Question wording was customized in the survey instrument such that the name of the school at which the respondent was teaching was used in place of "your school".

Variable: M1SCHYRS

Routing: go to M1 A22.

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Screen: M1 A22
Question wording: Are you currently collecting a pension from a teacher retirement system or drawing money from a school or system sponsored 401(k) or 403(b) plan which includes funds you contributed as a teacher?

Variable: M1PENSION
0=No
1=Yes

Routing: go to Introduction to Section B;

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Section B: Math Department and Instruction

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Screen: Introduction to Section B
Question wording: Now we have some questions regarding your math instruction and the math department at [your school].
Note: Question wording was customized in the survey instrument such that the name of the school at which the respondent was teaching was used in place of "your school".
Routing: go to M1 B01.

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Screen: M1 B01
Question wording: Indicate the extent to which you agree or disagree with each of the following statements about high school math teachers at your school. High school math teachers at your school...

Variable: M1TEACHING
Item wording: set high standards for teaching.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1LEARNING
Item wording: set high standards for students' learning.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1BELIEVE
Item wording: believe all students can do well.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1CLEARGOALS
Item wording: make expectations for instructional goals clear to students.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1GIVEUP
Item wording: have given up on some students.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1CARE
Item wording: care only about smart students.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
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Variable: M1EXPECT
Item wording: expect very little from students.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: M1WORKHARD
Item wording: work hard to make sure all students are learning.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Routing: If the sampled school has indicated the specific math course(s) (containing HSLS students) taught by this teacher, then go to M1 B02;
else go to M1 B08.
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Screen: M1 B06

Question wording: Primarily, how do you [plan to] assign students to groups in [fall 2009 math course]?
Note: Question wording was customized in the survey instrument such that the actual name of the fall 2009 math course (as provided by the school) taught by the teacher respondent was used in place of "fall 2009 math course"; question wording was also customized such that "plan to" was used in cases where the teacher respondent indicated they did not currently have students work in small groups, but planned to at some point during the course.

Variable: M1ASSIGN

1=Intentionally create groups so students will be of similar ability levels
2=Intentionally create groups so students will be of different ability levels
3=Create groups without regard to ability level such as alphabetically or randomly
4=Groups will be chosen by the students

Routing: go to M1 B07.

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Screen: M1 B07

Question wording: Think about the full duration of this [fall 2009 math course]. How much emphasis are you placing on each of the following objectives?
Note: Question wording was customized in the survey instrument such that the actual name of the fall 2009 math course (as provided by the school) taught by the teacher respondent was used in place of "fall 2009 math course".

Variable: M1INTEREST

Item wording: Increasing students' interest in mathematics

1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: M1CONCEPTS

Item wording: Teaching students mathematical concepts

1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: M1ALGORITHM

Item wording: Teaching students mathematical algorithms or procedures

1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: M1COMPSKILLS

Item wording: Developing students' computational skills

1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: M1PROBLEM

Item wording: Developing students' problem solving skills

1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: M1REASON
Item wording: Teaching students to reason mathematically
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis
Variable: M1IDEAS
Item wording: Teaching students how mathematics ideas connect with one another
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis
Variable: M1PREPARE
Item wording: Preparing students for further study in mathematics
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis
Variable: M1LOGIC
Item wording: Teaching students the logical structure of mathematics
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis
Variable: M1HISTORY
Item wording: Teaching students about the history and nature of mathematics
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis
Variable: M1EXPLAIN
Item wording: Teaching students to explain ideas in mathematics effectively
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis
Variable: M1BUSINESS
Item wording: Teaching students how to apply mathematics in business and industry
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis
Variable: M1COMPUTE
Item wording: Teaching students to perform computations with speed and accuracy
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis
Variable: M1TEST
Item wording: Preparing students for standardized tests

1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Routing: If the sampled school has reported any additional math course(s) (containing HSLS students) taught by this teacher, then go back to M1 B02;
Else go to M1 B08.

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Screen: M1 B08

Question wording: To what extent do you agree or disagree with each of the following statements about how high school math teaching assignments are made at [your school]?

Note: Question wording was customized in the survey instrument such that the name of the school at which the respondent was teaching was used in place of "your school".

Variable: M1ADVSENIOR

Item wording: Advanced courses are assigned to teachers with the most seniority

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1ADVBCKGRND

Item wording: Advanced courses are assigned to teachers with the strongest math background

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1ADVALL

Item wording: All or most math teachers are assigned at least one section of advanced courses

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1NCNEW

Item wording: Non-college prep courses are assigned to teachers new to the profession

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1NCLOW

Item wording: Non-college prep courses are assigned to teachers whose students do not perform well on standardized tests

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1NCALL

Item wording: All or most math teachers are assigned at least one section of a non-college prep course
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1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: go to M1 B09.

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1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1SHRBELIEFS

Item wording: discuss beliefs about teaching and learning.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1SHRMTHDS

Item wording: share and discuss research on effective teaching methods.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1SHRELL

Item wording: share and discuss research on effective instructional practices for English language learners.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1SHRAPPRCH

Item wording: explore new teaching approaches for under-performing students.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1SHRCONTENT

Item wording: make a conscious effort to coordinate the content of courses with other teachers in this school.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1EFFECTIVE

Item wording: are effective at teaching students mathematics.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1MENTOR

Item wording: provide support to new mathematics teachers.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1CHAIR
Item wording: are supported and encouraged by the math department's chair or curricular area coordinator.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Routing: skip section Section C (which is for science teachers only) and go to Introduction to Section D.
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Section D: Beliefs About Teaching and Current School

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Screen: Introduction to Section D
Question wording: The questions in the final section are related to your beliefs about teaching and your opinions about [your school].
Note: Question wording was customized in the survey instrument such that the name of the school at which the respondent was teaching was used in place of "your school".
Routing: go to M1 D01.
~~~~~~
Screen: M1 D01
Question wording: In general, how would you compare males and females in each of the following subjects?
Variable: M1ENGCOMP
Item wording: English or Language Arts
1=Females are much better
2=Females are somewhat better
3=Females and males are the same
4=Males are somewhat better
5=Males are much better
Variable: M1MTHCOMP
Item wording: Math
1=Females are much better
2=Females are somewhat better
3=Females and males are the same
4=Males are somewhat better
5=Males are much better
Variable: M1SCICOMP
Item wording: Science
1=Females are much better
2=Females are somewhat better
3=Females and males are the same
4=Males are somewhat better
5=Males are much better
Routing: go to M1 D02.
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Variable: M1UNPREPPROB
Item wording: Students come to school unprepared to learn
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
Variable: M1HEALTH
Item wording: Poor student health
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
Variable: M1RESOURCES
Item wording: Lack of resources and materials for teachers
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem

Routing: go to M1 D03.

~~~~~~

Screen: M1 D03

Question wording: In your view, to what extent do the following limit how you teach?
Variable: M1ABLRANGE
Item wording: Students with different academic abilities in the same class
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot
Variable: M1SESRANGE
Item wording: Students who come from a wide range of socio-economic backgrounds
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot
Variable: M1LANGRANGE
Item wording: Students who come from a wide range of language backgrounds
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot
Variable: M1SPECNEED
Item wording: Students with special needs such as hearing, vision, or speech impairments, physical disabilities, or mental, emotional, or psychological impairments
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot
~~~~~~

Variable: M1UNINTEREST
Item wording: Uninterested students
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot
Variable: M1MORALE
Item wording: Low morale among students
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot
Variable: M1DISRUPT
Item wording: Disruptive students
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot
Variable: M1PROFDEV
Item wording: Inadequate opportunities for professional learning
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot
Variable: M1ADMSUPPORT
Item wording: Inadequate administrative support
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot
Variable: M1COMPUTER
Item wording: Shortage of computer hardware or software
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot
Variable: M1TECHSUPPRT
Item wording: Shortage of support for using computers
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: M1BOOKS
Item wording: Shortage of textbooks for student use
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: M1STUEQUIP
Item wording: Shortage of other instructional equipment for students' use
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: M1DEMOEQUIP
Item wording: Shortage of equipment for your use in demonstrations and other exercises
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: M1FACILITIES
Item wording: Inadequate physical facilities
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: M1RATIO
Item wording: High student to teacher ratio
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: M1PLANNING
Item wording: Lack of planning time
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: M1AUTONOMY
Item wording: Lack of autonomy in instructional decisions
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: M1FAMSUPPORT
Item wording: Lack of parent or family support
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Routing: go to M1 D04.

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Variable: M1REDIRECT
Item wording: If a student in your class becomes disruptive and noisy, you feel assured that you know some techniques to redirect them quickly
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1GETTHRU
Item wording: If you really try hard, you can get through to even the most difficult or unmotivated students
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1HOMEFX
Item wording: When it comes right down to it, you really can not do much because most of a student's motivation and performance depends on their home environment
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: go to M1 D05.

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Screen: M1 D05

Question wording: To what extent do you agree or disagree with each of the following statements about [your school]'s principal? The principal...

Note: Question wording was customized in the survey instrument such that the name of the school at which the respondent was teaching was used in place of "your school".

Variable: M1PRESSURES
Item wording: deals effectively with pressures from outside the school that might interfere with my teaching.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1POORJOBRES
Item wording: does a poor job of getting resources for this school.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: M1PSETSPRIO
Item wording: sets priorities, makes plans, and sees that they are carried out.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
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Variable: M1PSCHVISION
Item wording: knows what kind of school he or she wants and has communicated it to the staff.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: M1PCOMEXP
Item wording: lets staff members know what is expected of them.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: M1PINNOVATE
Item wording: is interested in innovation and new ideas.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: M1PCONSULTS
Item wording: usually consults with staff members before he or she makes decisions that affect them.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: go to M1 D06.

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Screen: M1 D06
Question wording: To what extent do you agree or disagree with each of the following statements about teachers at [your school]? Teachers at this school...
Note: Question wording was customized in the survey instrument such that the name of the school at which the respondent was teaching was used in place of "your school".
Variable: M1TSCHDISC
Item wording: help maintain discipline in the entire school, not just in their classroom.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: M1TIMPROVE
Item wording: take responsibility for improving the school.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: M1TSETSTDS
Item wording: set high standards for themselves.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
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Variable: M1TSELFDEV
Item wording: feel responsible for helping students develop self-control.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: M1THELPBEST
Item wording: feel responsible for helping each other do their best.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: M1TALLLEARN
Item wording: feel responsible that all students learn.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: M1TFAIL
Item wording: feel responsible when students in this school fail.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: end teacher interview.

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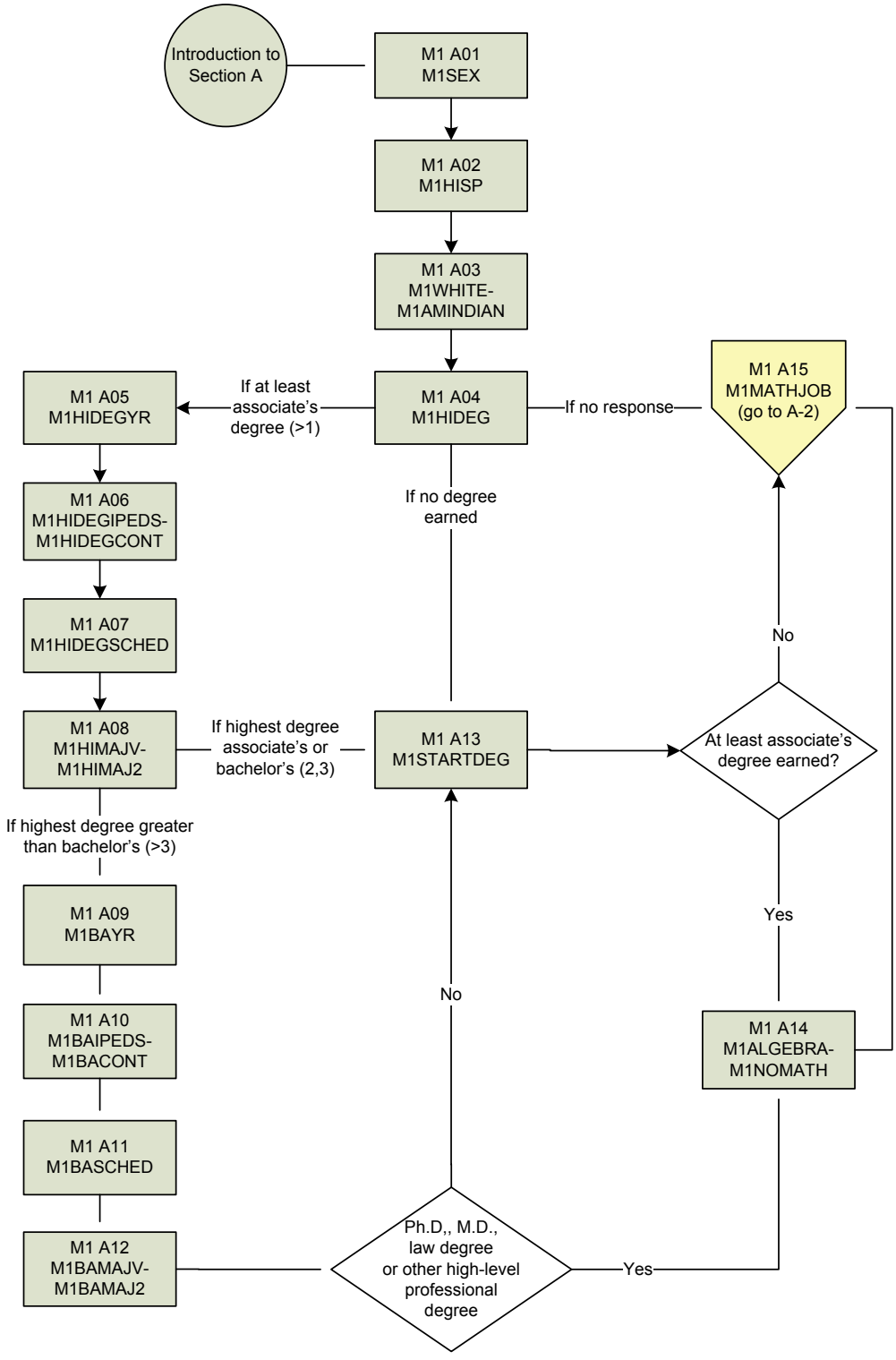
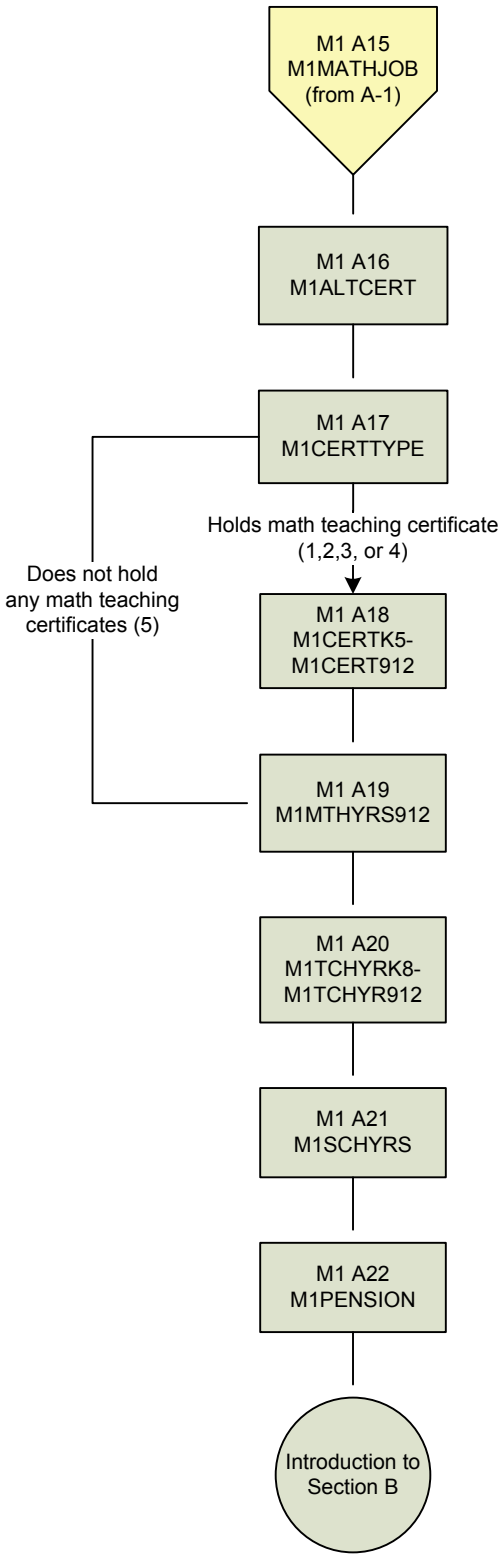
Math Teacher Flowchart

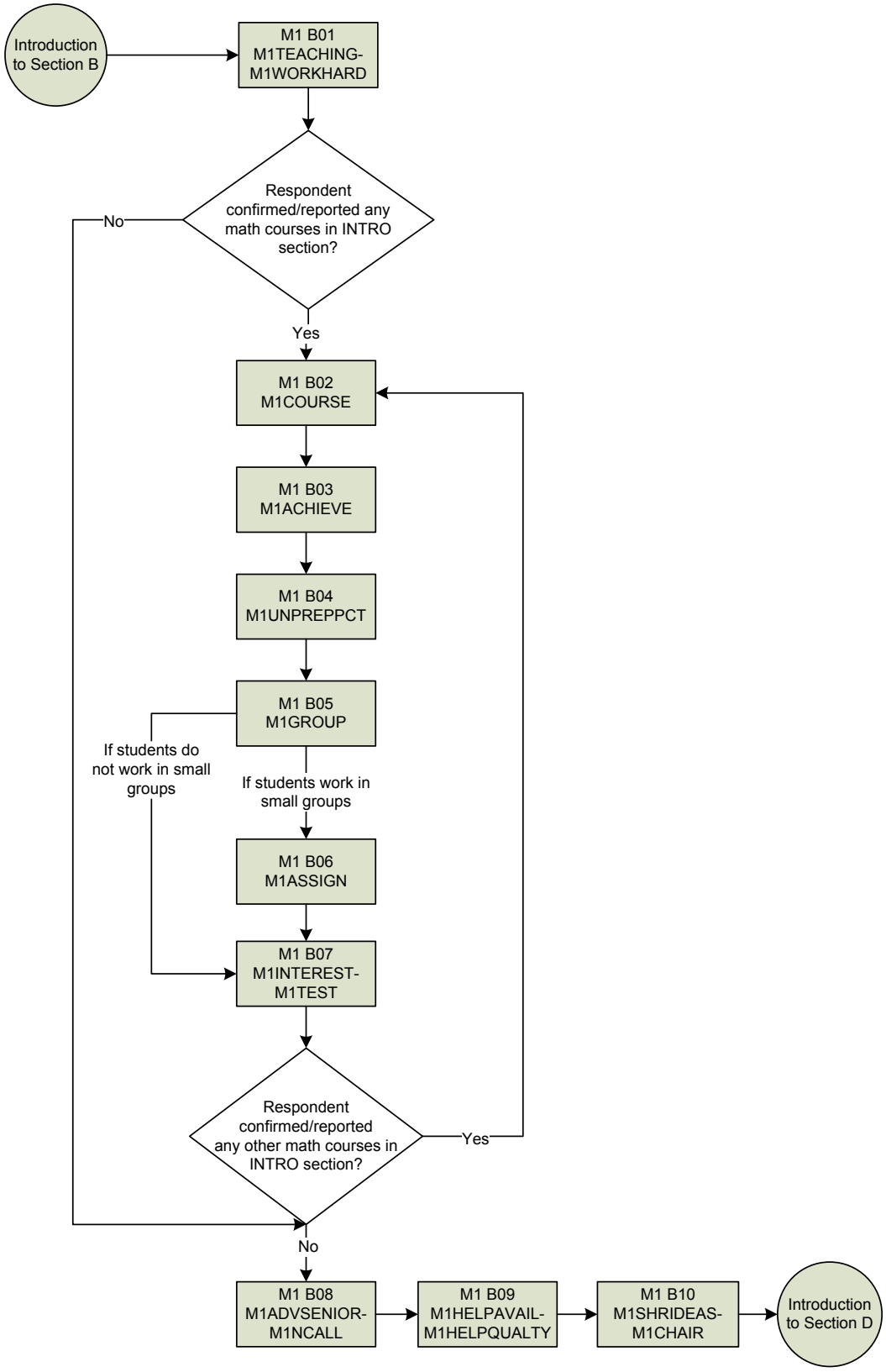
HSLS Teacher - Math Questionnaire Flowchart with Form Names
Section A-1



HSLS Teacher - Math Questionnaire Flowchart with Form Names
Section A-2

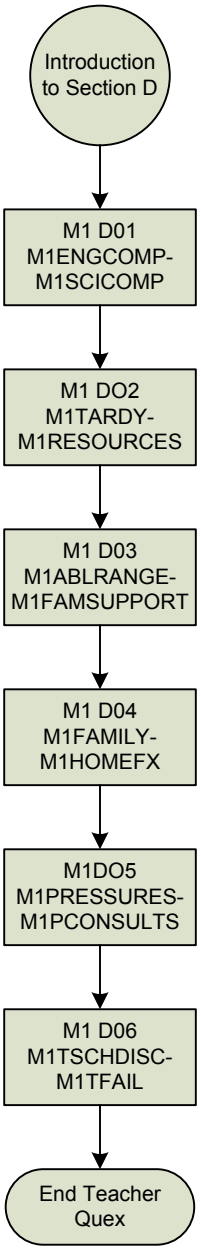


HSLS Teacher - Math Questionnaire Flowchart with Form Names
Section B



HSLS Teacher - Math Questionnaire Flowchart with Form Names

Section D



Science Teacher Questionnaire and Flowchart

Section A: Teacher Background

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Variable: N1NOSCIENCE
Item wording: None of the these
0=No
1=Yes

Routing: if N1BIOLOGY=1 then go to N1 A15;
else if N1CHEMISTRY=1 then go to N1 A16;
else if N1EARTHSCI=1 then go to N1 A17;
else if N1PHYSICS=1 then go to N1 A18;
else go to N1 A19.

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Variable: N1NOBIOLIFE
Item wording: None of the these
0=No
1=Yes

Routing: if N1CHEMISTRY=1 then go to N1 A16;
else if N1EARTHSCI=1 then go to N1 A17;
else if N1PHYSICS=1 then go to N1 A18;
else go to N1 A19.

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Variable: N1METEOROLGY
Item wording: Meteorology
0=No
1=Yes
Variable: N1OCEAN
Item wording: Oceanography
0=No
1=Yes
Variable: N1PHYSGEOG
Item wording: Physical Geography
0=No
1=Yes
Variable: N1NOEARTHSCI
Item wording: None of the these
0=No
1=Yes

Routing: if N1PHYSICS=1 then go to N1 A18;
else go to N1 A19.

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Variable: N1CERTPHY912
Item wording: 9th through 12th grade for chemistry, physics, or physical science (any or all grades)
0=No
1=Yes
Variable: N1CERTERT912
Item wording: 9th though 12th grades for earth or space sciences (any or all grades)
0=No
1=Yes
Routing: go to N1 A23.

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Section C: Science Department and Instruction

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Screen: Introduction to Section C
Question wording: Now we have some questions regarding your science instruction and the science department at [your school].
Note: Question wording was customized in the survey instrument such that the name of the school at which the respondent was teaching was used in place of "your school".
Routing: go to N1 C01.

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Screen: N1 C01
Question wording: Indicate the extent to which you agree or disagree with each of the following statements about high school science teachers at your school. High school teachers at your school...

Variable: N1TEACHING
Item wording: set high standards for teaching.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1LEARNING
Item wording: set high standards for students' learning.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1BELIEVE
Item wording: believe all students can do well.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1CLEARGOALS
Item wording: make expectations for instructional goals clear to students.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1GIVEUP
Item wording: have given up on some students.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1CARE
Item wording: care only about smart students.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
~~~~~~

Variable: N1EXPECT
Item wording: expect very little from students.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: N1WORKHARD
Item wording: work hard to make sure all students are learning.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Routing: If the sampled school has indicated the specific science course(s) (containing HSLS students) taught by this teacher, then go to N1 C02;
else go to N1 C08.
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Screen: N1 C06

Question wording: Primarily, how do you [plan to] assign students to groups in [fall 2009 science course]?

Note: Question wording was customized in the survey instrument such that the actual name of the fall 2009 science course (as provided by the school) taught by the teacher respondent was used in place of "fall 2009 science course"; question wording was also customized such that "plan to" was used in cases where the teacher respondent indicated they did not currently have students work in small groups, but planned to at some point during the course.

Variable: N1ASSIGN

1=Intentionally create groups so students will be of similar ability levels
2=Intentionally create groups so students will be of different ability levels
3=Create groups without regard to ability level such as alphabetically or randomly
4=Groups will be chosen by the students

Routing: go to N1 C07.

~~~~~~

Screen: N1 C07

Question wording: Think about the full duration of this [fall 2009 science] course. How much emphasis are you placing on each of the following objectives?

Note: Question wording was customized in the survey instrument based such that the actual name of the fall 2009 science course (as provided by the school) taught by the teacher respondent was used in place of "fall 2009 science course".

Variable: N1INTEREST

Item wording: Increasing students' interest in science

1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: N1CONCEPTS

Item wording: Teaching students basic science concepts

1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: N1TERMS

Item wording: Teaching students important terms and facts of science

1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: N1SKILLS

Item wording: Teaching students science process or inquiry skills

1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: N1PREPARE
Item wording: Preparing students for further study in science
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: N1EVIDENCE
Item wording: Teaching students to evaluate arguments based on scientific evidence
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: N1IDEAS
Item wording: Teaching students how to communicate ideas in science effectively
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: N1BUSINESS
Item wording: Teaching students about the applications of science in business and industry
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: N1SOCIETY
Item wording: Teaching students about the relationship between science, technology, and society
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: N1HISTORY
Item wording: Teaching students about the history and nature of science
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Variable: N1TEST
Item wording: Preparing students for standardized tests
1=No emphasis
2=Minimal Emphasis
3=Moderate Emphasis
4=Heavy Emphasis

Routing: If the sampled school has reported any additional science course(s) (containing HSLS students) taught by this teacher, then go back to N1 C02;
Else go to N1 C08.

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Variable: N1SHRIDEAS
Item wording: share ideas on teaching.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: N1WORKSHOP
Item wording: discuss what was learned at a workshop or conference.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: N1SHRSTWRK
Item wording: share and discuss student work.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: N1SHRLESSONS
Item wording: discuss particular lessons that were not very successful.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: N1SHRBELIEFS
Item wording: discuss beliefs about teaching and learning.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: N1SHRMTHDS
Item wording: share and discuss research on effective teaching methods.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: N1SHRELL
Item wording: share and discuss research on effective instructional practices for English language learners.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: N1SHRAPPRCH
Item wording: explore new teaching approaches for under-performing students.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: N1SHRCONTENT
Item wording: make a conscious effort to coordinate the content of courses with other teachers in this school.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1EFFECTIVE

Item wording: are effective at teaching students in science.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1MENTOR

Item wording: provide support to new science teachers.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1CHAIR

Item wording: are supported and encouraged by the science department's chair or curricular area coordinator.

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: go to Introduction to Section D.

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Section D: Beliefs About Teaching and Current School

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Screen: Introduction to Section D

Question wording: The questions in the final section are related to your beliefs about teaching and your opinions about [your school].

Note: Question wording was customized in the survey instrument such that the name of the school at which the respondent was teaching was used in place of "your school".

Routing: go to N1 D01.

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Screen: N1 D01

Question wording: In general, how would you compare males and females in each of the following subjects?

Variable: N1ENGCOMP

Item wording: English or Language Arts

1=Females are much better
2=Females are somewhat better
3=Females and males are the same
4=Males are somewhat better
5=Males are much better

Variable: N1MTHCOMP

Item wording: Math

1=Females are much better
2=Females are somewhat better
3=Females and males are the same
~~~~~~

4=Males are somewhat better
5=Males are much better

Variable: N1SCICOMP
Item wording: Science
1=Females are much better
2=Females are somewhat better
3=Females and males are the same
4=Males are somewhat better
5=Males are much better

Routing: go to N1 D02.

~~~~~~

Screen: N1 D02
Question wording: To what degree is each of the following matters a problem at [your school]?
Note: Question wording was customized in the survey instrument such that the name of the school at which the respondent was teaching was used in place of "your school".

Variable: N1TARDY
Item wording: Student tardiness
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem

Variable: N1STUABSENT
Item wording: Student absenteeism
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem

Variable: N1CUT
Item wording: Student class cutting
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem

Variable: N1TCHRABSENT
Item wording: Teacher absenteeism
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem

Variable: N1DROPOUT
Item wording: Students dropping out
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem

Variable: N1APATHY
Item wording: Student apathy
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
~~~~~~

Variable: N1INVOLVEMENT
Item wording: Lack of parental involvement
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
Variable: N1UNPREPPROB
Item wording: Students come to school unprepared to learn
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
Variable: N1HEALTH
Item wording: Poor student health
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
Variable: N1RESOURCES
Item wording: Lack of resources and materials for teachers
1=Not a problem
2=Minor problem
3=Moderate problem
4=Serious problem
Routing: go to N1 D03.
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~~~

Variable: N1SPECNEED
Item wording: Students with special needs such as hearing, vision, or speech impairments, physical disabilities, or mental, emotional, or psychological impairments
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1UNINTEREST
Item wording: Uninterested students
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1MORALE
Item wording: Low morale among students
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1DISRUPT
Item wording: Disruptive students
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1PROFDEV
Item wording: Inadequate opportunities for professional learning
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1ADMSUPPORT
Item wording: Inadequate administrative support
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1COMPUTER
Item wording: Shortage of computer hardware or software
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1TECHSUPPRT
Item wording: Shortage of support for using computers
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1BOOKS
Item wording: Shortage of textbooks for student use
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1STUEQUIP
Item wording: Shortage of other instructional equipment for students' use
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1DEMOEQUIP
Item wording: Shortage of equipment for your use in demonstrations and other exercises
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1FACILITIES
Item wording: Inadequate physical facilities
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1RATIO
Item wording: High student to teacher ratio
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1PLANNING
Item wording: Lack of planning time
0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1AUTONOMY
Item wording: Lack of autonomy in instructional decisions

0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Variable: N1FAMSUPPORT

Item wording: Lack of parent or family support

0=Not applicable
1=Not at all
2=A little
3=Some
4=A lot

Routing: go to N1 D04.

~~~~~~

Screen: N1 D04

Question wording: To what extent do you agree or disagree with each of the following statements as it applies to your instruction?

Variable: N1FAMILY

Item wording: The amount a student can learn is primarily related to family background

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1DISCIPLINE

Item wording: If students are not disciplined at home, they are not likely to accept any discipline at school

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1STUACHIEVE

Item wording: You are very limited in what you can achieve because a student's home environment is a large influence on their achievement

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1PARENT

Item wording: If parents would do more for their children, you could do more for your students

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1RETAIN

Item wording: If a student did not remember information you gave in a previous lesson, you would know how to increase their retention in the next lesson

1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
~~~~~~

Variable: N1REDIRECT
Item wording: If a student in your class becomes disruptive and noisy, you feel assured that you know some techniques to redirect them quickly
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1GETTHRU
Item wording: If you really try hard, you can get through to even the most difficult or unmotivated students
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1HOMEFX
Item wording: When it comes right down to it, you really can not do much because most of a student's motivation and performance depends on their home environment
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: go to N1 D05.

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Variable: N1PSCHVISION
Item wording: knows what kind of school he or she wants and has communicated it to the staff.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1PCOMEXP
Item wording: lets staff members know what is expected of them.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1PINNOVATE
Item wording: is interested in innovation and new ideas.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1PCONSULTS
Item wording: usually consults with staff members before he or she makes decisions that affect them.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Routing: go to N1 D06.

~~~~~~

Screen: N1 D06
Question wording: To what extent do you agree or disagree with each of the following statements about teachers at [your school]? Teachers at this school...
Note: Question wording was customized in the survey instrument such that the name of the school at which the respondent was teaching was used in place of "your school".

Variable: N1TSCHDISC
Item wording: help maintain discipline in the entire school, not just in their classroom.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1TIMPROVE
Item wording: take responsibility for improving the school.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree

Variable: N1TSETSTDS
Item wording: set high standards for themselves.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
~~~~~~

Variable: N1TSELFDEV
Item wording: feel responsible for helping students develop self-control.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: N1THELPBEST
Item wording: feel responsible for helping each other do their best.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: N1TALLLEARN
Item wording: feel responsible that all students learn.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Variable: N1TFAIL
Item wording: feel responsible when students in this school fail.
1=Strongly agree
2=Agree
3=Disagree
4=Strongly disagree
Routing: end teacher interview.
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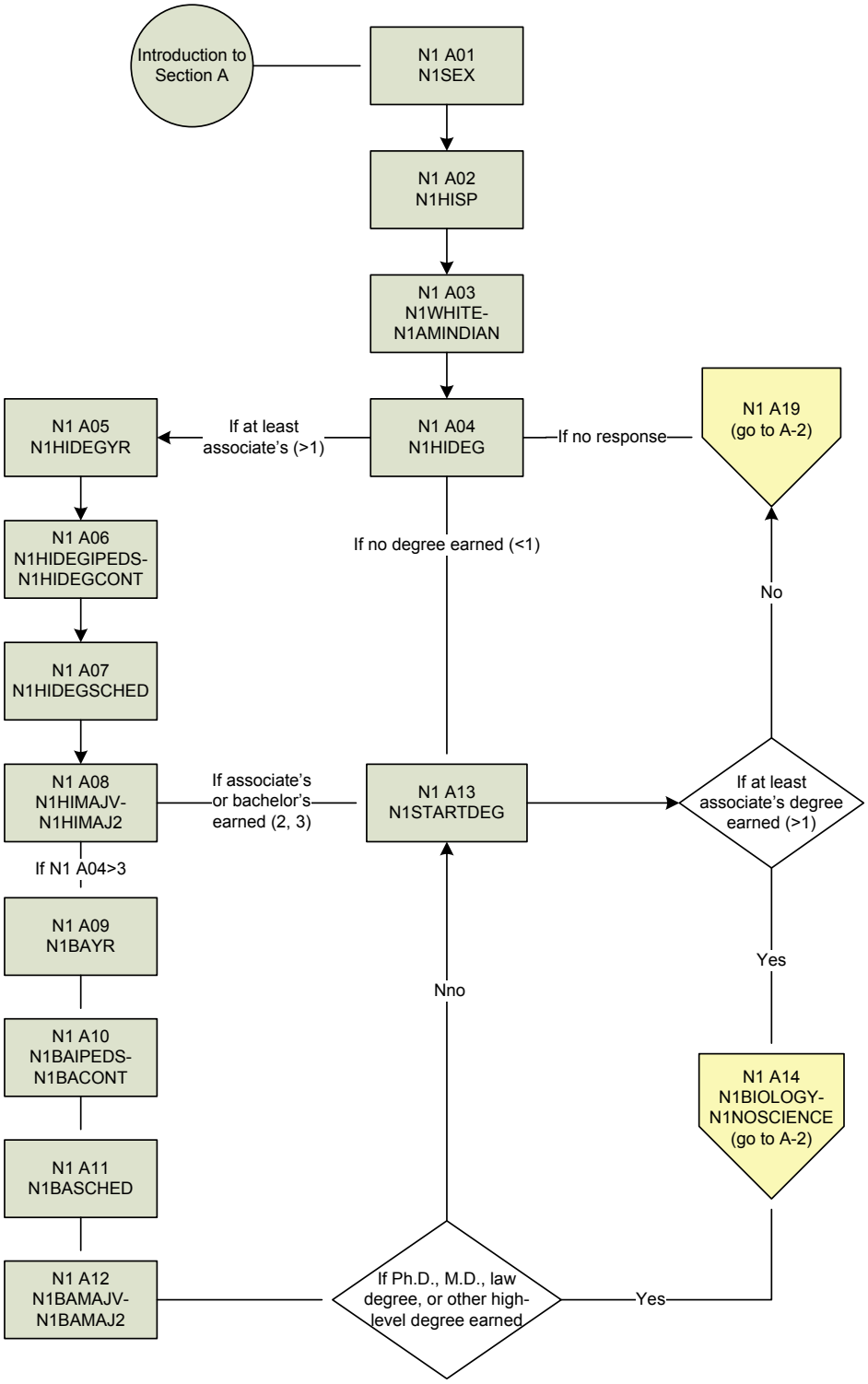
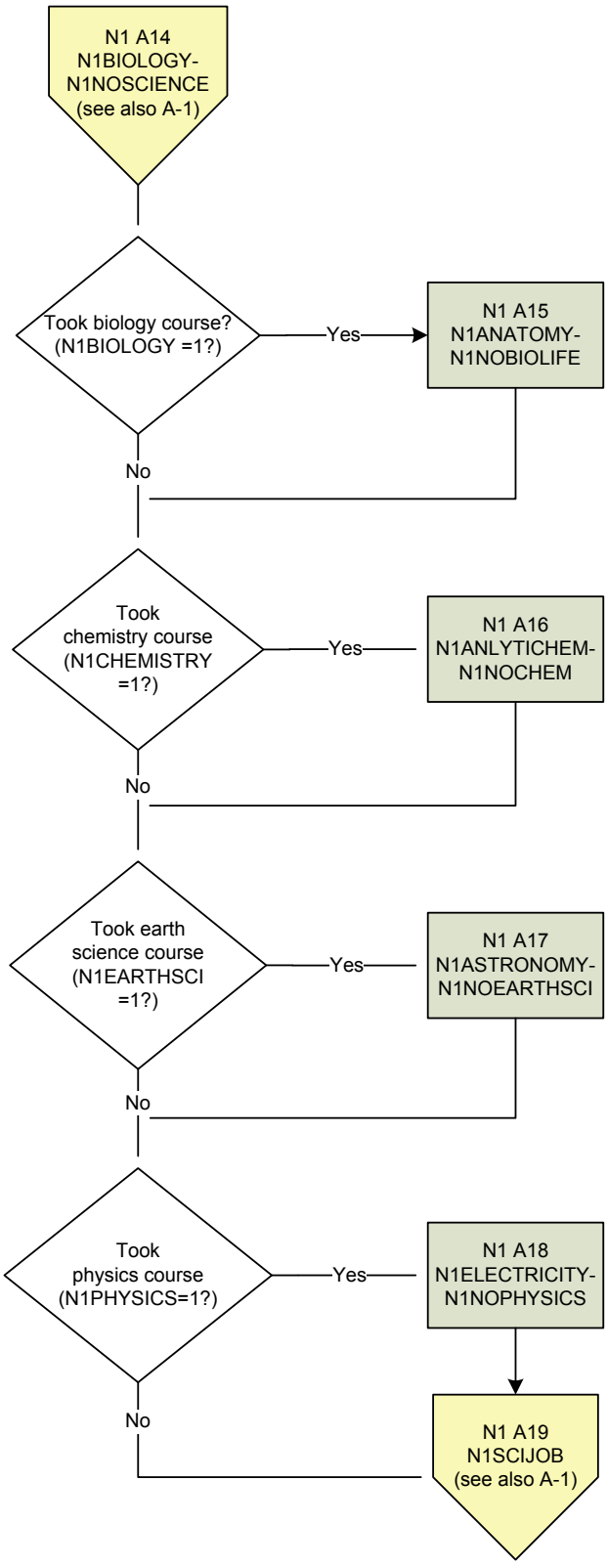
Science Teacher Flowchart

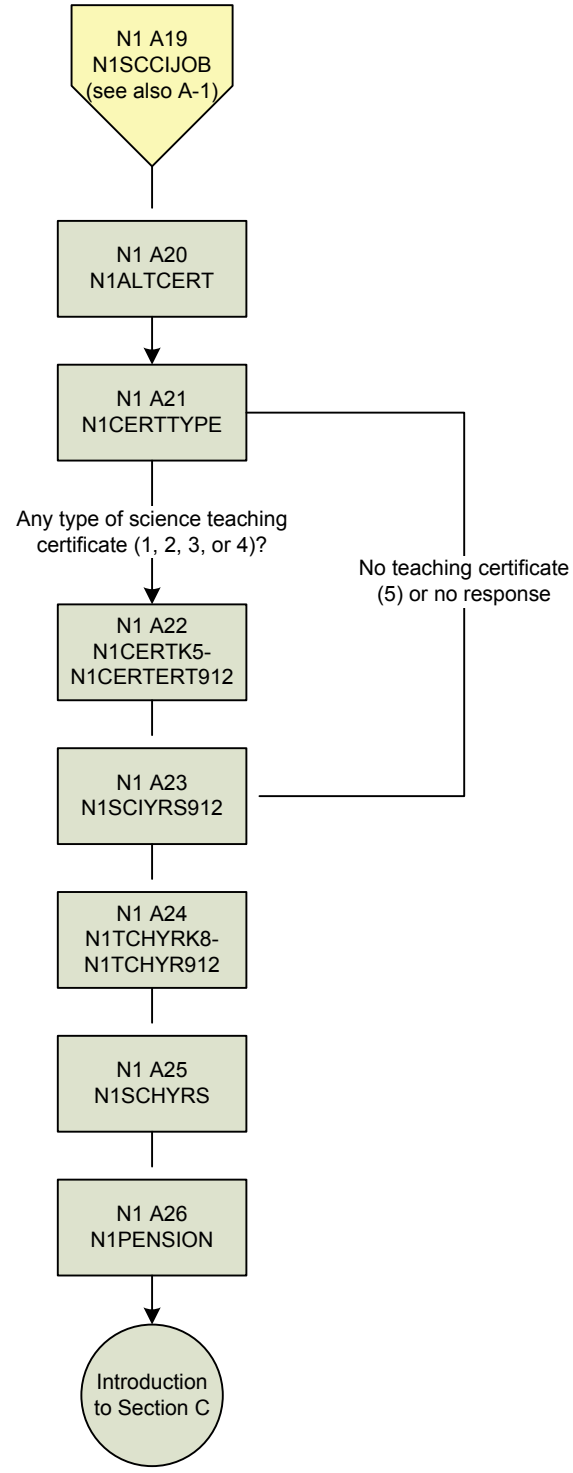
HSLS Teacher - Science Questionnaire Flowchart with Form Names
Section A-1



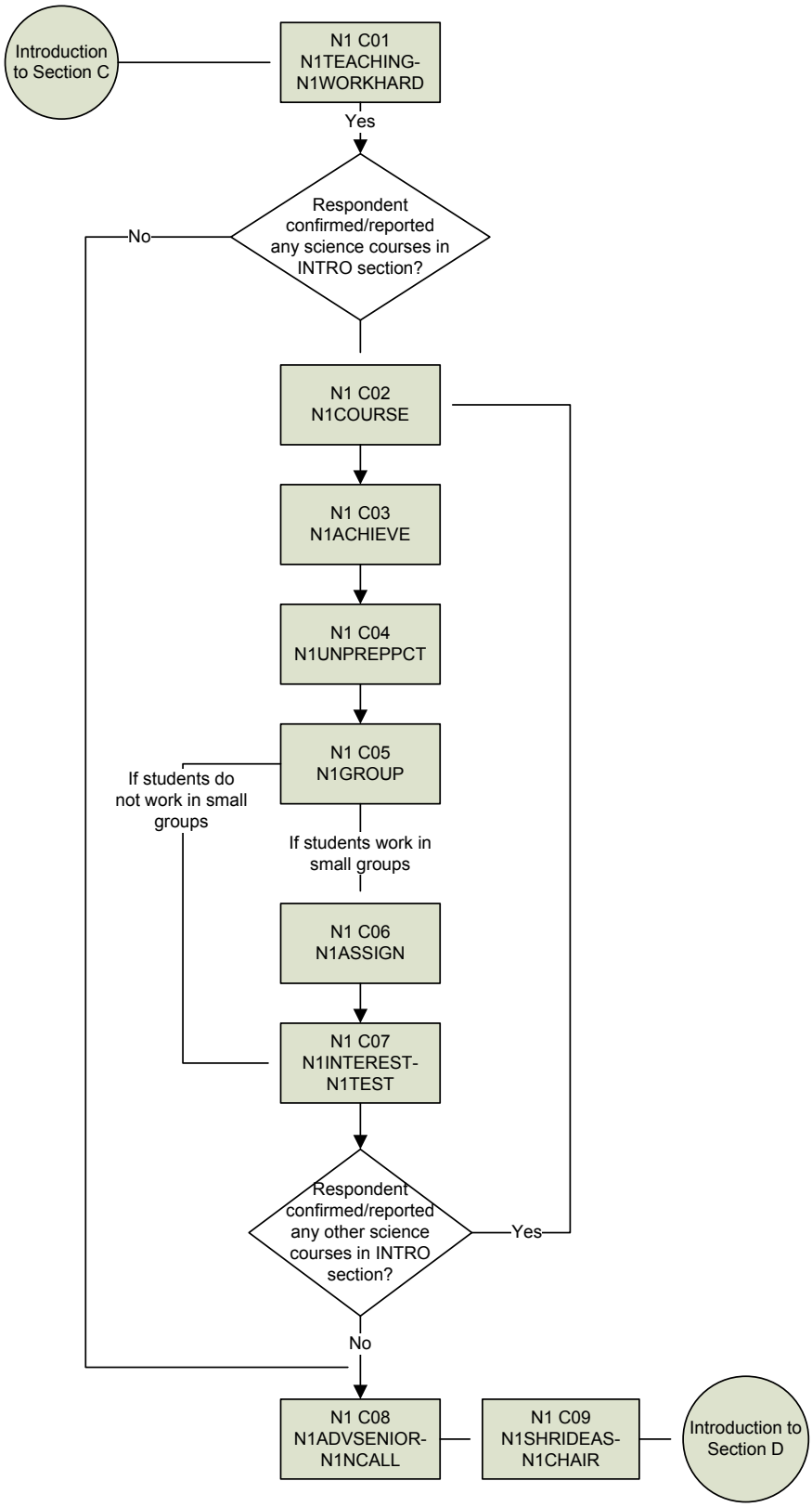
HSLS Teacher - Science Questionnaire Flowchart with Form Names
Section A-2



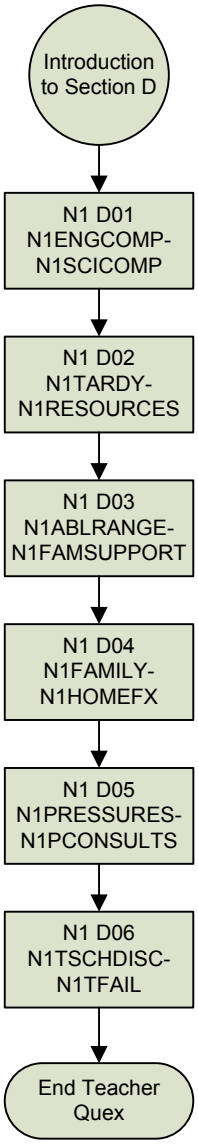
HSLS Teacher - Science Questionnaire Flowchart with Form Names
Section A-3



HSLS Teacher - Science Questionnaire Flowchart with Form Names
Section C



HSLS Teacher - Science Questionnaire Flowchart with Form Names
Section D



Appendix B.
HSLS:09 Mathematics Assessment Items: 2009

Table B-1. Item forms, item parameters, and their standard errors of the HSLS:09 Mathematics Assessment items: 2009

Item name	Form	a	s.e.	b	s.e.	c	s.e.
Q024	High and Moderate Stage 2	1.20	0.01	1.70	0.00	0.22	0.00
Q041	High and Moderate Stage 2	1.32	0.01	0.87	0.00	0.33	0.00
Q075	High and Moderate Stage 2	2.15	0.01	1.91	0.00	0.32	0.00
Q124	High and Moderate Stage 2	1.12	0.01	1.68	0.00	0.27	0.00
Q162	High and Moderate Stage 2	1.37	0.01	1.13	0.00	0.34	0.00
Q245	High and Moderate Stage 2	0.62	0.00	0.39	0.01	0.27	0.00
Q252	High and Moderate Stage 2	1.33	0.01	1.60	0.00	0.29	0.00
Q254	High and Moderate Stage 2	0.92	0.00	0.70	0.00	0.16	0.00
Q271	High and Moderate Stage 2	1.49	0.01	2.12	0.00	0.10	0.00
Q290	High and Moderate Stage 2	1.05	0.00	0.66	0.00	0.28	0.00
Q313	High and Moderate Stage 2	1.29	0.01	2.38	0.01	0.28	0.00
Q333	High and Moderate Stage 2	1.36	0.00	0.71	0.00	0.27	0.00
Q044	High Stage 2	1.40	0.01	1.52	0.00	0.24	0.00
Q051	High Stage 2	2.11	0.01	1.10	0.00	0.14	0.00
Q072	High Stage 2	0.42	0.00	1.19	0.01	0.01	0.00
Q115	High Stage 2	1.59	0.02	2.23	0.00	0.24	0.00
Q140	High Stage 2	1.27	0.01	2.38	0.00	0.21	0.00
Q181	High Stage 2	2.02	0.02	2.09	0.00	0.17	0.00
Q183	High Stage 2	1.05	0.01	1.47	0.00	0.04	0.00
Q273	High Stage 2	1.06	0.01	1.46	0.00	0.04	0.00
Q289	High Stage 2	1.57	0.01	1.62	0.00	0.18	0.00
Q294	High Stage 2	1.88	0.02	1.74	0.00	0.37	0.00
Q321	High Stage 2	0.78	0.01	2.29	0.01	0.35	0.00
Q350	High Stage 2	1.27	0.02	2.07	0.01	0.45	0.00
Q053	Low and Moderate Stage 2	1.20	0.00	−0.22	0.00	0.27	0.00
Q055	Low and Moderate Stage 2	1.96	0.01	0.58	0.00	0.19	0.00
Q165	Low and Moderate Stage 2	1.70	0.01	0.78	0.00	0.29	0.00
Q324	Low and Moderate Stage 2	0.60	0.00	−0.29	0.01	0.20	0.00
Q396	Low and Moderate Stage 2	0.80	0.00	−0.78	0.01	0.23	0.00
Q080	Low stage 2	3.02	0.03	−0.45	0.00	0.26	0.00
Q082	Low stage 2	2.16	0.03	−0.36	0.00	0.36	0.00
Q118	Low stage 2	1.20	0.01	−0.85	0.00	0.18	0.00
Q123	Low stage 2	1.08	0.01	−1.36	0.00	0.01	0.00
Q127	Low stage 2	1.43	0.02	−0.81	0.00	0.50	0.00
Q158	Low stage 2	0.38	0.00	−1.80	0.01	0.00	0.00
Q276	Low stage 2	3.51	0.04	−0.57	0.00	0.39	0.00
Q280	Low stage 2	1.54	0.01	−1.18	0.00	0.14	0.00
Q281	Low stage 2	1.01	0.01	−0.11	0.01	0.19	0.00
Q296	Low stage 2	1.71	0.01	−1.52	0.00	0.12	0.00

See notes at end of table.

Table B-1. Item forms, item parameters, and their standard errors of the HSLS:09 Mathematics Assessment items: 2009—Continued

Item name	Form	a	s.e.	b	s.e.	c	s.e.
Q299	Low stage 2	1.32	0.00	−1.47	0.00	0.00	0.00
Q375	Low stage 2	1.74	0.01	−1.25	0.00	0.10	0.00
Q378	Low stage 2	0.99	0.00	−1.30	0.00	0.00	0.00
Q379	Low stage 2	3.39	0.06	−0.16	0.00	0.29	0.00
Q381	Low stage 2	1.16	0.01	−0.66	0.00	0.23	0.00
Q387	Low stage 2	1.50	0.01	−0.84	0.00	0.13	0.00
Q388	Low stage 2	1.49	0.02	−0.18	0.00	0.19	0.00
Q389	Low stage 2	1.59	0.01	−0.47	0.00	0.20	0.00
Q390	Low stage 2	0.89	0.01	−0.32	0.00	0.18	0.00
Q402	Low stage 2	2.28	0.02	−0.51	0.00	0.14	0.00
Q030	Moderate Stage 2	1.11	0.01	−0.43	0.01	0.02	0.01
Q089	Moderate Stage 2	1.04	0.01	0.22	0.01	0.25	0.00
Q104	Moderate Stage 2	1.75	0.01	0.32	0.00	0.23	0.00
Q125	Moderate Stage 2	0.67	0.00	−0.48	0.00	0.00	0.00
Q132	Moderate Stage 2	1.53	0.01	0.34	0.00	0.10	0.00
Q179	Moderate Stage 2	1.58	0.01	−0.49	0.00	0.01	0.00
Q291	Moderate Stage 2	1.16	0.00	−0.75	0.00	0.00	0.00
Q322	Moderate Stage 2	1.36	0.00	−0.41	0.00	0.00	0.00
Q037	Router	0.73	0.00	−0.28	0.00	0.22	0.00
Q063	Router	1.06	0.00	1.35	0.00	0.11	0.00
Q088	Router	0.65	0.00	−0.23	0.01	0.20	0.00
Q090	Router	1.90	0.01	1.59	0.00	0.10	0.00
Q103	Router	1.06	0.00	−0.65	0.00	0.20	0.00
Q114	Router	0.53	0.00	0.96	0.00	0.17	0.00
Q155	Router	1.55	0.01	1.35	0.00	0.25	0.00
Q178	Router	0.18	0.00	−0.51	0.01	0.00	0.00
Q237	Router	0.48	0.00	0.80	0.01	0.22	0.00
Q247	Router	0.87	0.00	1.04	0.00	0.37	0.00
Q297	Router	1.37	0.00	0.89	0.00	0.38	0.00
Q329	Router	1.76	0.00	0.36	0.00	0.29	0.00
Q376	Router	0.81	0.00	−0.88	0.00	0.13	0.00
Q398	Router	0.86	0.00	0.13	0.00	0.24	0.00
Q403	Router	0.99	0.00	−1.41	0.00	0.00	0.00

NOTE: s.e. = standard error.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table B-2. Proportion correct for each of the HSLS:09 Mathematics Assessment items: 2009

Item name	P+ Unweighted	P+ Weighted
Q024	0.33	0.31
Q030	0.65	0.63
Q037	0.67	0.65
Q041	0.54	0.53
Q044	0.49	0.48
Q051	0.55	0.55
Q053	0.60	0.57
Q055	0.29	0.29
Q063	0.27	0.25
Q072	0.50	0.48
Q075	0.35	0.35
Q080	0.36	0.35
Q082	0.46	0.43
Q088	0.65	0.63
Q089	0.54	0.53
Q090	0.17	0.16
Q103	0.76	0.73
Q104	0.46	0.45
Q114	0.45	0.43
Q115	0.33	0.31
Q118	0.46	0.46
Q123	0.54	0.54
Q124	0.38	0.36
Q125	0.61	0.60
Q127	0.67	0.67
Q132	0.37	0.36
Q140	0.30	0.28
Q155	0.36	0.34
Q158	0.56	0.58
Q162	0.51	0.49
Q165	0.36	0.35
Q178	0.54	0.53
Q179	0.69	0.68
Q181	0.27	0.25
Q183	0.39	0.38
Q237	0.52	0.50
Q245	0.64	0.62
Q247	0.54	0.52
Q252	0.39	0.38
Q254	0.50	0.48
Q271	0.15	0.14
Q273	0.41	0.39

See notes at end of table.

Table B-2. Proportion correct for each of the HSLS:09 Mathematics Assessment items: 2009—Continued

Item name	P+ Unweighted	P+ Weighted
Q276	0.50	0.48
Q280	0.56	0.54
Q281	0.31	0.32
Q289	0.40	0.39
Q290	0.57	0.55
Q291	0.75	0.74
Q294	0.50	0.49
Q296	0.68	0.67
Q297	0.53	0.52
Q299	0.59	0.59
Q313	0.31	0.31
Q321	0.48	0.47
Q322	0.65	0.63
Q324	0.58	0.57
Q329	0.57	0.54
Q333	0.54	0.52
Q350	0.53	0.53
Q375	0.55	0.55
Q376	0.75	0.73
Q378	0.54	0.51
Q379	0.32	0.33
Q381	0.44	0.44
Q387	0.41	0.41
Q388	0.29	0.28
Q389	0.35	0.34
Q390	0.38	0.37
Q396	0.69	0.68
Q398	0.61	0.58
Q402	0.28	0.28
Q403	0.84	0.82

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Appendix C.
Glossary of Terms

Accommodations (testing): In HSLS:09, certain accommodations were offered to students with barriers to participation, who otherwise may not have been able to participate. An accommodation is a change in how a test is presented, in how a test is administered, or in how the test taker is allowed to respond. This term generally refers to changes that do not substantially alter what the test measures. The proper use of accommodations does not substantially change academic level or performance criteria. Appropriate accommodations were made to provide equal opportunity to demonstrate knowledge. Examples of test accommodations used in the base year include allowing extra time or conveying instructions in American Sign Language. Cases in which accommodations were implemented in HSLS:09 are specially flagged.

Adaptive testing: In HSLS:09, three test forms of varying levels of difficulty were assigned based on the examinee's score (or more specifically, pattern of responses) on a routing test. Thus, the specific sequence of questions that each student answered was tailored to that student's ability level. An advantage of adaptive tests is that reliability per unit of testing time is greater than in a nonadaptive test. Adaptive procedures help to minimize floor and ceiling effects. (See also *Ceiling effect* and *Floor effect*.)

American Indian or Alaska Native: An American Indian or Alaska Native is a person who has origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment. The primary source of race/ethnicity categorization in HSLS:09 was respondent self-identification.

Analytic weights: Analytic weights are sometimes called nonresponse-adjusted weights, adjusted (base) weights, or final analytic weights. The analytic weights are constructed by adjusting the base weights for factors such as subsampling of sample units, one or more nonresponse mechanisms (e.g., parent refusal of student participation and student refusal), and calibration (i.e., benchmarked) to population counts. (See also *Base weights* and *Calibration weight adjustment*.)

Asian: An Asian is a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam. The primary source of race/ethnicity categorization in HSLS:09 was respondent self-identification.

Balanced repeated replication (BRR): BRR weights can be used in HSLS:09 for variance estimation. BRR weights are based on a set of procedures that use a balanced set of pseudo-replicates. The BRR variance estimation process involves modeling the design as if it were a two-primary sampling unit (PSU)-per-stratum design. Variances are then calculated using a random group type of variance estimation procedure, with a balanced set of replicates as the groups. Balancing is done by creating replicates using an orthogonal matrix. An alternative variance estimation method available from the HSLS:09 data set is the Taylor Series linearization. (See also *Taylor Series Linearization*.)

Base weights: Base weights compensate for unequal probabilities of selection into the study sample. A base weight is calculated as the inverse probability of selection and includes all stages of sample design (e.g., two design stages are used for HSLS:09). Base weights are also called raw weights, design weights, unadjusted weights, or sampling weights throughout the survey literature. Estimates using base weights may be contrasted with the corresponding estimates using weights adjusted for nonresponse as with a nonresponse bias analysis (see *Nonresponse Bias* and *Nonresponse Bias Analysis*). Base weights are calculated for all sample members, respondents and nonrespondents alike. However, the base weights do not appear on the HSLS:09 data files, although they are used to generate response rates reported in the Data File Documentation. (See also *Analytic weights*.)

Bias: Bias is the difference between the reported value and the true value. An estimate of bias is calculated as the difference between the expected value of a sample estimate (e.g., estimated mean) and the corresponding true value for the population. The true values are generally not known and must also be estimated from the data. *Response bias* is the difference between respondent reports and their true behavior or characteristics. *Nonresponse bias* is defined as the (statistically significant) difference in an estimate calculated from the respondent and nonrespondent subsets of the sample (see *Nonresponse Bias* and *Nonresponse Bias Analysis*). *Undercoverage bias*, a type of sampling bias, arises because some critical portion of the target population is omitted from the sampling frame. For example, if the school list from which a school sample is drawn is incomplete or inaccurate (owing, for example, to the birth of new schools subsequent to the time the list was drawn up), school undercoverage may occur.

Black or African American: A Black or African American person is one having origins in any of the black racial groups of Africa. The primary source of race/ethnicity categorization in HSLS:09 was respondent self-identification.

Burden: Formally, burden is the aggregate hours realistically required for data providers to participate in a data collection. Burden also has a subjective or psychological dimension: the degree to which providing information is regarded as onerous may depend on the salience to the respondent of the questions that are being posed and on other factors, such as competing time demands and complexity of the information being requested.

Calibration weight adjustment: This is a weight adjustment that forces survey estimates to match independent population totals for specified characteristics. Poststratification is a specific type of weight calibration that uses the cross-classification of a set of variables to form poststrata (adjustment cells). Calibration adjustments for HSLS:09 were created through a model that included individual variables and a set of interaction terms (Folsom and Singh 2000).

Ceiling effect: Ceiling effect is the result of a test having insufficient numbers of the more difficult items. In a longitudinal study, ceiling effects in the follow-up can cause change scores to be artificially constrained for high-ability examinees. The measurement problems related to floor and ceiling effects in combination with regression effects found at the extreme

score ranges seriously hamper the accuracy of change measures in longitudinal studies. More information (i.e., smaller error of measurement) is obtained with respect to ability level if high-ability individuals receive relatively harder items (and if low-ability individuals receive proportionately easier items). The matching of item difficulty to a person's ability level yields increased reliability at the extremes of the score distribution, where it is most needed for studies of longitudinal change. A strategy employed in HSLS:09 to minimize ceiling (and floor) effects is to use an array of three distinct test forms that are "adaptive" to the ability level of the examinee, as demonstrated in a first-stage test form common to all examinees. Multilevel tests—with second stage test assignment that is based on the first stage (router) performance—minimize the possibility that ceiling effects might bias the estimates of the score gains. (See also *Floor effect* and *Adaptive testing*.)

Classical test theory: Classical test theory postulates that a test score can be decomposed into two parts—a true score and an error component; that the error component is random with a mean of zero and is uncorrelated with true scores; and that true scores, observed scores, and error components are linearly related.

Closed-ended question: A closed-ended question is a type of question in which the data provider's responses are limited to a given set of options (as opposed to an open-ended question). (See also *Open-ended question*.)

Cluster: A cluster is a group of sample members (or units) that is selected as one group in an early design stage. Sample members (or subsequent clusters of sample members) are then randomly selected from within the clusters chosen in the previous stage. For example, HSLS:09 clusters are schools and the sample members within the clusters are students. Examples of clusters in other studies include school districts, counties, and residential blocks. (See also *Primary sampling unit*.)

Cluster size: The cluster size is the number of HSLS:09 sample members attending a particular study-eligible school.

Codebook: A codebook is a document that contains a detailed description of each variable measured in HSLS:09 or derived from HSLS:09 variables. The description includes the variable name, columns occupied by each variable in the data matrix, values used to define each variable, unweighted frequencies, and unweighted and weighted percentages.

Coefficient of Variation (CV): The CV is calculated as the ratio of the estimated population standard deviation over the estimated population quantity (e.g., mean). Both estimates are calculated using the final analysis weights and software that appropriately accounts for the complex, two-stage sample design of HSLS:09. This quantity differs from the *relative standard error* (*relSE*), sometimes referred to as the (estimated) CV. The *relSE* is calculated as the estimated population standard error divided by the estimated population quantity.

Cohort: A cohort is a group of individuals who have a statistical factor in common such as, for example, year of birth, grade in school, year of retirement, or year of high school graduation. The HSLS:09 cohort consists of 9th-grade high school students as of the fall term of the 2009–10 school year.

Common Core of Data (CCD): The CCD consists of data annually collected from all public schools in the United States by NCES. Study-eligible public schools were identified from the CCD to form the public school portion of the sampling frame for the HSLS:09 base year.

Composite variable: A composite variable is one that is constructed through either the combination of two or more variables (poverty status, for example, combines household size with family income) or through a mathematical function or statistical transformation (e.g., conversion of raw test scores to quintiles). A composite variable is also referred to as a derived, created, or constructed variable.

Computer-assisted telephone interviewing (CATI): CATI is a mode of data collection administered in HSLS:09 where an electronic questionnaire is administered to a sample member through a telephone interview.

Confidence interval: A confidence interval is a sample-based estimate expressed as an interval or range of values that is expected to contain the true population value given a specified degree of confidence.

Confidentiality protections: NCES is required by law to protect individually identifiable data from unauthorized disclosure. To this end, HSLS:09 data have been subject to a disclosure risk analysis to determine which records require masking to produce the public-use data file from the restricted-use data file. Disclosure coarsening techniques (such as recoding of continuous variables into categorical, top and bottom coding, and so on), suppression of variables, and data perturbation techniques (e.g., data swapping) have been used to provide disclosure protection to HSLS:09 data. (See also *Data swapping* and *Disclosure risk analysis*.)

Consent, active (explicit): One variety of informed consent is called active or explicit consent. Typically, in active consent, a signed agreement to participate in a study must be obtained. In HSLS:09, permission of parents was required before students could be surveyed. Some schools required active parental consent (i.e., that a signed permission form be obtained).

Consent, passive (implied): Another variety of informed consent is called passive or implied consent. In more recent terminology, this consent type is called Opt-out Notification. In this model, a permission form is sent to the relevant party (in HSLS:09, the parent or guardian of the sampled student), who has the opportunity to return the form to indicate denial of permission. If the form is not returned, it is assumed that the individual has no objection to survey participation. In HSLS:09, about 80 percent of participating schools allowed passive parental consent for their 9th-grader's participation in the study. (See also *Opt-out notification*.)

Construct: A construct is an abstract image, idea, or theory, formed from a number of simpler observable elements (e.g., socioeconomic status, or science self-efficacy). Constructs represent ideas constructed by researchers to help summarize a group of related phenomena or objects.

Contextual data: In HSLS:09, the primary unit of analysis is the student. Survey information collected from other study participants, referred to as contextual data, should be viewed as extensions of the student data. For example, responses provided in the school administrator, teacher, counselor, and parent questionnaires on the student's school learning environment or home situation are classified as contextual data.

Counselor questionnaire: This questionnaire was designed to be completed by the most knowledgeable 9th-grade school counselor at the school. The lead or senior-most 9th-grade counselor was targeted as the preferred respondent. The questionnaire contains items that elicit school-level data concerning counseling practices and resources, and services provided to facilitate the transition of 9th graders into high school.

Coverage rate: Coverage refers to the extent to which all elements on a sampling frame are members of the population, and to which every element in a population appears uniquely on the frame. *Coverage error* refers to the discrepancy between statistics calculated on the frame population and the same statistics calculated on the target population. *Undercoverage error can* occur if target population units are excluded from the sampling frame. *Overcoverage errors* occur either when eligible target population units are listed more than once on the frame, or sampling frame units are erroneously classified as eligible for sampling (see *Bias* for discussion of undercoverage bias).

Criterion-referenced measure**:** A criterion-referenced score allows its user to measure how well a student or groups of students have learned a specific body of knowledge and skills. This measure estimates what students can do and what they know on a continuum where all examinees could in theory obtain a perfect score. The HSLS:09 IRT-estimated number-correct scores are an example of a criterion-referenced measure of status at a point in time. For this example, the criterion is the knowledge and set of skills defined by the algebraic reasoning assessment framework and represented by the assessment item pool. In contrast, the purpose of norm-referenced tests is to rank or compare students. (See also Norm-referenced test.)

Cross-cohort (or intercohort) comparison and analysis: The HSLS:09 base-year survey is not precisely comparable in timing to the prior studies, which involved spring data collections for 8th-, 10th-, or 12th-grade students. Nor is the first follow-up (spring 11th grade in 2012) precisely comparable in timing. However, coursetaking over the high school years can be compared (1982, 1992, 2004, and 2013), based on academic transcripts. Longitudinal intercohort comparison is also possible at a higher level of generality that encompasses modeling the basic transition from high school to postsecondary education and the workforce that is the subject of all the secondary longitudinal studies.

Cross-sectional analysis: A cross-sectional design represents events and statuses at a single point in time. For example, a cross-sectional survey may measure the cumulative educational attainment (achievements, attitudes, statuses) of students at a particular stage of schooling, such as the beginning of 9th grade. In contrast, a longitudinal survey (or repeated measurement of the same sample units) measures the change or growth in educational attainments that occurs over a particular period of schooling. (See also *Longitudinal or panel survey* and *Cross-cohort comparison and analysis*.)

Data swapping: Data swapping is defined in the *NCES Statistical Standards* as a perturbation disclosure limitation technique that results in a "confidentiality" edit. An example of data swapping would be to assume that a data file has two potential individual identifying variables, for example, sex and age. If a sample case needs disclosure protection, it is paired with another sampled case so that each element of the pair has the same age, but different sexes. The data on these two records are then swapped. After the swapping, anyone thinking they have identified either one of the paired cases gets the data of the other case, so they have not made an accurate match and the data have been protected. (See also *Confidentiality protections*.)

Design effect: The design effect (*deff*) is a measure of sample efficiency and is the variance of an estimate accounting for the complex nature of a survey design divided by the variance of the estimate that would have occurred if a sample of the same size had been selected using simple random sampling. Historically, the *deff* was used to adjust a variance estimate calculated with software that could not properly account for the sample design. More recently, the *deff* calculated for a set of study characteristics is used to compare the sample efficiency across surveys. Sometimes it is more useful to work with standard errors than with variances. The root design effect (*deft*) expresses the relation between the actual standard error of an estimate and the standard error of the corresponding estimates from a simple random sample. (See also *Effective sample size*.)

Differential Item Functioning (DIF): DIF exists when examinees of equal ability differ on an item solely because of their membership in a particular group (e.g., if an item favors males over females, or one racial or ethnic group over another, and cannot be explained by relevant factors such as differential coursetaking). DIF for HSLS:09 mathematics assessment items was examined in the base-year field test. Items with DIF problems were revised or deleted. A DIF analysis was also conducted with main study data, to confirm that there were no DIF problems.

Disability: A disability is a physical or mental impairment that substantially limits one or more of the major life activities (Title 42 U.S.C. Section 12102).

Disclosure risk analysis: This involves investigation of study data to evaluate and minimize the risk of identification of individual sample units to preserve the confidentiality of the data. HSLS:09 data have been subjected to a disclosure risk analysis to protect confidential information about individual respondents; see the entry for *Public-use Data File*. For a more detailed account of disclosure risk analysis, and of means of altering data (including masking,

data perturbation, and data swapping) to prevent disclosure, see the current NCES Statistical Standards document. (See also *Confidentiality protections* and *Data swapping*.)

Domain: A domain, also called a subpopulation, refers to a defined universe of knowledge, skills, abilities, attitudes, interests, or other human characteristics. For example, certain estimates in the Data File Documentation are reported for the public-school domain and for the two domains within sex.

Education Longitudinal Study of 2002 (ELS:2002): ELS:2002 is the immediate predecessor study to HSLS:09 within the series of NCES Secondary Longitudinal Studies. It began with spring high school sophomores in 2002, with follow-up studies in 2004 and 2006. A third and final follow-up is scheduled for summer 2012. URL: http://nces.ed.gov/surveys/els2002/.

Effective sample size: Effective sample size is defined as the ratio of the (unweighted) sample size divided by the design effect. In essence, the effective sample size is the sample size under a simple random sample design that has the same level of precision as obtained from the complex sample design. (See also *Design effect*.)

English Language Learner (ELL): ELL is a term used to describe students who are in the process of acquiring English language skills and knowledge. However, some schools use the term limited English proficiency (LEP) to refer to such students. (See also *Limited English proficient*.)

File: This refers to a data file containing a set of related computerized records.

Floor effect: Floor effect is the result of a cognitive test being too difficult for a large number of examinees, causing low-ability examinees to receive chance scores on the first testing, and on subsequent testings if the test remains too difficult. Floor effects result in an inability to discriminate among low-ability individuals at time one or time two, and there will be no reliable discrimination among examinees with respect to amounts of change. A possible solution, used in HSLS:09, is to develop test forms that are "adaptive" to the ability level of the examinee, which tends to minimize the possibility of floor effects biasing the estimates of the score gains. (See also *Adaptive testing* and *Ceiling effect*.)

High School and Beyond (HS&B): HS&B is the second in the series of longitudinal high school cohort studies sponsored by NCES. The HS&B base-year study surveyed sophomore and senior students in 1980. The sophomore cohort was last interviewed in 1992 and their postsecondary transcripts collected in 1993. The senior cohort was last interviewed in 1986. URL: http://nces.ed.gov/surveys/hsb/.

Hispanic or Latino: A Hispanic or Latino/Latina is a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture, origin, or ethnicity regardless of race. The primary source of race/ethnicity categorization in HSLS:09 was respondent self-

identification. Race/ethnicity was obtained for sampling purposes from administrative records provided by the *School Coordinator*.

Hold sample: The hold sample is the additional sample of schools randomly selected for the study to guard against lower than anticipated school eligibility and response rates. These schools were included in the complete sample from which the release pools were formed. (See also *Release pool*.)

Imputation: Imputation involves substituting values for missing or inconsistent data in a data set. Prediction of a missing value is typically based on a procedure that uses a mathematical model in combination with available information. Model covariates are identified from a set of variables known to be statistically and substantively related to the variable requiring imputation and the pattern of item nonresponse. Missing data for key items in HSLS:09 have been imputed (see Section 7.3).

Individualized Education Program (IEP): An IEP is a written statement or plan for each individual with a disability that is developed, reviewed, and revised in accordance with Title 42 U.S.C. Section 1414(d).

Individually identifiable data: This is data from any record, response form, completed survey, or aggregation about an individual or individuals from which the identity of a particular individual (or set of) may be revealed.

Institutional Contactor (IC): An IC is a staff member who worked in the recruitment of schools for realization of the HSLS:09 sample.

Item nonresponse: Item nonresponse is defined as a missing response to a particular question item on an instrument when a valid response was expected. For example, a participant did not wish to provide income information and therefore left the question item unanswered (blank). Item nonresponse is generally limited to the set of sample members that have been classified as respondents by providing, for example, responses to key questionnaire items required for analysis. (See also *Nonresponse bias analysis* and *Unit nonresponse*.)

Item response theory **(IRT):** IRT is a method of estimating achievement level by considering the pattern of right, wrong, and omitted responses on all items administered to an individual student. IRT postulates that the probability of correct responses to a set of test questions is a function of true proficiency and of one or more parameters specific to each test question. Rather than merely counting right and wrong responses, the IRT procedure also considers characteristics of each of the test items, such as their difficulty and the likelihood that they could be guessed correctly by low-ability individuals. IRT scores are less likely than simple number-right or formula scores to be distorted by correct guesses on difficult items if a student's response vector also contains incorrect answers to easier questions. Another attribute of IRT that makes it useful for HSLS:09 is the calibration of item parameters for all items administered to all students. This makes it possible to obtain scores on the same scale for students who took harder

or easier forms of the test. IRT will also permit vertical scaling of the two grade levels (9th grade in 2009–10, 11th grade in 2012). (See, in contrast, *Classical test theory*.)

Keyfitz procedure: This is a statistical procedure for efficiently maximizing sample overlap. A Keyfitz procedure was used to augment the HSLS:09 nationally representative sample for state-level public school estimation in a subset of the states.

Limited English proficiency (LEP): LEP is a concept developed to assist in identifying those language-minority students (individuals from non-English language backgrounds) who need language assistance services, in their own language or in English, in the schools. (See also *English language learner*, a similar term that is employed in many school systems.)

Locale codes: In earlier NCES secondary longitudinal studies, locale codes have been referred to as metropolitan status or urbanicity codes (for example, urbanicity trichotomized into three values—urban, suburban, or rural). The former codes were metro-centric (that is, based on metropolitan statistical areas). The HSLS:09 locale codes, however, use NCES's new urban-centric codes. The new urban-centric locale codes follow the same logic as the older locale codes, but incorporate an approach that prioritizes population size and proximity to an urbanized area in assigning locale. The highest level (four terms) of the new locale code system was used in HSLS:09 school sampling to create substrata (with geography as superstrata). The four major categories are city (large or mid-size city), suburban (urban fringe of large or mid-size city), town (large or small), and rural (outside or inside a Core-Based Statistical Area). Although HSLS:09 uses only the four major or highest categories, each of the four categories is further subdivided in the NCES geocode scheme (for example, "town" comprises three statuses in relation to an urbanized area: fringe, distant, or remote from an urbanized area).

Longitudinal or panel survey: In a longitudinal design, similar measurements—of the same sample of individuals, institutions, households, or of some other defined unit—are taken at multiple time points. HSLS:09 employs a longitudinal design that follows the same individuals over time and permits the analysis of individual-level change. (See also *Cross-sectional analysis*.)

Microdata (microrecords): These are observations of individual sample members, such as those contained on the HSLS:09 electronic codebook data files.

Mode effects**:** Mode of administration effects can sometimes present difficulties for surveys. Typically the HSLS:09 base-year questionnaires were administered in two modes: self-administration (via web) and interviewer administration (via web-based computer-assisted telephone interview [CATI]). (Although the mode of administration differs, the instruments are identical.) The concern is that sometimes (and in particular when perceived social desirability of questionnaire responses is a salient consideration and the item is administered by an interviewer) respondents may respond differently to the different stimuli provided by differing administration modes. However, format differences also can lead to mode effects, as when a question benefits from visual cues that cannot be duplicated in a telephone interview. For this reason, every effort

was made in HSLS:09 to adapt questions so that differences between modes would be minimized. Nor were there highly sensitive questions of the sort likely to be affected by mode of administration.

National Assessment of Educational Progress (NAEP): NAEP is a cross-sectional assessment program that measures achievement at the group level for students in 4th, 8th, and 12th grades and provides a time series for measuring trends in academic progress of 9-, 13-, and 17-year-olds. The HSLS:09 assessment differs from but complements those of NAEP by providing a basis for measuring individual-level achievement growth between fall of 9th and spring of 11th grade in mathematics (with a focus on algebraic reasoning) and relating cognitive gains in this subject to the individual, school, and family factors and processes that are measured in the various HSLS:09 questionnaires. URL: http://nces.ed.gov/nationsreportcard/.

National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education (NCES): This governmental agency is the sponsor of such current studies as HSLS:09 and ELS:2002, and is also the sponsoring agency for (among other studies) the National Assessment of Educational Progress (NAEP), and the following completed secondary longitudinal studies: National Education Longitudinal Study of 1988 (NELS:88), the High School and Beyond (HS&B) longitudinal study, and the National Longitudinal Study of the High School Class of 1972 (NLS-72).

National Education Longitudinal Study of 1988 (NELS:88): NELS:88 was the third in the series of longitudinal high school cohort studies sponsored by NCES. The study represents three cohorts: the eighth-grade class of 1988, the sophomore class of 1990, and the senior class of 1992. The study collected questionnaire and test data in 1988, 1990, and 1992 on students' school experiences, and background information from school administrators, teachers, parents (in the base year and second follow-up only), and school records. Data on postsecondary and out-of-school experiences were collected in interviews conducted in 1994 and 2000 and through a postsecondary education transcripts study in 2000–01. URL: http://nces.ed.gov/surveys/nels88/.

National Longitudinal Study of the High School Class of 1972 (NLS:72): This project was the first in the series of longitudinal high school cohort studies sponsored by NCES. The final round of data collection took place in 1986. URL: http://nces.ed.gov/surveys/nls72/.

National Science Foundation (NSF): NSF has collaborated with NCES in support of HSLS:09, particularly in matters that reflect state-level samples and records systems**.**

Native Hawaiian or Other Pacific Islander: A Native Hawaiian or Other Pacific Islander is any person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands. The primary source of race/ethnicity categorization in HSLS:09 was respondent self-identification.

Noncoverage: Noncoverage is defined as target population members that have been excluded from the sampling frame population. See the discussion of coverage error under *Coverage rate*.

Nonresponse bias: Nonresponse bias may occur as a result of not obtaining 100 percent response from the selected cases. More specifically, nonresponse bias occurs when the population parameter estimated from the respondent data deviates from the population parameter. The potential magnitude of nonresponse bias is estimated as the product of the nonresponse rate and the difference in values of a characteristic between respondents and nonrespondents. (See also *Nonresponse bias analysis*.)

Nonresponse bias analysis: Nonresponse bias analysis compares the characteristics of respondents and nonrespondents. Both unit nonresponse (school and student) and item nonresponse on questionnaires were subject to bias analyses in HSLS:09. For example, certain key data items were obtained for both responding and nonresponding schools, so that a school nonresponse bias analysis could be conducted, and bias in school-level estimates quantified and tested.

Nonsampling error: This is an error in sample estimates that cannot be attributed to sampling fluctuations. Such errors may arise from many sources including unit or item nonresponse across subgroups or errors in the respondent data such as through a student's keying error.

Norm-referenced test**:** A norm-referenced test is used to rank or compare students or groups of students relative to each other. It is interpreted based on comparison of an examinee's performance relative to the performance of others in a specified reference population, or by a comparison of a group to other groups. The weighted quintile score and the theta scores are examples of norm-referenced scores in the HSLS:09 mathematics assessment. (See also Criterion-referenced measure.)

Occupational Information Network (O*NET)**:** O*NET is the primary industry and occupation coding scheme used in HSLS:09. The O*NET database was developed for the U.S. Department of Labor and represents an extensive set of worker attributes and job characteristics. O*NET provides a nested coding structure: 23 general-level categories expand to 96 mid-level categories that can be expanded further to 821 specific-level categories.

Office of Management and Budget, U.S. Executive Branch (OMB): OMB is a federal agency with the responsibility for reviewing all studies funded by executive branch agencies. OMB reviewed, commented on, and approved the HSLS:09 questionnaires, and all study components including the sample design.

Open-ended question: This is a type of question in which the data provider's responses are not limited to given alternatives.

Opt-out notification: Opt-out notification is more commonly known as passive consent or as implied consent. In HSLS:09, about four fifths of schools agreed to "opt-out notification" in which parents or guardians were required to sign and return a form only if they refused to permit their child to participate in the study. Written parent permission—sometimes known as active or explicit consent—was required by other schools. In this case, no student could participate in the research who lacked a signed parental consent form. (See also *Parental permission, active (explicit)* and *Parental permission, passive (implied)*.)

Oversampling: Oversampling is the deliberate sampling of a group (subpopulation) within the target population at a higher rate than the proportion exhibited in the population. For example, Catholic schools and other private schools were oversampled. Asian 9th-grade students were oversampled within schools to ensure sufficient sample to conduct analysis.

Parent/guardian questionnaire: The HSLS:09 parent component sought to collect information from parents/guardians of all base-year student sample members. The parent or guardian most knowledgeable about his or her student's educational experience was asked to complete the questionnaire.

Population variance: This is a measure of dispersion defined as the average of the squared deviations between the population values and the mean of those population values.

Precision: Precision is calculated in terms of the sampling error (or standard error) of an estimate. Theoretically, precision is the deviation among estimates for a set of samples.

Primary sampling unit (PSU): The PSU is the unit chosen at the first stage of a sample design and is typically reserved for clusters of units selected at a subsequent stage of sampling in a multistage design. The HSLS:09 PSU is the school that represents a cluster of students used to select the second-stage sample. In other studies, geographical units such as a county or metropolitan statistical area (MSA) may serve as the PSU.

Private School Universe Survey (PSS): The PSS is an NCES universe survey conducted every two years, encompassing the nation's private schools. Study-eligible private schools were identified from the PSS to form the private school sampling frame for the HSLS:09 base-year study.

Probability sample: A probability sample is a subset of the target population selected by a random mechanism using a fixed and predetermined probability of selection for each unit (i.e., each population unit has a known, nonzero chance of being included).

Proficiency score: Proficiency scores (or criterion-referenced mastery scores) are based on clusters of items within each test that are of similar content and difficulty.

Public-use data file (PUF): A public-use file includes data that have been coded, aggregated, or otherwise altered to mask individually identifiable information. This file is available to the public through NCES. Unique identifiers, geographic detail, and other variables

that cannot be suitably altered are suppressed in public-use data files. Public-use edits are based on an assumption that the public may have access to both individual respondent records and secondary data sources that include data that could be used to identify respondents. For this reason, the editing process is relatively extensive. When determining an appropriate masking process, the public-use edit takes into account and guards against matches on common variables from all known files that could be matched to the public-use file. The analysis used to determine which records require masking is called a disclosure risk analysis. (See also *Restricted-use data file*.)

Questionnaire-incapable students: It was determined that, as in past surveys, some students could not be validly assessed or surveyed (even with accommodations) owing to severe physical, mental, or emotional limitations, or because of language barriers. These students were classified as "questionnaire-incapable" students but they were not deemed ineligible for the study. Contextual information was collected for these students including responses from some but not all parents, school administrators, teachers, and counselors, and they were given positive weights as applicable (student, parent, teacher etc.). These students' status will be reviewed in the first follow-up and those whose situation has changed (for example, a student becomes proficient in English) will be invited to participate.

Range check: A range check is a determination of whether responses fall within a predetermined set of acceptable values.

Record format: This is the layout of the information contained in a data record and includes the name, type, and size of each field in the record.

Relative bias: Relative bias is the bias of the estimate divided by the estimate. This measure identifies the magnitude of the bias relative to the point estimate.

Release pool: A release pool is a randomly chosen subgroup of sample units formed within the design strata (see *Stratification*). For HSLS:09, the release pools were formed by randomly subsampling schools from the complete sample. These pools are released only when additional schools were needed for recruitment based on a combination of study goals, projected response rates, and preliminary nonresponse bias analysis. (See also *Hold sample*.)

Reliability: Reliability is the consistency in results of a test or measurement including the tendency of the test or measurement to produce the same results when applied twice to some entity or attribute believed not to have changed in the interval between measurements.

Reserve(d) code: Certain codes have been reserved to stand for a number of situations in which missing data occur in response frequencies. In HSLS:09, the reserve code conventions are as follows:

- −5 = "Data Suppressed"—indicates values that are available on the restricted use data but suppressed on the public use data.

- −7 = "Item legitimate skip/NA"—indicates items that are programmatically skipped based on rules in the questionnaire and are not applicable to those respondents.
- −8 = "Nonrespondent/component N/A"—indicates that data are not available because of nonresponse or the interview component did not apply (e.g., student has no mathematics class, thus the mathematics teacher interview does not apply).
- −9 = "Missing"—question may apply to the respondent but it is not answered
- −1, −2, −3, −4, and −6 are reserved for subsequent rounds where new reserve code values may apply.

Response rate (weighted): In general, *unit response rates* are calculated as the ratio of the weighted number of completed instruments to the weighted number of eligible (in-scope) sample units, using the sample base weight (the inverse of the probability of selection). In multistage samples such as HSLS:09, overall student-level response is the product of both stages (although for many purposes, the stages are reported separately). *Item response rates* are calculated as the weighted ratio of the number of respondents for whom an in-scope response was obtained to the number of respondents who are asked to answer a given item. More detailed information can be found by consulting NCES Standard 1-3 in the NCES 2002 Statistical Standards document (available on the web at http://nces.ed.gov/StatProg/2002/stdtoc.asp). Bias analyses conducted when response rates are below targets help to assess any possible limitations to the generalizability of survey estimates. (See also *Nonresponse bias analysis*.)

Restricted-use data file (RUF): A restricted-use file includes individually identifiable information that is confidential and protected by law. The basic strategy for HSLS:09 public- versus restricted-use file construction was to include the variables with limited disclosure treatment on the restricted-use file, and to modify or suppress values for these same variables on the public use version. Use of the restricted data requires the researcher to obtain a special license from NCES. (See also *Public-use data file* and *Disclosure risk analysis*.)

RTI International (RTI): RTI is a nonprofit university-affiliated research organization with headquarters in Research Triangle Park, North Carolina. RTI conducted the HSLS:09 base-year study and is currently conducting the first follow-up study on behalf of NCES. RTI International is a trade name of Research Triangle Institute. URL: http://www.rti.org/.

Sampling error: Sampling error is the difference between a value for an entire population and an estimate of that value derived from a probability sample (i.e., subset of the population).

Sampling frame: A sampling frame is a list of all the sampling units for the target population associated with a particular stage of the sample design. The Common Core of Data (CCD) and Private School Survey (PSS) were the basis or the HSLS:09 school (first-stage) sampling frame. The student sampling frame was equivalent to the 9th-grade enrollment lists (rosters) provided by the HSLS:09 sampled schools. The *sampling frame population* is the set of elements associated with this list. As with every survey, the sampling frame is constructed in an

attempt to enumerate every member of the target population (see *Target population*). Differences between the sampling frame and target populations are linked to coverage errors (see *Bias* and *Coverage rate*).

Sampling variance: Sampling variance is the variation associated with the set of estimates generated from (theoretical) repeated implementation of the essential survey conditions (sample design, frame, sample size, instrument, data collection methodology, etc.). The square root of the sampling variance is the standard error. These statistics are estimated using the sample data from a single survey and the final analytic weights.

Scaling: Scaling refers to the process of assigning a scale score based on the pattern of responses (see also *Item response theory*).

School Administrator questionnaire: This questionnaire was completed by the base-year school administer (e.g., principal) or someone designated by the administer. This instrument contains questions on basic information about school policies, number of students in each class, curriculum offered, programs for students with special needs (e.g., disadvantaged students and students with disabilities), and other school characteristics. The school questionnaire was completed primarily in a web-survey self-administered mode.

School climate: The school climate is defined as the social system and ethos or culture of the school, including the organizational structure of the school and values and expectations within it.

School Coordinator (SC): The SC is a person designated in each school to act as a contact person between the school and RTI. This individual assisted with establishing a Survey Day in the school and preparing for the survey.

Section 504: Section 504 of the Rehabilitation Act of 1973, as amended (Title 29 U.S.C. 794 Section 504), prohibits discrimination on the basis of handicap in federally assisted programs and activities.

Selection probability: The selection probability, also referred to as the inclusion probability, is the random chance that a particular sampling unit has of being selected into the sample. These values are greater than zero and, in general, less than or equal to one. Selection probabilities equal to zero are only (theoretically) associated with ineligible sampling frame units.

Serpentine sorting: Serpentine sorting is a method of sorting in which records are ordered in an alternating ascending and descending pattern, so that any two consecutive records in the sorted file are more similar with respect to their values on the sort variables than in traditional sorting. This method was used in various HSLS:09 statistical procedures such as with the weighted hot-deck imputation methodology.

Session Administrator (SA): The SA is a member of the field staff in charge of conducting in-school data collection sessions, including proctoring of the assessment. (See also *Survey Day*.)

Session Administrator Assistant (SAA): The SAA is a member of the field staff working under the direction of a session administrator to conduct in-school data collection sessions.

Simple random sampling (SRS): SRS uses equal probability sampling with no strata or clusters. The HSLS:09 sample is stratified and clustered. Standard statistical analysis software assumes SRS and independently distributed errors. For studies such as HSLS:09, special variance estimation software (such as SUDAAN, WesVar, AM, Stata, or R) is required to compute (Taylor Series) linearization or replication variance estimates. The HSLS:09 restricted-use data files contain linearization weights (see *Analysis weight*) and balanced repeated replication weights (see *Balanced repeated replication*) are available on all files.

Socioeconomic status (SES): A socioeconomic status variable has been created for subpopulation definition and as an independent or control variable. SES is a social status construct represented by an index in HSLS:09 that takes account of the student's home background as represented by parent's education, parent's occupation, and family income. Two SES measures are available on the data files, both in continuous form as well as weighted quintiles. The first HSLS:09 SES index is similar to measures employed in *ELS:2002*, but refines the earlier concept by including information provided by non-biological adult guardians of the sampled student. A second version of the SES index was created for HSLS:09 that includes a covariate adjustment based on school urbanicity (city, suburban, town, or rural locale). In this alternative version of the SES composite, urbanicity is accorded a role as a factor that differentially affects the impact of education, occupation, and income on relative social position.

Sojourn: HSLS:09 base year included a computerized assessment of students conducted on school computers when possible. When school computers were not compatible with RTI's computerized assessment, RTI-provided laptops were used in their place. When school computers were compatible and a computer lab at the school was available, RTI used a custom Linux distribution called Sojourn to launch the survey and mathematics-assessment software. Using Sojourn allows for a high degree of interoperability with hardware based on i486 compatible processors, creates a controlled testing environment, and secures the computer against key loggers, viruses, or other malicious code. This ensures that any sensitive information entered by the student is not compromised.

Standard deviation: This is the square root of the population (unit) variance used in, for example, the calculation of the standardized theta score in the mathematics assessment

Standard error: This is the square root of the population sampling variance. It is a measure of the dispersion of the sampling distribution of a statistic. Standard errors are used to

establish confidence intervals for the statistics being analyzed and are constructed using the final analysis weights and software that accounts for the complex HSLS:09 sample design.

Standard error of measurement (sem) for theta (or standard error of estimation): For the assessment, the standard error of measurement (*sem*) for each student's theta score is calculated from the sum of item information functions for all items answered by that student. The standard error of measurement is a transformation of the test information function. The precision of parameter estimates can be computed as a function of the reciprocal of the measurement error, or the variability of repeated estimates of the value of the parameter. More specifically, the standard error of measurement is computed from the reciprocal of the square root of the test information function. (See also *Test information function*.)

Statistical significance: Statistical significance is the finding (based on a derived probability, rather than a certitude) that, for example, two or more estimates are truly different from one another and not a merely apparent difference reflecting chance variation.

Stratification: Stratification is the division of a population into distinct, mutually exclusive and exhaustive subgroups (strata). Strata are generally defined to include relatively homogeneous units on characteristics that are of interest to the study. Stratification is used to reduce sampling error. In HSLS:09, the first-stage strata were formed (see section 3.2.3) and schools were selected independently within each stratum. Students were independently selected within strata defined by race/ethnicity.

Student questionnaire: This is one of the two parts of the HSLS:09 base-year student survey (the other part is the algebraic reasoning assessment). The student questionnaire contained a locator section for tracing sample members for future waves of HSLS:09 and a series of questions about school and home environments, time use, attitudes, values, expectations and aspirations.

Study-eligible school: With a few exclusions, study-eligible schools are generally defined as U.S. schools (public or private) that provide educational instruction to 9th- and 11th-grade students and distribute high school diplomas based on a pre-set list of criteria. The complete list of exclusions is provided in section 3.2.1. (See also *Target population*.)

Study-eligible student: All 9th-grade students enrolled in study-eligible schools on the Survey Day in the fall semester of the 2009–10 school year were classified as study eligible (section 3.3). This set includes students identified as questionnaire incapable and students who were able to complete all components of the study. All foreign exchange students were excluded from the study. (See also *Survey Day*.)

Survey Day: This is a day chosen by the school coordinator during the data collection period when a session administrator and assistant oversaw the computerized administration of the survey to the school's sample of students. Make-up days were normally offered for students who missed Survey Day.

Target population: Target population is defined as the elements identified for a particular study. The weighted results tabulated from the HSLS:09 data provide estimates for target populations and population domains. In HSLS:09, the base-year target population was fall term 9th-graders in all regular public and private schools with 9th and 11th grades in the 50 states and the District of Columbia. (See section 3.2.1 for details of school eligibility.)

Taylor series linearization: The Taylor series variance estimation procedure is used to estimate the variance of linear statistics (e.g., estimated totals) and nonlinear statistics (e.g., proportions or ratios). For nonlinear statistics, the procedure takes the first-order Taylor series approximation of the nonlinear statistics and then substitutes the linear representation into the appropriate variance formula based on the sample design. Because HSLS:09 is a stratified multistage survey, the Taylor series procedure requires analytic strata and analytic primary sampling units, defined from the sampling strata and primary sampling units (HSLS:09 schools). (For an alternative HSLS:09 variance estimation method, see also *Balanced repeated replication*.)

Teacher (contextual) sample: In the HSLS:09 base year, as applicable two teacher reports were sought for each student, one from the student's mathematics teacher and one from the student's science teacher. However, some students were not enrolled in the target subjects, or were not enrolled at the time of the survey (owing to block scheduling or other special arrangements).

Teacher questionnaire: In the base year, mathematics and science teachers of HSLS:09 sampled students were asked to complete a teacher questionnaire. This instrument was used to collect data on school and teacher characteristics (including teacher qualifications and experience) and some classroom-level information. Unlike the NELS:88 and ELS:2002 teacher surveys, no direct teacher ratings or evaluations of specific sampled students were sought and the names of the sampled students were kept anonymous.

Technical Review Panel (TRP): A TRP is a specially appointed, independent group of substantive, methodological, and technical experts who offer advice to NCES and RTI on issues of study design and content. TRP members are nominated by the RTI and approved by NCES. Typically TRPs are convened prior to and subsequent to a field test.

Test information function**:** The test information function provides a visual representation of the measurement accuracy of the theta estimates across the range of ability levels. A transformation of the test information function provides the standard error of measurement (*sem*) of the ability estimate (*theta*).

Unit nonresponse: Unit nonresponse is the failure of a survey unit (e.g., at the institutional level, a school, or at the individual level, a respondent, such as a student or a teacher) to cooperate or complete a survey instrument. *Overall unit nonresponse* reflects a combination of unit nonresponse across two or more levels of data collection, where participation at the second stage of data collection is conditional upon participation in the first

stage of data collection. In HSLS:09, overall nonresponse is the product of school-level nonresponse times student nonresponse. *Total item nonresponse* reflects a combination of the overall unit nonresponse and item nonresponse. (See also *Item nonresponse* and *Nonresponse bias*.)

Validity: Validity is the capacity of an item or instrument to measure what it was designed to measure, stated most often in terms of the correlation between scores in the instrument and measures of performance on some external criterion. It is the extent to which a test or set of operations measures what it is supposed to measure. Reliability, on the other hand, refers to consistency of measurement over time. (See also *Reliability*.)

Variance estimation: Variance estimation is the measures of the variability of a statistic and includes the standard error and error variance. Two procedures for estimating variances of survey statistics in HSLS:09 are the BRR (balanced repeated replication) and Taylor Series. BRR (available on both the public-use and restricted-use files) is recommended for HSLS:09 data. (See also *Balanced repeated replication* and *Taylor series linearization*.)

Wave: A wave is a single implementation of the survey within the larger longitudinal survey (e.g., the base year and each successive follow-up are each waves of data collection).

Weighted estimates: Weighted estimates (as in the HSLS:09 codebook) are survey estimates generated from survey data that have been statistically weighted (multiplied) by factors reflecting the sample design. The general purpose of weighting is to compensate for unequal probabilities of selection into the sample and to adjust for the fact that not all schools or individuals selected into the sample actually participated. (See also *Final analysis weights*.)

White: A white person is one having origins in any of the original peoples of Europe, the Middle East, or North Africa. The primary source of race/ethnicity categorization in HSLS:09 was respondent self-identification.

Appendix D.
Details of School and Student Sampling

The mathematical details for the random selection of the High School Longitudinal Study of 2009 (HSLS:09) schools are provided in section D.1. Components of the Keyfitz procedure for augmenting the sample for 10 states are listed in section D.2. Finally, the second-stage probabilities of selection, students within schools, are discussed in section D.3.

D.1 School Sampling for National Design

The original two-stage HSLS:09 sample design was created to produce precise national estimates for students' educational experience and context in the United States. However, additional funds were provided after the national sample was selected so that precise state-level estimates could also be calculated for 10 states. Even though the final HSLS:09 sample design incorporates features of the national and state-level designs as discussed in chapter 3, sampling rates for schools and for students within schools were set under the original national sample design.

A probability proportional to size (*pps*) sample of schools within strata was selected in the first design stage for HSLS:09. The first-stage sampling strata were defined as the interaction of three variables: three school types (public, private-Catholic, private-other), four regions of the United States (Northeast, Midwest, South, West), and four metropolitan areas (city, suburban, town, rural).

The measure of size (*mos*) used in the *pps* selection was created as a composite of student sampling rates by four race/ethnicity[1] domains as defined below. A composite *mos* was used to balance the workload for in-school data collection staff, to ensure adequate sample for domain-specific analyses, and to produce approximately equal unconditional design weights for students within each domain (Folsom, Potter, and Williams 1987).

The following notation is useful to explicitly define the composite *mos* and the probabilities of selection for first- and second-stage sample units. For this and the subsequent section, let:

- h index the first-stage sampling strata ($h = 1, \ldots, H$) where H=48;
- i index the HSLS:09 target population schools within the first-stage strata such that $i = 1, \ldots, M_h$ where M_h is the total number of school in stratum h;
- m_h is the total number of schools selected in the first-stage stratum h;
- m_h^* is the total number of schools selected *minus* any certainty selections in the first-stage stratum h ($m_h^* \equiv m_h$, for most strata);
- j index the second-stage strata (four race/ethnicity domains) where $j = 1, \ldots, 4$;

[1] The second-stage sampling strata are defined by four race/ethnicity domains: Hispanic, non-Hispanic (NH) Asian, NH Black, and NH Other.

- N_{hij} represent the total number of 9th-grade students listed on the National Center for Education Statistics (NCES) data files used to construct the composite *mos* (i.e., the Common Core of Data [CCD] file for public schools and the Private School Survey [PSS] file for private schools); and
- n_{hij} represent the student sample size (adjusted for nonresponse) that will be selected from the j^{th} race/ethnicity stratum within school i sampled from stratum h (hi^{th} school).

Define the desired overall sampling rate for students within the h^{th} school sampling stratum and the j^{th} race/ethnicity stratum as

$$f_{hj} = \frac{n_{hj}}{N_{hj}} \tag{1}$$

where $n_{hj} = \sum_{i=1}^{M_h} n_{hij}$, the total number of students selected across all schools within the combination of first- and second-stage strata, and $N_{hj} = \sum_{i=1}^{M_h} N_{hij}$ is the corresponding population count of 9th-grade students from the NCES files. The stratum-specific student sampling rates, f_{hj}, were determined from the final sample allocation in combination with the most recent population counts by the design strata. The resulting composite *mos* for the hi^{th} school was then calculated as

$$S_{hi} = \sum_{j=1}^{4} f_{hj}\ N_{hij}$$

.

An independent sample of schools was selected for each school stratum using Chromy's sequential *pps* sampling algorithm with minimum replacement and the composite *mos* defined above (Chromy 1979). The preliminary expected selection frequency for the hi^{th} school was evaluated as

$$\frac{m_h\ S_{hi}}{S_{h+}}$$

,

where $S_{h+} = \sum_{i=1}^{M_h} S_{hi}$. After removing the few certainty selections[2], the expected selection frequency for the hi^{th} noncertainty school, used to construct the school design or base weights (chapter 6), was calculated as

[2] In general, survey sampling rates are designed to be greater than zero and less than or equal to one. Units with a sampling rate equal to one are referred to as certainty selections because these units are automatically included into the sample (i.e., included with certainty).

$$\pi_{hi} = \frac{m_h^* S_{hi}}{S_{h+}} \quad . \tag{2}$$

Note that $\pi_{hi} \equiv 1$ for all certainty selections.

Prior to drawing the sample, the frame of study-eligible schools was sorted by Census division, state, and the composite *mos* to form implicit strata with the objective of ensuring proportional representation across the United States (see, e.g., Williams and Chromy 1980).

Additional schools were selected for HSLS:09 to ensure sufficient sample in the event that either ineligibility or nonresponse rates were higher than anticipated. The full sample of schools was randomly divided into release groups (also known as release waves or pools) within design strata so that any release pool would represent a random selection from the target population. Only those groups required to meet the desired number of participating schools were released for data collection to limit the impact to the study budget. Thus, the initial probability of selection in expression (2) was adjusted by proportion of schools randomly released for study, i.e.,

$$\frac{m_h^{(r)}}{m_h} \tag{3}$$

where $m_h^{(r)} \leq m_h$, the number of school by design stratum *h* released.

D.2 School Sampling for Augmented-Sample States

Funds were provided to HSLS:09 by the National Science Foundation to select additional sample to produce precise estimates for 10 states. Because school sample for the original (national estimate) design had already been selected, a Keyfitz (1951) procedure was implemented (1) to maximize the retention of public schools selected under the original sample design, (2) to minimize overlap with the sample of schools already selected for the 2009 Program for International Student Assessment (PISA), and (3) for certain states, to minimize the overlap with the HSLS:09 field test schools.

A sketch of the Keyfitz procedure used for the HSLS:09 augmented-sample states is provided below. Define

- the probability that school *hi* was randomly selected for the HSLS:09 full-scale study sample under the original design as π_{1hi};
- the probability that school *hi* was randomly selected for the 2009 PISA but not selected for the HSLS:09 full-scale study as π_{2hi};
- the probability that school *hi* was randomly selected for the HSLS:09 field test but not selected for the HSLS:09 full-scale study as π_{3hi}; and

- the probability that school *hi* was randomly selected as a member of the HSLS:09 augmented-sample for one of the 10 states as π_{4hi}.

The results from the original HSLS:09 sample selection for school *hi* was divided into three mutually exclusive and exhaustive events:

- selected for the HSLS:09 full-scale study sample = π_{1hi};
- selected for PISA or the HSLS:09 field test but not for the HSLS:09 full-scale study sample = $(1 - \pi_{1hi}) \times (\pi_{2hi} + \pi_{3hi} - \pi_{2hi}\, \pi_{3hi})$; and
- not selected for any of the three studies = $1 - (\pi_{1hi} + \pi_{2hi} + \pi_{3hi} - \pi_{2hi}\, \pi_{3hi})$.

Comparing the original HSLS:09 probability of selection under the national design ($\boldsymbol{\pi_{1hi}}$) against the revised probability of selection within the associated augmented-sample state ($\boldsymbol{\pi_{4hi}}$), the Keyfitz procedure dictates the following probabilities using a Poisson selection algorithm.

- If $\boldsymbol{\pi_{4hi} \geq \pi_{1hi}}$, then assign school *hi* a conditional selection probability equal to $(\boldsymbol{\pi_{4hi} - \pi_{1hi}}) / [1 - (\pi_{1hi} + \pi_{2hi} + \pi_{3hi} - \pi_{2hi}\, \pi_{3hi})]$.
- Otherwise, assign school *hi* a conditional selection probability equal to $(\pi_{4\text{hi}} / \pi_{1\text{hi}})$.

D.3 Student Sampling

The HSLS:09 sample design was devised around the primary analytic objectives of the study—producing precise education estimates for eligible students within the four race/ethnicity strata. To meet the objective, the unconditional student sampling rates were calculated to maintain the overall sampling rates defined in equation (1) within the four strata. The unconditional sampling rates by race/ethnicity were calculated as

$$\pi_{hij} = \pi_{hi}\left(\frac{n_{hij}}{N_{hij}}\right), \tag{4}$$

where π_{hi}, defined in equation (1), is school selection probability; and the ratio n_{hij} / N_{hij} is the stratum-specific sampling rate conditional on the hi^{th} school being selected for the HSLS:09. Setting f_{hj} given in (1) equal to π_{hij} given in (3) yields

$$n_{hij} = f_{hj}\left(\frac{N_{hij}}{\pi_{hi}}\right), \tag{5}$$

the number of students sampled in race/ethnicity stratum j $(j = 1, \ldots, 4)$ within the hi^{th} sampled school.

The resulting sampling rates could not have guaranteed the sample sizes within race/ethnicity required for the analytic objectives because, among other issues, not all sampled

schools were projected to participate in the study. To meet the analytic sample size objectives, the expected number of sampled students within the two-stage design strata was estimated as

$$\sum_{i=1}^{M_h} n_{hij}\ \delta_{hij} = n_{hj}$$

where δ_{hij} is an indicator for participation by the hi^{th} school. This resulted in a revised overall sampling rate of

$$f_{hj}^{*} = n_{hj} \Big/ N_{hj}^{*}$$

where $N_{hj}^{*} = \sum_{i=1}^{M_h} \delta_{hij} \left(N_{hij} \Big/ \pi_{hi} \right)$. Therefore, the school-specific sampling rates were defined as

$$\frac{n_{hij}}{N_{hij}} = \hat{f}_{hj} \left(\frac{1}{\pi_{hi}} \right) \tag{6}$$

by setting

$$\hat{f}_{hj} = n_{hj} \Big/ \hat{N}_{hj}$$

with

$$\hat{N}_{hj} = \sum_{i=1}^{M_h} \frac{N_{hij}}{\pi_{hi}} \left(\lambda_h\ \lambda_{hj} \right)$$

where λ_h is an sample inflation factor to address sample loss associated with ineligible and nonresponding schools, and λ_{hj} is the corresponding sample inflation factor associated with loss of student analysis records.

Appendix E.
Parental Passive and Active Consent Forms

Dear Parent or Guardian:

We are pleased to inform you that your child has been selected to participate in the High School Longitudinal Study of 2009 (HSLS:09), a national education study sponsored by the U. S. Department of Education. The purpose of the study is to understand the impact of the high school experience on students' learning and their educational and career choices, and to explore the transitions students make from high school to postsecondary education, the labor force, and adulthood. Approximately 24,000 students from 940 schools across the country have been randomly selected to participate in HSLS:09, which will be conducted in the fall 2009. In a few weeks, your teenager will be asked to spend approximately 90 minutes completing a background questionnaire and a math test on a computer at school.

HSLS:09 will measure achievement and various influences on the plans and decision-making of high school students. On the questionnaire students will be asked about their current education activities such as coursework, study habits, extracurricular activities, future plans, attitudes and beliefs. In addition, we would like you to complete a parent survey that will provide important background information. You will be contacted separately to complete this survey. We will also ask a school administrator, a school counselor, and your teenager's math and science teachers to complete a questionnaire, which will provide information about programs and practices at the school.

An important feature of HSLS:09 is that it is longitudinal, meaning it will follow the same students as they progress through school and eventually enter the work force and/or go to college. In two years, we would like to contact your teenager again for a follow-up study, so we will ask for his/her address and telephone number and those of a relative or close friend. At that time you can decide whether you agree to have your child participate. Transcript data of coursework and grades will also be collected from the school.

The U.S. Department of Education is authorized by federal law (Public Law 107-279) to conduct HSLS:09. Data will be used only for statistical purposes and may not be disclosed or used, in identifiable form for any other purpose except as required by law. No individual data (such as names or addresses) will be reported. Participation is voluntary and there is no penalty if you or your teenager decides not to participate. Your teenager may choose not to answer any question. There are no risks to your teenager from taking part in the study. The data collected will be used in analyses to understand students' course-taking behaviors, motivation and achievement, and how students decide what to do during and after high school.

Participating students will receive a "goodie bag" – a clear backpack filled with educational items. If you allow your child to participate, you do <u>not</u> need to return this form. If you object to his or her participation, please fill out the form below and return it to the school as soon as possible.

The enclosed brochure provides more information about HSLS:09. If you have questions about the study please call Mr. Dan Pratt at RTI, toll-free, at 1-866-253-1063 between 9 AM and 5 PM Eastern time, Monday through Friday. RTI is a non-profit research organization in North Carolina that has been contracted to collect the data. If you have questions about your rights as a study participant, you may call RTI's Office for Research Protection toll-free at 1-866-214-2043. Both Mr. Pratt and staff from the Office for Research Protection can be reached at: RTI, P.O. Box 12194, Research Triangle Park, NC 27709.

We thank you in advance for your cooperation in this important research.

Sincerely,

Stuart Kerachsky, Acting Commissioner
National Center for Education Statistics
Institute of Education Sciences, U.S. Department of Education
Enclosure: HSLS: 09 Brochure

EXAMPLE OF PARENT PASSIVE CONSENT FORM

High School Longitudinal Study of 2009 (HSLS:09) PERMISSION FORM

As a token of our appreciation for your child's participation in this study, he or she will receive a clear drawstring backpack with some exciting, educational goodies inside.

IF YOU GRANT YOUR PERMISSION FOR YOUR TEENAGER TO PARTICIPATE IN THE STUDY, YOU DO NOT NEED TO RETURN THIS FORM.

IF YOU DO NOT CONSENT TO YOUR TEENAGER'S PARTICIPATION IN HSLS:09, PLEASE RETURN THIS FORM TO YOUR TEENAGER'S SCHOOL AS SOON AS POSSIBLE.

I DO NOT GRANT PERMISSION for my teenager, _____, to participate in the High School Longitudinal Study.

_____

(Signature of parent or guardian)

Date of signature: _____

(_____)_____

Area code Telephone number

PLEASE PRINT:

Student name: _____

School Name: _____

FOR OFFICE USE ONLY:

Student ID: _____

EXAMPLE OF PARENT ACTIVE CONSENT FORM

Dear Parent or Guardian:

We are pleased to inform you that your child has been selected to participate in the High School Longitudinal Study of 2009 (HSLS:09), a national education study sponsored by the U. S. Department of Education. The purpose of the study is to understand the impact of the high school experience on students' learning and their educational and career choices, and to explore the transitions students make from high school to postsecondary education, the labor force, and adulthood. Approximately 24,000 students from 940 high schools across the country have been randomly selected to participate in HSLS:09, which will be conducted in the fall 2009. In a few weeks, your teenager will be asked to spend approximately 90 minutes completing a background questionnaire and a math test on a computer at school.

HSLS:09 will measure achievement and various influences on the plans and decision-making of high school students. On the questionnaire students will be asked about their current education activities such as coursework, study habits, extracurricular activities, future plans, attitudes and beliefs. In addition, we would like you to complete a parent survey that will provide important background information. You will be contacted separately to complete this survey. We will also ask a school administrator, a school counselor, and your teenager's math and science teachers to complete a questionnaire, which will provide information about programs and practices at the school.

An important feature of HSLS:09 is that it is longitudinal, meaning it will follow the same students as they progress through school and eventually enter the work force and/or go to college. In two years, we would like to contact your teenager again for a follow-up study, so we will ask for his/her address and telephone number and those of a relative or close friend. At that time you can decide whether you agree to have your child participate. Transcript data of coursework and grades will also be collected from the school.

The U.S. Department of Education is authorized by federal law (Public Law 107-279) to conduct HSLS:09. Data will be used only for statistical purposes and may not be disclosed or used, in identifiable form for any other purpose except as required by law (Public Law 107-279, Section 183). No individual data (such as names or addresses) will be reported. Participation is voluntary and there is no penalty if you or your teenager decides not to participate. Your teenager may choose not to answer any question. There are no risks to your teenager from taking part in the study. The data collected will be used in analyses to understand students' course-taking behaviors, motivation and achievement, and how students decide what to do during and after high school.

Participating students will receive a "goodie bag" – a clear backpack filled with educational items. **Please take a moment in the next day or two to fill out the enclosed form and return it to your teenager's school in the enclosed envelope. We cannot allow your teenager to participate without your written consent.**

The enclosed brochure provides more information about HSLS:09. If you have questions about the study please call Mr. Dan Pratt at RTI, toll-free, at 1-866-253-1063 between 9 AM and 5 PM Eastern time, Monday through Friday. RTI is a non-profit research organization in North Carolina that has been contracted to collect the data. If you have questions about your rights as a study participant, you may call RTI's Office for Research Protection toll-free at 1-866-214-2043. Both Mr. Pratt and staff from the Office for Research Protection can be reached at: RTI, P.O. Box 12194, Research Triangle Park, NC 27709.

We thank you in advance for your cooperation in this important research.

Sincerely,

Stuart Kerachsky, Acting Commissioner
National Center for Education Statistics
Institute of Education Sciences, U.S. Department of Education
Enclosure: HSLS:09 Brochure

High School Longitudinal Study of 2009 (HSLS:09) PERMISSION FORM

As a token or our appreciation for your child's participation in this study, he or she will receive a clear drawstring backpack with some exciting educational goodies inside.

Please check only one option below that indicates your decision about your teenager's participation in the study; sign the form, providing your telephone number; and print the student name and school name, where indicated.

Please return this form to your teenager's school as soon as possible. We have enclosed an envelope addressed to the school coordinator.

Please check one:

☐ **I GIVE PERMISSION** for my teenager, _____, to participate in the study.

☐ **I DO NOT GIVE PERMISSION** for my teenager, _____, to participate in the study.

_____

(Signature of parent or guardian)

Date of signature: _____

(_____) _____

Area code Telephone number

PLEASE PRINT:

Student name: _____

School name: _____

FOR OFFICE USE ONLY:

Student ID: _____

Appendix F.
Documentation for Composite Variables

A number of composite variables have been constructed in order to enhance substantive analysis. These constructed variables are listed below. Readers should note that not all of the composite variables are available on the public use file. Examples of restricted use composites unavailable on the public use file include (among many others) X1NCESID, X1AMINDIAN, X1HISPTYPE, X1NATIVELANG, and X1FREELUNCH. In addition to the fact that some composite variables have been suppressed on the public use file, others have been coarsened through recoding (X1STDOB is an example of such a recoded variable). For a comparison of variables in the public and restricted files, with indication of how variables have been altered or suppressed for the public use file, see Appendix L of this document. The HSLS:09 base year composites are listed immediately below.

X1NCESID

X1NCESID stores the 12-character NCES ID of the sample member's base year school (2009-2010 school year). The NCES ID is school identifier used to link to the Common Core of Data (CCD) file and the Private School Survey (PSS) file. The source of the NCES ID was the 2008-2009 CCD and 2007-2008 PSS.

X1SEX

Sex of the sample member, taken from the base year student questionnaire, parent questionnaire, or school-provided sampling roster. If the sex indicated by any of these three sources was inconsistent, X1SEX was coded based on manual review of the sample member's first name.

X1RACE

X1RACE characterizes the sample member's race/ethnicity by summarizing the following six dichotomous race/ethnicity composites: X1HISPANIC, X1WHITE, X1BLACK, X1ASIAN, X1PACISLE, and X1AMINDIAN. The dichotomous race/ethnicity composites are based on data from the student questionnaire, if available; if not available from the student questionnaire, they are based on, in order of preference, data from the school-provided sampling roster or data from the parent questionnaire. X1RACE is derived from the six dichotomous race/ethnicity variables listed above (though the imputed values of X1WHITE, X1BLACK, X1ASIAN, X1PACISLE, and X1AMINDIAN are not stored on the data file). If any of these input variables are imputed, then the imputation flag for X1RACE (X1RACE _IM) is set to 1.

X1HISPANIC

The sample member's race/ethnicity is characterized by a series of six dichotomous composite variables (the student is/is not white, the student is/is not black, etc.). The six dichotomous composite race/ethnicity variables are X1HISPANIC, X1WHITE, X1BLACK, X1ASIAN, X1PACISLE, and X1AMINDIAN. Each of these dichotomous composites is based on data from the student questionnaire; if missing from the student questionnaire, they are based on the presence of the race/ethnicity from the school-provided sampling roster; if still missing, they are based on the presence of the race/ethnicity from the parent questionnaire (if parent questionnaire data include race/ethnicity information for biological parents); if still missing, they are based on

the presence of another race/ethnicity on the school-provided sampling roster (to set values to "No"). The six dichotomous race/ethnicity composites are then used in conjunction to produce the summary race/ethnicity composite X1RACE.

X1WHITE

The sample member's race/ethnicity is characterized by a series of six dichotomous composite variables (the student is/is not white, the student is/is not black, etc.). The six dichotomous composite race/ethnicity variables are X1HISPANIC, X1WHITE, X1BLACK, X1ASIAN, X1PACISLE, and X1AMINDIAN. Each of these dichotomous composites is based on data from the student questionnaire; if missing from the student questionnaire, they are based on the presence of the race/ethnicity from the school-provided sampling roster; if still missing, they are based on the presence of the race/ethnicity from the parent questionnaire (if parent questionnaire data includes race/ethnicity information for biological parents); if still missing, they are based on the presence of another race/ethnicity on the school-provided sampling roster (to set values to "No"). The six dichotomous race/ethnicity composites are then used in conjunction to produce the summary race/ethnicity composite X1RACE.

X1BLACK

The sample member's race/ethnicity is characterized by a series of six dichotomous composite variables (the student is/is not white, the student is/is not black, etc.). The six dichotomous composite race/ethnicity variables are X1HISPANIC, X1WHITE, X1BLACK, X1ASIAN, X1PACISLE, and X1AMINDIAN. Each of these dichotomous composites is based on data from the student questionnaire; if missing from the student questionnaire, they are based on the presence of the race/ethnicity from the school-provided sampling roster; if still missing, they are based on the presence of the race/ethnicity from the parent questionnaire (if parent questionnaire data includes race/ethnicity information for biological parents); if still missing, they are based on the presence of another race/ethnicity on the school-provided sampling roster (to set values to "No"). The six dichotomous race/ethnicity composites are then used in conjunction to produce the summary race/ethnicity composite X1RACE.

X1ASIAN

The sample member's race/ethnicity is characterized by a series of six dichotomous composite variables (the student is/is not white, the student is/is not black, etc.). The six dichotomous composite race/ethnicity variables are X1HISPANIC, X1WHITE, X1BLACK, X1ASIAN, X1PACISLE, and X1AMINDIAN. Each of these dichotomous composites is based on data from the student questionnaire; if missing from the student questionnaire, they are based on the presence of the race/ethnicity from the school-provided sampling roster; if still missing, they are based on the presence of the race/ethnicity from the parent questionnaire (if parent questionnaire data includes race/ethnicity information for biological parents); if still missing, they are based on the presence of another race/ethnicity on the school-provided sampling roster (to set values to

"No"). The six dichotomous race/ethnicity composites are then used in conjunction to produce the summary race/ethnicity composite X1RACE.

X1PACISLE
The sample member's race/ethnicity is characterized by a series of six dichotomous composite variables (the student is/is not white, the student is/is not black, etc.). The six dichotomous composite race/ethnicity variables are X1HISPANIC, X1WHITE, X1BLACK, X1ASIAN, X1PACISLE, and X1AMINDIAN. Each of these dichotomous composites is based on data from the student questionnaire; if missing from the student questionnaire, they are based on the presence of the race/ethnicity from the school-provided sampling roster; if still missing, they are based on the presence of the race/ethnicity from the parent questionnaire (if parent questionnaire data includes race/ethnicity information for biological parents); if still missing, they are based on the presence of another race/ethnicity on the school-provided sampling roster (to set values to "No"). The six dichotomous race/ethnicity composites are then used in conjunction to produce the summary race/ethnicity composite X1RACE.

X1AMINDIAN
The sample member's race/ethnicity is characterized by a series of six dichotomous composite variables (the student is/is not white, the student is/is not black, etc.). The six dichotomous composite race/ethnicity variables are X1HISPANIC, X1WHITE, X1BLACK, X1ASIAN, X1PACISLE, and X1AMINDIAN. Each of these dichotomous composites is based on data from the student questionnaire; if missing from the student questionnaire, they are based on the presence of the race/ethnicity from the school-provided sampling roster; if still missing, they are based on the presence of the race/ethnicity from the parent questionnaire (if parent questionnaire data includes race/ethnicity information for biological parents); if still missing, they are based on the presence of another race/ethnicity on the school-provided sampling roster (to set values to "No"). The six dichotomous race/ethnicity composites are then used in conjunction to produce the summary race/ethnicity composite X1RACE.

X1HISPTYPE
X1HISPTYPE indicates the sample member's Hispanic subgroup, where applicable. Information on Hispanic subgroup is taken from the base year student questionnaire, and, if missing in the base year student questionnaire, from the base year parent questionnaire (if the base year parent questionnaire includes information about a particular Hispanic subgroup for both biological parents or one of the biological parents if the other biological parent is not Hispanic or is missing).

X1ASIANTYPE
X1ASIANTYPE indicates the sample member's Asian subgroup, where applicable. Information on Asian subgroup is taken from the base year student questionnaire, and, if missing in the base year student questionnaire, from the base year parent questionnaire (if the base year parent

questionnaire includes information about a particular Asian subgroup for both biological parents or one of the biological parents if the other biological parent is not Asian or is missing).

X1NATIVELANG
Indicates the language the sample member first learned to speak. X1NATIVELANG is taken from the base year student questionnaire, i.e., S1LANG1ST (whether sample member first learned to speak English, Spanish, and/or another language) and S1LANG1STOS (non-English language sample member first learned to speak); if missing in the base year student questionnaire, X1NATIVELANG is taken from the base year parent questionnaire, i.e., P1HOMELANG (whether a language other than English is spoken in the home) and P1RSPLANG (language parent respondent usually speaks to sample member). If missing from both sources, X1NATIVELANG is statistically imputed for base-year student survey respondents (imputed values in X1NATIVELANG can be identified using X1NATIVEL_IM). For sample members who first learned both English and a non-English language, X1NATIVELANG is coded with the applicable non-English language (see also X1DUALLANG).

X1DUALLANG
Indicates whether the language the sample member first learned to speak was English only, a non-English language only, or English and a non-English language equally. This variable is computed from information taken from the base-year student questionnaire (S1LANG1ST). See also X1NATIVELANG for further specificity of non-English languages.

X1STDOB
Indicates the sample member's birth year and month; X1STDOB is taken from the base year student questionnaire, and, if missing in the base year student questionnaire, from the school-provided sampling roster. In cases where the student questionnaire birth date is entirely missing, only the birth year is provided from the sampling roster, and X1STDOB is filled with YYYY00.

X1TXMTH
The mathematics theta score represents the student's ability level on a continuous scale. The theta score provides a norm-referenced measurement of achievement, that is, an estimate of achievement relative to the population (fall 2009 9th graders) as a whole. It provides information on status compared to peers (as distinguished from the IRT-estimated scale score which represents status with respect to achievement on a particular criterion set of test items). When the score is not available, X1TXMTH1- X1TXMTH5 are created as the multiple imputation values for X1TXMTH. X1TXMTH is the mean of X1TXMTH1- X1TXMTH5. The standard error of measurement for the theta score is X1TXMSEM. The standardized form of the mathematics theta score is X1TXMTSCOR. See Chapter 2 for more information on the derivation of the mathematics theta score.

X1TXMSEM

The standard error of measurement (SEM) for the theta score indicates the precision in the ability estimate. It is calculated from the sum of item information functions for each item answered by each student. Unlike the classical standard error of measurement, which is a constant, the IRT standard error varies across the scale-score continuum. It is typically smaller for students whose theta score falls toward the center of the distribution because more students answered the items with average difficulty. However, students whose theta scores fall at the extremes of the distribution tend to have a higher SEM because their scores are based on items answered by fewer students overall. When the score is not available, X1TXMSEM1- X1TXMSEM5 are created as the multiple imputation values for X1TXMSEM. X1TXMSEM is he mean of X1TXMSEM1- X1TXMSEM5. See Chapter 2 for more information on the derivation of the mathematics theta SEM.

X1TXMSCR

The mathematics IRT-estimated scale score is a criterion-referenced measure of achievement. The criterion is the set of skills defined by the HSLS:09 framework and represented by the 72 items in the HSLS:09 mathematics item pool. The estimated scale score for mathematics is an estimate of the number of items students would have answered correctly had they responded to all 72 items in the item pool. The ability estimates and item parameters derived from the IRT calibration can be used to calculate each student's probability of a correct answer for each of the items in the pool. These probabilities are summed to produce the IRT-estimated number-correct scale score. See Chapter 2 for more information on the derivation of the mathematics scale score score.

X1TXMTSCOR

The mathematics standardized T score provides a norm-referenced measurement of achievement, that is, an estimate of achievement relative to the population (fall 2009 9th graders) as a whole. It provides information on status compared to peers (as distinguished from the IRT-estimated number right score which represents status with respect to achievement on a particular criterion set of test items). The standardized T score is a transformation of the IRT theta (ability) estimate, rescaled to a mean of 50 and standard deviation of 10. An advantage of the standardized score over the raw theta score is that it facilitates comparisons in standard deviation units. See Chapter 2 for more information on the derivation of the mathematics T score.

X1TXMQUINT

The mathematics quintile score is a norm-referenced measure of achievement. The quintile score divides the weighted (population estimate) achievement distributions into five equal groups, based on mathematics score (X1TXMTSCOR). Quintile 1 corresponds to the lowest-achieving one-fifth of the population, quintile 5 the highest. To determine the quintile cut-points, the weighted distribution of the standardized scores was divided at the 20th, 40th, 60th, and 80th

percentiles. Cut points were matched to unrounded standardized scores. See Chapter 2 for more information on the derivation of the mathematics quintile score.

X1TXMPROF1

The mathematics proficiency probability scores are criterion-referenced and are based on clusters of items that mark five levels on the mathematics scale developed in HSLS:09. The levels are hierarchical in the sense that mastery of a higher level typically implies proficiency at the lower levels. The HSLS:09 proficiency probabilities were computed using IRT-estimated item parameters. Each proficiency probability represents the probability that a student would pass a given proficiency level. Clusters of four items were identified that marked mathematics level 1: algebraic expressions. Students able to answer questions like these have an understanding of algebraic basics including evaluating simple algebraic expressions and translating between verbal and symbolic representations of expressions. See Chapter 2 for more information on the derivation of the mathematics proficiency probability scores.

X1TXMPROF2

The mathematics proficiency probability scores are criterion-referenced and are based on clusters of items that mark five levels on the mathematics scale developed in HSLS:09. The levels are hierarchical in the sense that mastery of a higher level typically implies proficiency at the lower levels. The HSLS:09 proficiency probabilities were computed using IRT-estimated item parameters. Each proficiency probability represents the probability that a student would pass a given proficiency level. Clusters of four items were identified that marked mathematics level 2: multiplicative and proportional thinking. Students able to answer questions like these have an understanding of proportions and multiplicative situations and can solve proportional situation word problems, find the percent of a number, and identify equivalent algebraic expressions for multiplicative situations. See Chapter 2 for more information on the derivation of the mathematics proficiency probability scores.

X1TXMPROF3

The mathematics proficiency probability scores are criterion-referenced and are based on clusters of items that mark five levels on the mathematics scale developed in HSLS:09. The levels are hierarchical in the sense that mastery of a higher level typically implies proficiency at the lower levels. The HSLS:09 proficiency probabilities were computed using IRT-estimated item parameters. Each proficiency probability represents the probability that a student would pass a given proficiency level. Clusters of four items were identified that marked mathematics level 3: algebraic equivalents. Students able to answer questions like these have an understanding of algebraic equivalents and can link equivalent tabular and symbolic representations of linear equations, identify equivalent lines and find the sum of variable expressions. See Chapter 2 for more information on the derivation of the mathematics proficiency probability scores.

X1TXMPROF4

The mathematics proficiency probability scores are criterion-referenced and are based on clusters of items that mark five levels on the mathematics scale developed in HSLS:09. The levels are hierarchical in the sense that mastery of a higher level typically implies proficiency at the lower levels. The HSLS:09 proficiency probabilities were computed using IRT-estimated item parameters. Each proficiency probability represents the probability that a student would pass a given proficiency level. Clusters of four items were identified that marked mathematics level 4: systems of equations. Students able to answer questions like these have an understanding of systems of linear equations and can solve such systems algebraically and graphically and characterize the lines (parallel, intersecting, collinear) represented by a system of linear equations. See Chapter 2 for more information on the derivation of the mathematics proficiency probability scores.

X1TXMPROF5

The mathematics proficiency probability scores are criterion-referenced and are based on clusters of items that mark five levels on the mathematics scale developed in HSLS:09. The levels are hierarchical in the sense that mastery of a higher level typically implies proficiency at the lower levels. The HSLS:09 proficiency probabilities were computed using IRT-estimated item parameters. Each proficiency probability represents the probability that a student would pass a given proficiency level. Clusters of four items were identified that marked mathematics level 5: linear functions. Students able to answer questions like these have an understanding of linear functions and can find and use slopes and intercepts of lines, and use functional notation. See Chapter 2 for more information on the derivation of the mathematics proficiency probability scores.

X1MACC

Whether accommodation(s) were provided for assessment administration to students with special needs - either identified in an IEP or specified by a school official at the time of test administration: no accommodation needed; extra time for test or other special test accommodations needed (e.g., use of calculator, tests read to student). X1MACC was set to 1 if special test accommodations and/or extra time were needed. Those taking a test but not requiring test accommodations had X1MACC=0. X1MACC=-8 for those that did not take the test.

X1PARRESP

Indicates whether or not the parent questionnaire respondent is “parent #1”; that is, the parent to whom all “parent #1” variables (e.g., X1P1RELATION, X1PAR1EMP, P1YRBORN1, P1USYR1, etc.) refer. The parent questionnaire respondent is always “parent #1” except in cases where: (1) the respondent is a grandparent, other adult relative, or other nonparent guardian, and (2) there are two biological, adoptive, step, or foster parents in the home. In such cases (i.e., where P1RELSHP > 8 and P1HHPARENT = 2), “parent #1” and “parent #2” are the parents identified in P1HHPARREL1 and P1HHPARREL2.

X1P1RELATION
Indicates the relationship of "parent #1" to the sample member; "parent #1" is the parent to whom all "parent #1" variables (e.g., X1P1RELATION, X1PAR1EMP, P1YRBORN1, P1USYR1, etc.) refer. X1P1RELATION is taken from the base year parent questionnaire; if missing from the base year parent questionnaire, X1P1RELATION is statistically imputed for cases with a completed parent interview (imputed values in X1P1RELATION can be identified using X1P1RELAT_IM).

X1PAR1EDU
Indicates the highest level of education achieved by "parent #1"; "parent #1" is the parent to whom all "parent #1" variables (e.g., X1P1RELATION, X1PAR1EMP, P1YRBORN1, P1USYR1, etc.) refer. X1PAR1EDU is taken from the base year parent questionnaire; if missing from the base year parent questionnaire, X1PAR1EDU is statistically imputed for cases with a completed parent interview (imputed values in X1PAR1EDU can be identified using X1PAR1EDU_IM).

X1PAR1EMP
Indicates the employment status of "parent #1"; "parent #1" is the parent to whom all "parent #1" variables (e.g., X1P1RELATION, X1PAR1EMP, P1YRBORN1, P1USYR1, etc.) refer. X1PAR1EMP is taken from the base year parent questionnaire; if missing from the base year parent questionnaire, X1PAR1EMP is statistically imputed for cases with a completed parent interview (imputed values in X1PAR1EMP can be identified using X1PAR1EMP_IM).

X1PAR1OCC2
X1PAR1OCC2 stores the 2-digit Occupational Information Network (O*NET) occupation code of "parent #1's" current (or most recent) job; "parent #1" is the parent to whom all "parent #1" variables (e.g., X1P1RELATION, X1PAR1EMP, P1YRBORN1, P1USYR1, etc.) refer. Use X1PAR1EMP to distinguish whether the code stored in X1PAR1OCC2 refers to a current or most recent job. X1PAR1OCC2 is taken from the base year parent questionnaire; if missing or "uncodeable" from the base year parent questionnaire, X1PAR1OCC2 is statistically imputed for cases with a completed parent interview (imputed values in X1PAR1OCC2 can be identified using X1PAR1OCC_IM). See also http://www.onetcenter.org/ for further information on the O*NET taxonomy.

X1PAR1OCC6
X1PAR1OCC6 stores the 6-digit Occupational Information Network (O*NET) occupation code of "parent #1's" current (or most recent) job; "parent #1" is the parent to whom all "parent #1" variables (e.g., X1P1RELATION, X1PAR1EMP, P1YRBORN1, P1USYR1, etc.) refer. Use X1PAR1EMP to distinguish whether the code stored in X1PAR1OCC6 refers to a current or most recent job. Please note that if the value of X1PAR1OCC2 was imputed to a value of "XX", X1PAR1OCC6 is imputed to a value of "XX0000" (as opposed to a more-specifically imputed

value of "XXXXXX"). Imputed values in these variables can be identified by using the variable X1PAR1OCC_IM. See also http://www.onetcenter.org/ for further information on the O*NET taxonomy.

X1PAR1RACE
Characterizes the race/ethnicity of "parent #1", as reported by the parent questionnaire respondent; "parent #1" is the parent to whom all "parent #1" variables (e.g., X1P1RELATION, X1PAR1EMP, P1YRBORN1, P1USYR1, etc.) refer. X1PAR1RACE summarizes the following six dichotomous race/ethnicity variables drawn from the parent questionnaire: P1HISP1, P1WHITE1, P1BLACK1, P1ASIAN1, P1PACISLE1, and P1AMINDIAN1.

X1P2RELATION
Indicates the relationship of "parent #2" to the sample member; "parent #2" is the parent to whom all "parent #2" variables (e.g., X1P2RELATION, X1PAR2EMP, P1YRBORN2, P1USYR2, etc.) refer. Parent #2 is usually the spouse/partner of the respondent unless the respondent is not a parent or parent figure and there are two parents also living in the household. X1P2RELATION is taken from the base year parent questionnaire; if missing from the base year parent questionnaire, X1P2RELATION is statistically imputed for cases with a completed parent interview (imputed values in X1P2RELATION can be identified using X1P2RELAT_IM).

X1PAR2EDU
Indicates the highest level of education achieved by "parent #2"; "parent #2" is the parent to whom all "parent #2" variables (e.g., X1P2RELATION, X1PAR2EMP, P1YRBORN2, P1USYR2, etc.) refer. X1PAR2EDU is taken from the base year parent questionnaire; if missing from the base year parent questionnaire, X1PAR2EDU is statistically imputed for cases with a completed parent interview (imputed values in X1PAR2EDU can be identified using X1PAR2EDU_IM).

X1PAR2EMP
Indicates the employment status of "parent #2"; "parent #2" is the parent to whom all "parent #2" variables (e.g., X1P2RELATION, X1PAR2EMP, P1YRBORN2, P1USYR2, etc.) refer. X1PAR2EMP is taken from the base year parent questionnaire; if missing from the base year parent questionnaire, X1PAR2EMP is statistically imputed for cases with a completed parent interview (imputed values in X1PAR2EMP can be identified using X1PAR2EMP_IM).

X1PAR2OCC2
X1PAR2OCC2 stores the 2-digit Occupational Information Network (O*NET)occupation code of "parent #2's" current (or most recent) job; "parent #2" is the parent to whom all "parent #2" variables (e.g., X1P2RELATION, X1PAR2EMP, P1YRBORN2, P1USYR2, etc.) refer. Use X1PAR2EMP to distinguish whether the code stored in X1PAR2OCC2 refers to a current or most recent job. X1PAR2OCC2 is taken from the base year parent questionnaire; if missing from the base year parent questionnaire, X1PAR2OCC2 is statistically imputed for cases with a

completed parent interview (imputed values in X1PAR2OCC2 can be identified using X1PAR2OCC_IM). See also http://www.onetcenter.org/ for further information on the O*NET taxonomy.

X1PAR2OCC6
X1PAR2OCC6 stores the 6-digit Occupational Information Network (O*NET)occupation code of "parent #2's" current (or most recent) job; "parent #2" is the parent to whom all "parent #2" variables (e.g., X1P2RELATION, X1PAR2EMP, P1YRBORN2, P1USYR2, etc.) refer. Use X1PAR2EMP to distinguish whether the code stored in X1PAR2OCC6 refers to a current or most recent job. Please note that if the value of X1PAR2OCC2 was imputed to a value of "XX", X1PAR2OCC6 is imputed to a value of "XX0000" (as opposed to a more-specifically imputed value of "XXXXXX"). Imputed values in these variables can be identified by using the variable X1PAR2OCC_IM. See also http://www.onetcenter.org/ for further information on the O*NET taxonomy.

X1PAR2RACE
Characterizes the race/ethnicity of "parent #2", as reported by the parent questionnaire respondent; "parent #2" is the parent to whom all "parent #2" variables (e.g., X1P2RELATION, X1PAR2EMP, P1YRBORN2, P1USYR2, etc.) refer. X1PAR2RACE summarizes the following six dichotomous race/ethnicity variables drawn from the parent questionnaire: P1HISP2, P1WHITE2, P1BLACK2, P1ASIAN2, P1PACISLE2, and P1AMINDIAN2.

X1PAREDU
Indicates the highest level of education achieved by either parent living in the sample member's home. X1PAREDU is constructed from two composite variables (X1PAR1EDU and X1PAR2EDU) which contain imputed values; if either of these two input variables are imputed and the highest level of education could not be inferred from non-imputed data, then the imputation flag for X1PAREDU (X1PAREDU_IM) is set to 1.

X1PARPATTERN
This variable indicates: (1) whether there are one or two parents in sample member's home, (2) the relationship of those parent(s) to the sample member, and (3) if there are two parents in the home, the relationship of those parents to each other. This variable was derived from two composite variables (X1P1RELATION and X1P2RELATION) which contain imputed values, as well as one parent questionnaire variable (P1HHTIME) which was imputed, when missing, for the purposes of constructing X1PARPATTERN (though the imputed values of P1HHTIME are not delivered). If any of these three inputs is imputed, then the imputation flag for X1PARPATTERN (X1PARPATT_IM) is set to 1.

X1MOMRESP
Indicates whether or not the parent questionnaire respondent is a biological, adoptive, or step

mother. X1MOMRESP is derived from three composite variables (X1P1RELATION, X1P2RELATION, and X1PARRESP).

X1MOMREL
Indicates whether or not there is a biological, adoptive, or step mother in the sample member's household. X1MOMREL is derived from two composite variables (X1P1RELATION and X1P2RELATION) which contain imputed values; if either of these two input variables is imputed and the presence of a mother in the household could not be determined from unimputed data, then the imputation flag for X1MOMREL (X1MOMREL_IM) is set to 1.

X1MOMEDU
For sample members who have a biological, adoptive, or step mother living in their household, X1MOMEDU indicates the highest level of education achieved by that biological, adoptive, or step mother. X1MOMEDU is derived from four composite variables (X1P1RELATION, X1P2RELATION, X1PAR1EDU, and X1PAR2EDU) which contain imputed values; if any of these four input variables are imputed and the mother's education could not be determined from unimputed data, then the imputation flag for X1MOMEDU (X1MOMEDU_IM) is set to 1.

X1MOMEMP
For sample members who have a biological, adoptive, or step mother living in their household, X1MOMEMP indicates the employment status of that biological, adoptive, or step mother. X1MOMEMP is derived from four composite variables (X1P1RELATION, X1P2RELATION, X1PAR1EMP, and X1PAR2EMP) which contain imputed values; if any of these four input variables are imputed and the mother's employment could not be determined from unimputed data, then the imputation flag for X1MOMEMP (X1MOMEMP_IM) is set to 1.

X1MOMOCC2
For sample members who have a biological, adoptive, or step mother living in their household, X1MOMOCC2 stores the 2-digit Occupational Information Network (O*NET) occupation code for that biological, adoptive, or step mother's current (or most recent) job. Use X1MOMEMP to distinguish whether the code stored in X1MOMOCC2 refers to a current job or most recent job. X1MOMOCC2 is derived from four composite variables (X1P1RELATION, X1P2RELATION, X1PAR1OCC2, and X1PAR2OCC2) which contain imputed values; if any of these four input variables are imputed and the mother's occupation could not be determined from unimputed data, then the imputation flag for mother's occupation (X1MOMOCC_IM) is set to 1. See also http://www.onetcenter.org/ for further information on the O*NET taxonomy.

X1MOMOCC6
For sample members who have a biological, adoptive, or step mother living in their household, X1MOMOCC6 stores the 6-digit Occupational Information Network (O*NET) occupation code for that biological, adoptive, or step mother's current (or most recent) job. Use X1MOMEMP to distinguish whether the code stored in X1MOMOCC6 refers to a current job or most recent job.

X1MOMOCC6 is derived from four composite variables (X1P1RELATION, X1P2RELATION, X1PAR1OCC6, and X1PAR2OCC6), all of which can contain imputed values; if any of these input variables are imputed, then the imputation flag for mother's occupation (X1MOMOCC_IM) is set to 1. See also http://www.onetcenter.org/ for further information on the O*NET taxonomy.

X1MOMRACE
For sample members who have a biological, adoptive, or step mother living in their household, X1MOMRACE characterizes the race/ethnicity of that biological, adoptive, or step mother. X1MOMRACE is derived from four composite variables (X1P1RELATION, X1P2RELATION, X1PAR1RACE, and X1PAR2RACE).

X1DADRESP
Indicates whether the parent questionnaire respondent is a biological, adoptive, or step father. X1DADRESP is derived from three composite variables (X1P1RELATION, X1P2RELATION, and X1PARRESP).

X1DADREL
Indicates whether or not there is a biological, adoptive, or step father in the sample member's household. X1DADREL is derived from two composite variables (X1P1RELATION and X1P2RELATION) which contain imputed values; if either of these two input variables is imputed, then the imputation flag for X1DADREL (X1DADREL_IM) is set to 1.

X1DADEDU
For sample members who have a biological, adoptive, or step father living in their household, X1DADEDU indicates the highest level of education achieved by that biological, adoptive, or step father. X1DADEDU is derived from four composite variables (X1P1RELATION, X1P2RELATION, X1PAR1EDU, and X1PAR2EDU) which contain imputed values; if any of these four input variables are imputed, then the imputation flag for X1DADEDU (X1DADEDU_IM) is set to 1.

X1DADEMP
For sample members who have a biological, adoptive, or step father living in their household, X1DADEMP indicates the employment status of that biological, adoptive, or step father. X1DADEMP is derived from four composite variables (X1P1RELATION, X1P2RELATION, X1PAR1EMP, and X1PAR2EMP) which contain imputed values; if any of these four input variables are imputed and the father's employment could not be determined from unimputed data, then the imputation flag for X1DADEMP (X1DADEMP_IM) is set to 1.

X1DADOCC2
For sample members who have a biological, adoptive, or step father living in their household, X1DADOCC2 stores the 2-digit Occupational Information Network (O*NET) occupation code

for that biological, adoptive, or step father's current (or most recent) job. Use X1DADEMP to distinguish whether the code stored in X1DADOCC2 refers to a current job or most recent job. X1DADOCC2 is derived from four composite variables (X1P1RELATION, X1P2RELATION, X1PAR1OCC2, and X1PAR2OCC2) which contain imputed values; if any of these four input variables are imputed, then the imputation flag for father's occupation (X1DADOCC_IM) is set to 1. See also http://www.onetcenter.org/ for further information on the O*NET taxonomy.

X1DADOCC6
For sample members who have a biological, adoptive, or step father living in their household, X1DADOCC6 stores the 6-digit Occupational Information Network (O*NET) occupation code for that biological, adoptive, or step father's current (or most recent) job. Use X1DADEMP to distinguish whether the code stored in X1DADOCC6 refers to a current job or most recent job. X1DADOCC6 is derived from four composite variables (X1P1RELATION, X1P2RELATION, X1PAR1OCC6, and X1PAR2OCC6), all of which contain imputed values; if any of these input variables are imputed, then the imputation flag for father's occupation (X1DADOCC6_IM) is set to 1. See also http://www.onetcenter.org/ for further information on the O*NET taxonomy.

X1DADRACE
For sample members who have a biological, adoptive, or step father living in their household, X1DADRACE characterizes the race/ethnicity of that biological, adoptive, or step father. X1DADRACE is derived from four composite variables (X1P1RELATION, X1P2RELATION, X1PAR1RACE, and X1PAR2RACE).

X1HHNUMBER
Indicates the total number of people living in the sample member's household, as reported by the parent questionnaire respondent. X1HHNUMBER is the sum of P1HHLT18 (number of household members less than 18 years of age) and P1HHGE18 (number of household members 18 years or older), both of which are based on questions from the base year parent questionnaire which accepted only single-digit responses (i.e., the two input variables for this composite are essentially top-coded at 9). If either of these two input variables stores a value of 9, X1HHNUMBER will store a value (98 or 99) indicating that one or both of the input variables was top-coded; X1HHNUMBER values of 98 and 99 therefore refer to households where the exact number of household members cannot be determined, but can be safely assumed to be 9 or greater. The two input variables for this composite were imputed for the purposes of constructing X1HHNUMBER (though the imputed values of P1HHLT18 and P1HHGE18 are not delivered). If either of these two inputs is imputed, then the imputation flag for X1HHNUMBER (X1HHNUMB_IM) is set to 1.

X1FAMINCOME
X1FAMINCOME is a categorical variable which indicates the sample member's family income from all sources in 2008, as reported by the parent questionnaire respondent. If missing from the

parent questionnaire, X1FAMINCOME is statistically imputed (imputed values in X1FAMINCOME can be identified by using X1FAMINC_IM).

X1POVERTY

X1POVERTY indicates whether the sample member's family was at/above or below the 2008 poverty threshold, as set forth by the U.S. Census Bureau. Both family income and household size are considered when calculating whether a family is at/above or below the poverty threshold. If X1FAMINCOME or X1HHNUMBER are imputed, then the imputation flag for the poverty variables (X1POVERTY_IM) is set to 1. See http://www.census.gov/hhes/www/poverty/data/threshld/thresh08.html for further detail on 2008 poverty thresholds.

X1POVERTY130

X1POVERTY130 indicates whether the sample member's family was at/above or below 130% of the 2008 poverty threshold, as set forth by the U.S. Census Bureau. Both family income and household size are considered when calculating whether a family is at/above or below 130% of the poverty threshold. If X1FAMINCOME or X1HHNUMBER are imputed, then the imputation flag for the poverty variables (X1POVERTY_IM) is set to 1. See http://www.census.gov/hhes/www/poverty/data/threshld/thresh08.html for further detail on 2008 poverty thresholds.

X1POVERTY185

X1POVERTY185 indicates whether the sample member's family was at/above or below 185% of the 2008 poverty threshold, as set forth by the U.S. Census Bureau. Both family income and household size are considered when calculating whether a family is at/above or below 185% of the poverty threshold. If X1FAMINCOME or X1HHNUMBER are imputed, then the imputation flag for the poverty variables (X1POVERTY_IM) is set to 1. See http://www.census.gov/hhes/www/poverty/data/threshld/thresh08.html for further detail on 2008 poverty thresholds.

X1SES

This composite variable is used to measure a construct for socioeconomic status. X1SES is calculated using parent/guardians' education (X1PAR1EDU and X1PAR2EDU), occupation (X1PAR1OCC2 and X1PAR2OCC2), and family income (X1FAMINCOME). For cases with nonresponding parent/guardians, 5 imputed values are generated (X1SES1-X1SES5), X1SES is computed as the average of the 5 imputed values, and the imputation flag is set as X1SES_IM=1 (values for parent/guardian education, occupation, and income are set to -8). When education, occupation, or family income are imputed using other information provided by the responding parent/guardian, X1SES is constructed from the combination of actual and imputed parent/guardian values. For these cases, the values of X1SES1-X1SES5 are equivalent to X1SES and X1SES_IM=2. Otherwise, the responding parent/guardian provided responses for all input

variables so that the values of X1SES1-X1SES5 are again equivalent to X1SES and X1SES_IM=0. For more information on this variable, please refer to section 7.3.2.2 and appendix K.

X1SESQ5
This variable is the quintile of X1SES, weighted using the student weight (W1STUDENT). For more information on this variable, please refer to section 7.3.2.2.

X1SES_U
This composite variable is used to measure a construct for socioeconomic status. X1SES_U is calculated using parent/guardians' education (X1PAR1EDU and X1PAR2EDU), occupation (X1PAR1OCC2 and X1PAR2OCC2), family income (X1FAMINCOME), as well as school urbanicity (X1LOCALE). For cases with nonresponding parent/guardians, 5 imputed values of are generated (X1SES1_U-X1SES5_U), X1SES_U is computed as the average of the 5 imputed values, and the imputation flag is set as X1SES_IM=1 (values for parent/guardian education, occupation, and income are set to -8). When education, occupation, or family income are imputed using other information provided by the responding parent/guardian, X1SES_U is constructed from the combination of actual and imputed parent/guardian values. For these cases, the values of X1SES1_U-X1SES5_U are equivalent to X1SES_U and X1SES_IM=2. Otherwise, the responding parent/guardian provided responses for all input variables so that the values of X1SES1_U-X1SES5_U are again equivalent to X1SES_U and X1SES_IM=0. For more information on this variable, please refer to section 7.3.2.2 and appendix K.

X1SESQ5_U
This variable is the quintile of X1SES_U, weighted using the student weight (W1STUDENT). For more information on this variable, please refer to section 7.3.2.2.

X1MTHID
This variable is a scale of the sample member's mathematics identity. Sample members who tend to agree with the statements "You see yourself as a math person" and/or "Others see me as a math person" will have higher values for X1MTHID. This variable was created through principal components factor analysis (weighted by W1STUDENT) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were S1MPERSON1 and S1MPERSON2. Only respondents who provided a full set of responses were assigned a scale value. The coefficient of reliability (alpha) for the scale is .65. For more information on this scale score, please see chapter 5.

X1MTHUTI
This variable is a scale of the sample member's perception of the utility of mathematics; higher values represent perceptions of greater mathematics utility. Variable was created through principal components factor analysis (weighted by W1STUDENT) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were S1MUSELIFE, S1MUSECLG, and

S1MUSEJOB. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information on this scale score, please see chapter 5.

X1MTHEFF
This variable is a scale of the sample member's mathematics self-efficacy; higher X1MTHEFF values represent higher mathematics self-efficacy. Variable was created through principal components factor analysis (weighted by W1STUDENT) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were S1MTESTS, S1MTEXTBOOK, S1MSKILLS, and S1MASSEXCL. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7.The coefficient of reliability (alpha) for the scale is .65. For more information on this scale score, please see chapter 5.

X1MTHINT
This variable is a scale of the sample member's interest in their base-year mathematics course; higher values represent greater interest in their base-year mathematics course. Variable was created through principal components factor analysis (weighted by W1STUDENT) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were S1MENJOYING, S1MWASTE, S1MBORING, S1FAVSUBJ, S1LEASTSUBJ, and S1MENJOYS. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information on this scale score, please see chapter 5.

X1SCIID
This variable is a scale of the sample member's science identity. Sample members who tend to agree with the statements "You see yourself as a science person" and/or "Others see me as a math person" will have higher values for X1SCIID. Variable was created through principal components factor analysis (weighted by W1STUDENT) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were S1SPERSON1 and S1SPERSON2. Only respondents who provided a full set of responses were assigned a scale value. The coefficient of reliability (alpha) for the scale is .65. For more information on this scale score, please see chapter 5.

X1SCIUTI
This variable is a scale of the sample member's perception of the utility of science; higher values represent perceptions of greater science utility. Variable was created through principal components factor analysis (weighted by W1STUDENT) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were S1SUSELIFE, S1SUSECLG, and

S1SUSEJOB. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall science class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information on this scale score, please see chapter 5.

X1SCIEFF
This variable is a scale of the sample member's science self-efficacy; higher X1SCIEFF values represent higher science self-efficacy. Variable was created through principal components factor analysis (weighted by W1STUDENT) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were S1STESTS, S1STEXTBOOK, S1SSKILLS, and S1SASSEXCL. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall science class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information on this scale score, please see chapter 5.

X1SCIINT
This variable is a scale of the sample member's interest in their base-year science course; higher values represent greater interest in their base-year science course. Variable was created through principal components factor analysis (weighted by W1STUDENT) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were S1SENJOYING, S1SWASTE, S1SBORING, S1FAVSUBJ, S1LEASTSUBJ, and S1SENJOYS. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall science class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information on this scale score, please see chapter 5.

X1SCHOOLBEL
This variable is a scale of the sample member's perception of school belonging; higher values represent a greater sense of school belonging. Variable was created through principal components factor analysis (weighted by W1STUDENT) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were S1SAFE, S1PROUD, S1TALKPROB, S1SCHWASTE, and S1GOODGRADES. Only respondents who provided a full set of responses were assigned a scale value. The coefficient of reliability (alpha) for the scale is .65. For more information on this scale score, please see chapter 5.

X1SCHOOLENG
This variable is a scale of the sample member's school engagement; higher values represent greater school engagement. Variable was created through principal factor analysis (weighted by W1STUDENT) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were S1NOHWDN, S1NOPAPER, S1NOBOOKS, and S1LATE. Only respondents who provided a full set of responses were assigned a scale value. The coefficient of reliability (alpha) for the scale is .65.

X1STU30OCC6
X1STU30OCC6 stores the 6-digit Occupational Information Network (O*NET) code of the job the sample member expects or plans to have at age 30. The occupation text is stored in S1OCC30 and X1STU30OCC6 (6-digit code) and X1STU30OCC2 (2-digit code) are the coded versions of that occupation text. If an occupation cannot be coded to the 6-digit level but can be coded to the 2-digit level, the 2 digit code is also stored in X1STU30OCC6 with a value of "XX0000". See http://www.onetcenter.org/ for further information on the O*NET taxonomy.

X1STU30OCC2
X1STU30OCC2 stores the 2-digit Occupational Information Network (O*NET) code of the job the sample member expects or plans to have at age 30. The occupation text is stored in S1OCC30 and X1STU30OCC6 (6-digit code) and X1STU30OCC2 (2-digit code) are the coded versions of that occupation text. See http://www.onetcenter.org/ for further information on the O*NET taxonomy.

X1STUEDEXPCT
Indicates the highest level of education the sample member expects to achieve. X1STUEDEXPCT is drawn from the student questionnaire, and if missing from the student questionnaire, is statistically imputed (imputed values in X1STUEDEXPCT can be identified using X1STUEDEX_IM).

X1PAREDEXPCT
X1PAREDEXPCT indicates the highest level of education the parent questionnaire respondent expects the sample member to achieve. X1PAREDEXPCT is taken from the base year parent questionnaire; if missing from the base year parent questionnaire, X1PAREDEXPCT is statistically imputed (imputed values in X1PAREDEXPCT can be identified using X1PAREDEX_IM).

X1STUPRVSCHL
X1STUPRVSCHL stores the 12-digit NCESID of the school from the Common Core of Data (CCD) or the Private School Universe Survey (PSS) that the sample member attended in the prior 2008-2009 school year (i.e. the school year prior to the base year of HSLS).

X1IEPFLAG
Whether student has an Individualized Education Plan. This information was provided on the ninth grade enrollment lists or subsequent sampled student roster by school personnel, if school personnel were able to provide it. An IEP can also be assumed for students of parents that indicated the 9th grader was currently receiving Special Education Services (P1SPECIALED=1), however, if a student is not receiving Special Education Services (P1SPECIALED=2) they can still have an IEP (as indicated by the school).

X1TESTSTAT
X1TESTSTAT indicates whether base-year HSLS mathematics assessment data are available on the data file for any given sample member.

X1TESTDATE
Month and year the sample member completed the base-year HSLS mathematics assessment.

X1SQSTAT
X1SQSTAT indicates whether a complete base year student interview is available on the data file; X1SQSTAT also indicates the mode of the base year student interview, and whether the student responded in-school or out-of-school. For an explanation of a responding case, please see chapter 2.

X1SQDATE
Month and year the sample member responded to the base year student interview.

X1SQINCAPABL
Indicates whether or not the sample member was questionnaire incapable for the base year interview, and if so, the reason for being assigned a status of questionnaire incapable.

X1PQSTAT
X1PQSTAT indicates whether a complete base year parent interview is available on the data file; it also indicates the mode of the base year parent interview, and whether the parent responded to a full-length or abbreviated interview. For an explanation of a responding case, please see chapter 2.

X1PQDATE
Month and year the sample member's parent responded to the base year parent questionnaire.

X1PQLANG
Indicates whether the parent respondent completed an English or Spanish questionnaire.

X1TMQSTAT
X1TMQSTAT indicates whether a complete base year mathematics teacher interview is available on the data file; X1TMQSTAT also indicates the mode of the base year mathematics teacher interview, and whether the mathematics teacher responded to a full-length or abbreviated interview. For an explanation of a responding case, please see chapter 2.

X1TMQDATE
Month and year the mathematics teacher responded to the base year teacher questionnaire.

X1TMLINK
X1TMLINK characterizes the linkage between the student and the base-year mathematics

teacher associated with that student on the HSLS data file. The values assigned are a product of comparison between student-provided teacher information and the teacher information provided by the school. Values of 1 through 3 represent cases where the mathematics teacher associated with the student is a respondent to the teacher questionnaire, with values of 1 representing the 'strongest' links (due to consistency between student- and school-provided information), and values of 2, and 3 representing links considered less strong due to inconsistent and/or missing information. Values of 8 are assigned in cases where a link could not be established between the student and a teacher because the teacher did not respond to the questionnaire. Values of 9 are assigned in cases where the student's school indicates the student is not enrolled in a mathematics class and the student either indicates they are not enrolled in a mathematics class or their class information is missing. For more information about teacher linkages, please see chapter 5.

X1TMCRSLINK

X1TMCRSLINK characterizes the linkage between the student and the course-level data provided by the mathematics teacher associated with that student on the HSLS data file. Values of 1 are assigned in cases where X1TMLINK = 1 and the student confirmed enrollment in the associated course and could be linked using school records data to a course reported in the teacher questionnaire. Values of 2 are assigned in cases where X1TMLINK = 1 or 3 and the student did not confirm enrollment in the associated course but could be linked using school records data to a course reported in the teacher questionnaire. Values of 8 are assigned where X1TMLINK =1, 2, 3, or 8 and either the teacher did not provide any course-level information for the school-specified course associated with the given student or the teacher was a nonrespondent. Values of 9 are assigned where X1TMLINK =9. For more information about teacher linkages, please see chapter 5.

X1TMRACE

X1TMRACE characterizes the race/ethnicity of the sample member's mathematics teacher by summarizing the following mathematics teacher questionnaire variables: M1HISP, M1WHITE, M1BLACK, M1ASIAN, M1PACISLE, and M1AMINDIAN. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7.

X1TMCERT

Characterizes the mathematics teacher's base year mathematics teaching certification status by grade level and type of certification. "Probationary certifications" refer to certificates issued after satisfying all requirements except the completion of a probationary teaching period; "emergency/temporary/waiver certifications" refer to either: certificates that require some additional coursework or passing a test, or certificates issued to persons who must complete a certification program in order to continue teaching (see also M1CERTTYPE). If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7.

X1TMCOMM
This variable is a scale of the base year mathematics teacher's perceptions of a professional learning community among mathematics teachers at his or her school; higher X1TMCOMM values represent perceptions of a greater professional learning community. Variable was created through principal components factor analysis (weighted by W1MATHTCH) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were M1SHRIDEAS, M1WORKSHOP, M1SHRSTWRK, M1SHRLESSONS, M1SHRBELIEFS, M1SHRMTHDS, M1SHRELL, M1SHRAPPRCH, M1SHRCONTENT, M1EFFECTIVE, M1MENTOR, and M1CHAIR. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1TMEFF
This variable is a scale of the base year mathematics teacher's self-efficacy; higher values represent greater self-efficacy. Variable was created through principal components factor analysis (weighted by W1MATHTCH) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were M1FAMILY, M1DISCIPLINE, M1STUACHIEVE, M1PARENT, M1RETAIN, M1REDIRECT, M1GETTHRU, and M1HOMEFX. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1TMEXP
This variable is a scale of the base year mathematics teacher's perceptions of teacher expectations at his or her school; higher X1TMEXP values represent higher perceived expectations. Variable was created through principal components factor analysis (weighted by W1MATHTCH) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were M1TEACHING, M1LEARNING, M1BELIEVE, M1CLEARGOALS, M1GIVEUP, M1CARE, M1EXPECT, and M1WORKHARD. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1TMPRINC
This variable is a scale of the base year mathematics teacher's perceptions of support from his or her school's principal; higher values represent greater perceived support. Variable was created through principal components factor analysis (weighted by W1MATHTCH) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were M1PRESSURES, M1POORJOBRES, M1PSETSPRIO, M1PSCHVISION, M1PCOMEXP, M1PINNOVATE, and M1PCONSULTS. Only respondents who provided a full set of responses were assigned a scale

value. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1TMRESP
This variable is a scale of the base year mathematics teacher's perceptions of collective responsibility among his or her school's teachers; higher values represent greater perceived collective responsibility. Variable was created through principal components factor analysis (weighted by W1MATHTCH) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were M1TSCHDISC, M1TIMPROVE, M1TSETSTDS, M1TSELFDEV, M1THELPBEST, M1TALLLEARN, or M1TFAIL. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1TSQSTAT
X1TSQSTAT indicates whether a complete base year science teacher interview is available on the data file; X1TSQSTAT also indicates the mode of the base year science teacher interview, and whether the science teacher responded to a full-length or abbreviated interview. For an explanation of a responding case, please see chapter 2.

X1TSQDATE
Month and year the science teacher responded to the base year teacher questionnaire. If the student indicated that he or she was not taking a fall science class, this variable is set to -7.

X1TSLINK
X1TSLINK characterizes the linkage between the student and the base-year science teacher associated with that student on the HSLS data file. The values assigned are a product of comparison between student-provided teacher information and the teacher information provided by the school. Values of 1 through 3 represent cases where the science teacher associated with the student is a respondent, with values of 1 representing the 'strongest' links (due to consistency between student- and school-provided information), and values of 2, and 3 representing links considered less strong due to inconsistent and/or missing information. Values of 8 are assigned in cases where a link could not be established between the student and a teacher because the teacher did not respond to the questionnaire. Values of 9 are assigned in cases where the student's school indicates the student is not enrolled in a science class and the student either indicates they are not enrolled in a science class or their class information is missing. For more information about teacher linkages, please refer to chapter 5.

X1TSCRSLINK
X1TSCRSLINK characterizes the linkage between the student and the course-level data provided by the science teacher associated with that student on the HSLS data file. Values of 1

are assigned in cases where X1TSLINK=1 and the student confirmed enrollment in the associated course and could be linked using school records data to a course reported in the teacher questionnaire. Values of 2 are assigned in cases where X1TSLINK=1 or 3 and the student did not confirm enrollment in the associated course but could be linked using school records data to a course reported in the teacher questionnaire. Values of 8 are assigned where X1TSLINK=1, 2, 3, or 8 and either the teacher did not provide any course-level information for the school-specified course associated with the given student or the teacher was a nonrespondent. Values of 9 are assigned where X1TSLINK=9. For more information about teacher course linkages, please refer to chapter 5.

X1TSRACE

X1TSRACE characterizes the race/ethnicity of the sample member's science teacher by summarizing the following science teacher questionnaire variables: N1HISP, N1WHITE, N1BLACK, N1ASIAN, N1PACISLE, and N1AMINDIAN. If the student indicated that he or she was not taking a fall science class, this variable is set to -7.

X1TSCERT

Characterizes the science teacher's base year science teaching certification status by grade level and type of certification. "Probationary certifications" refer to certificates issued after satisfying all requirements except the completion of a probationary teaching period; "emergency/temporary/waiver certifications" refer to either: certificates that require some additional coursework or passing a test, or certificates issued to persons who must complete a certification program in order to continue teaching (see also N1CERTTYPE). If the student indicated that he or she was not taking a fall science class, this variable is set to -7.

X1TSCOMM

This variable is a scale of the base year science teacher's perceptions of a professional learning community among science teachers at his or her school; higher X1TSCOMM values represent perceptions of a greater professional learning community. Variable was created through principal components factor analysis (weighted by W1SCITCH) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were N1SHRIDEAS, N1WORKSHOP, N1SHRSTWRK, N1SHRLESSONS, N1SHRBELIEFS, N1SHRMTHDS, N1SHRELL, N1SHRAPPRCH, N1SHRCONTENT, N1EFFECTIVE, N1MENTOR, and N1CHAIR. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1TSEFF

This variable is a scale of the base year science teacher's self-efficacy; higher values represent greater self-efficacy. Variable was created through principal components factor analysis (weighted by W1SCITCH) and standardized to a mean of 0 and standard deviation of 1. The

inputs to this scale were N1FAMILY, N1DISCIPLINE, N1STUACHIEVE, N1PARENT, N1RETAIN, N1REDIRECT, N1GETTHRU, and N1HOMEFX. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1TSEXP
This variable is a scale of the base year science teacher's perceptions of teacher expectations at his or her school; higher X1TSEXP values represent higher perceived expectations. Variable was created through principal components factor analysis (weighted by W1SCITCH) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were N1TEACHING, N1LEARNING, N1BELIEVE, N1CLEARGOALS, N1GIVEUP, N1CARE, N1EXPECT, and N1WORKHARD. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1TSPRINC
This variable is a scale of the base year science teacher's perceptions of support from his or her school's principal; higher values represent greater perceived support. Variable was created through principal components factor analysis (weighted by W1SCITCH) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were N1PRESSURES, N1POORJOBRES, N1PSETSPRIO, N1PSCHVISION, N1PCOMEXP, N1PINNOVATE, and N1PCONSULTS. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1TSRESP
This variable is a scale of the base year science teacher's perceptions of collective responsibility among his or her school's teachers; higher values represent greater perceived collective responsibility. Variable was created through principal components factor analysis (weighted by W1SCITCH) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were N1TSCHDISC, N1TIMPROVE, N1TSETSTDS, N1TSELFDEV, N1THELPBEST, N1TALLLEARN, and N1TFAIL. Only respondents who provided a full set of responses were assigned a scale value. If the student indicated that he or she was not taking a fall mathematics class, this variable is set to -7. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1CONTROL
X1CONTROL identifies the sample member's base year school as being a Public, Catholic, or

Other Private School, as indicated in the source data for sampling: the Common Core of Data (CCD) 2007-2008 and the Private School Survey (PSS) 2007-2008.

X1LOCALE
X1LOCALE characterizes the locale of the sample member's base year school as either City, Suburb, Town, or Rural, as indicated in the source data for sampling: the Common Core of Data (CCD) 2007-2008 and the Private School Survey (PSS) 2007-2008.

X1REGION
X1REGION identifies the geographic region of the sample member's base year school, as indicated in the source data for sampling: the Common Core of Data (CCD) 2007-2008 and the Private School Survey (PSS) 2007-2008.

X1CENDIV
X1CENDIV identifies the census division of the sample member's base year school, as indicated in the source data for sampling: the Common Core of Data (CCD) 2007-2008 and the Private School Survey (PSS) 2007-2008.

X1STATESAMPL
X1STATESAMPL indicates whether or not the school is part of a state-representative public school sample, and if so, which particular state-representative public school sample the school is a part of.

X1GRADESPAN
This variable reflects the school administrator's indication as to whether the lowest grade level offered at the sample member's base year school was Pre-K through 5th grade, 6th through 8th grade, or 9th grade.

X1FREELUNCH
Categorized version of the continuous administrator questionnaire variable A1FREELUNCH. This variable indicates the percentage of students enrolled in the school who receive free or reduced price lunch.

X1REPEAT9TH
Categorized version of the continuous administrator questionnaire variable A1REPEATG9. This variable indicates the percentage of students enrolled in the school who are repeating 9^{th} grade.

X1SCHAMIND
Categorized version of the continuous administrator questionnaire variable A1AMINDIANST. This variable indicates the percentage of students enrolled in the school who are identified as American Indian or Alaskan Native.

X1SCHASIAN
Categorized version of the continuous administrator questionnaire variable A1ASIANSTU. This variable indicates the percentage of students enrolled in the school who are identified as Asian.

X1SCHBLACK
Categorized version of the continuous administrator questionnaire variable A1BLACKSTU. This variable indicates the percentage of students enrolled in the school who are identified as Black or African American.

X1SCHHISP
Categorized version of the continuous administrator questionnaire variable A1HISPSTU. This variable indicates the percentage of students enrolled in the school who are identified as Hispanic.

X1SCHWHITE
Categorized version of the continuous administrator questionnaire variable A1WHITESTU. This variable indicates the percentage of students enrolled in the school who are identified as White or Caucasian.

X1SCHOOLCLI
This variable is a scale of the administrator's assessment of his or her school's climate. Higher values represent more positive assessments of the school's climate (i.e., fewer problems are indicated). Variable was created through principal components factor analysis (weighted by W1SCHOOL) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were A1CONFLICT, A1ROBBERY, A1VANDALISM, A1DRUGUSE, A1ALCOHOL, A1DRUGSALE, A1WEAPONS, A1PHYSABUSE, A1TENSION, A1BULLY, A1VERBAL, A1MISBEHAVE, A1DISRESPECT, and A1GANG. Only respondents who provided a full set of responses were assigned a scale value. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1COUPERTEA
This variable is a scale of the school counselor's perceptions of the teaching staff's expectations. Higher values represent more positive assessments of the teaching staff's expectations. Variable was created through principal components factor analysis (weighted by W1SCHOOL) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were C1TTEACHING, C1TLEARNING, C1TBELIEVE, C1TWORKHARD, C1TGIVEUP, C1TCARE, and C1TEXPECT. Only respondents who provided a full set of responses were assigned a scale value. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1COUPERCOU
This variable is a scale of the school counselor's perceptions of the counseling staff's

expectations. Higher values represent more positive assessments of the counseling staff's expectations. Variable was created through principal components factor analysis (weighted by W1SCHOOL) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were C1CLEARNING, C1CBELIEVE, C1CWORKHARD, C1CGIVEUP, C1CCARE, and C1CEXPECT. Only respondents who provided a full set of responses were assigned a scale value. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1COUPERPRI
This variable is a scale of the school counselor's perceptions of the school principal's expectations. Higher values represent more positive assessments of the principal's expectations. Variable was created through principal components factor analysis (weighted by W1SCHOOL) and standardized to a mean of 0 and standard deviation of 1. The inputs to this scale were C1PLEARNING, C1PBELIEVE, C1PWORKHARD, C1PGIVEUP, C1PCARE, and C1PEXPECT. Only respondents who provided a full set of responses were assigned a scale value. The coefficient of reliability (alpha) for the scale is .65. For more information, please see chapter 5.

X1AQSTAT
X1AQSTAT indicates whether a complete base year administrator interview is available on the data file; X1AQSTAT also indicates the mode of the base year administrator interview, and whether the administrator responded to a full-length or abbreviated interview. For an explanation of a responding case se, please see chapter 2.

X1AQDATE
Month and year the school administrator responded to the base year administrator questionnaire.

X1AQDESIGNEE
Indicates whether an administrator designee completed the applicable portion of the administrator questionnaire. An administrator designee was allowed to complete all sections of the administrator questionnaire except for the "Goals and Background" section (i.e., administrator questionnaire variables with a variable label prefix of "A1 Exxx"), which was the administrator was required to complete him- or herself.

X1CQSTAT
X1CQSTAT indicates whether a complete base year counselor interview is available on the data file; X1CQSTAT also indicates the mode of the base year counselor interview. For an explanation of a responding case se, please see chapter 2.

X1CQDATE
Month and year the school counselor responded to the base year counselor questionnaire.

X1TXMTH1-X1TXMTH5
Mathematics theta score multiple imputation values (1 through 5). When the mathematics test data were missing for student survey respondents, the mathematics theta score was imputed with multiple imputation technique, with 5 imputed values. X1TXMTH is the mean of X1TXMTH1-X1TXMTH5. The theta score provides a norm-referenced measurement of achievement, that is, an estimate of achievement relative to the population (fall 2009 9th graders) as a whole. It provides information on status compared to peers (as distinguished from the IRT-estimated scale score which represents status with respect to achievement on a particular criterion set of test items). The associated theta score is X1TXMTH. The standardized form of the theta score is X1TXMTSCOR.

X1TXMSEM1-X1TXMSEM5
Mathematics standard error of measurement multiple imputation values (1 through 5). When the mathematics test data were missing for student survey respondents, the mathematics standard error of measurement (SEM) for the raw theta score was imputed with multiple imputation technique, with 5 imputed values. X1TXMTH is the mean of X1TXMTH1- X1TXMTH5. The standard error of measurement for the raw theta score indicates the precision in the ability estimate. It is calculated from the sum of item information functions for each item answered by each student. Unlike the classical standard error of measurement, which is a constant, the IRT standard error varies across the scale-score continuum. It is typically smaller for students whose theta score falls toward the center of the distribution because more students answered the items with average difficulty. However, students whose theta scores fall at the extremes of the distribution tend to have a higher SEM because their scores are based on items answered by fewer students overall. The associated standard error of measurement is X1TXMSEM.

X1SES1-X1SES5
These variables contain the imputed values (1 through 5) for X1SES, generated through a multiple imputation model, for responding students without a responding parent/guardian. X1SES is the mean of X1SES1-X1SES5 and X1SES_IM=1.

X1SES1_U-X1SES5_U
These variables contain the imputed values (1 through 5) for X1SES_U, generated through a multiple imputation model, for responding students without a responding parent/guardian. X1SES_U is the mean of X1SES1_U-X1SES5_U and X1SES_IM=1.

X1RACE_IM
Flag indicating whether the variable X1RACE was statistically imputed or not imputed.

X1HISPAN_IM
Flag indicating whether the variable X1HISPANIC was statistically imputed or not imputed.

X1NATIVEL_IM
Flag indicating whether the variable X1NATIVELANG was statistically imputed or not imputed.

X1P1RELAT_IM
Flag indicating whether the variable X1P1RELATION was statistically imputed or not imputed.

X1P2RELAT_IM
Flag indicating whether the variable X1P2RELATION was statistically imputed or not imputed.

X1PARPATT_IM
X1PARPATT_IM values of 1 indicate that at least one of the three inputs to X1PARPATTERN (i.e., X1P1RELATION, X1P2RELATION, or P1HHTIME) was imputed. Please note that while P1HHTIME was imputed when missing for the purposes of constructing X1PARPATTERN, the imputed P1HHTIME values are not included on the final data file.

X1PAR1EDU_IM
Flag indicating whether the variable X1PAR1EDU was statistically imputed or not imputed.

X1PAR2EDU_IM
Flag indicating whether the variable X1PAR2EDU was statistically imputed or not imputed.

X1PAREDU_IM
Flag indicating whether any of the inputs to X1PAREDU were statistically imputed.

X1PAR1EMP_IM
Flag indicating whether the variable X1PAR1EMP was statistically imputed or not imputed.

X1PAR2EMP_IM
Flag indicating whether the variable X1PAR2EMP was statistically imputed or not imputed.

X1PAR1OCC_IM
Flag indicating whether the variable X1PAR1OCC2 and X1PAR1OCC6 was statistically imputed or not imputed.

X1PAR2OCC_IM
Flag indicating whether the variable X1PAR2OCC2 and X1PAR2OCC6 was statistically imputed or not imputed.

X1MOMREL_IM
Flag indicating whether any of the inputs to X1MOMREL were statistically imputed.

X1MOMEDU_IM
Flag indicating whether any of the inputs to X1MOMEDU were statistically imputed.

X1MOMEMP_IM
Flag indicating whether any of the inputs to X1MOMEMP were statistically imputed.

X1MOMOCC_IM
Flag indicating whether any of the inputs to X1MOMOCC2 and X1MOMOCC6 were statistically imputed.

X1DADREL_IM
Flag indicating whether any of the inputs to X1DADREL were statistically imputed.

X1DADEDU_IM
Flag indicating whether any of the inputs to X1DADEDU were statistically imputed.

X1DADEMP_IM
Flag indicating whether any of the inputs to X1DADEMP were statistically imputed.

X1DADOCC_IM
Flag indicating whether any of the inputs to X1DADOCC2 and X1DADOCC6 were statistically imputed.

X1FAMINC_IM
Flag indicating whether the variable X1FAMINCOME was statistically imputed or not imputed.

X1HHNUMB_IM
Flag indicating whether one or both of the input variables P1HHLT18 and P1HHGE18 for the composite X1HHNUMBER were statistically imputed.

X1STUEDEX_IM
Flag indicating whether the variable X1STUEDEXPCT was statistically imputed or not imputed.

X1PAREDEX_IM
Flag indicating whether the variable X1PAREDEXPCT was statistically imputed or not imputed.

X1TXMATH_IM
Flag indicating whether the variable X1TXMTH was statistically imputed or not imputed.

Appendix G.
Standard Errors and Design Effects

The estimated standard errors (SEs), design effects (*deff*), and root design effects (*deft*) are presented in the following tables by study instrument and survey item (tables G-1 through G-53). The formulae used to calculate the *deff* and *deft* are:

$$deff = \frac{\hat{V}_d\left(\hat{\theta}\right)}{\hat{V}_s\left(\hat{\theta}\right)} \qquad \text{and} \qquad deft = \sqrt{\frac{\hat{V}_d\left(\hat{\theta}\right)}{\hat{V}_s\left(\hat{\theta}\right)}}$$

where $\hat{V}_d\left(\hat{\theta}\right)$ is the estimated variance using methodology and software that properly accounts for the complex HSLS:09 sample design and $\hat{V}_s\left(\hat{\theta}\right)$ is the estimated variance associated with a simple random sample design of the same size.

Table G-1. School-level standard errors and design effects—overall

Survey item[1]	Variable	N	Estimate	Design standard error[2]	Simple random sample standard error[3]	*deff*	*deft*
School type (2 levels)	X1CONTROL	944	76.1	0.15	1.39	0.01	0.11
Average caseload per counselor (average)	C1CASELOA	852	273.0	13.19	5.56	5.63	2.37
Whether students are required to have a career or education plan	C1PLAN	851	54.4	3.51	1.71	4.23	2.06
Whether school has a formal dropout prevention program	C1DROPOUT	845	39.3	3.73	1.68	4.93	2.22
All 9th graders placed in same math course	C1G9MSAME	848	21.5	3.34	1.41	5.62	2.37
School has a counselor whose primary responsibility is workforce preparation	C1WORKFOR	845	29.3	4.34	1.57	7.69	2.77
Summary statistics							
Mean						4.68	1.98
Minimum						0.01	0.11
Median						5.27	2.30
Maximum						7.69	2.77
Standard deviation						2.56	0.95

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-2. School-level standard errors and design effects—Public schools

Survey item[1]	Variable	N	Estimate	Design standard error[2]	Simple random sample standard error[3]	*deff*	*deft*
School type (2 levels)	X1CONTROL	767	100.0	0.00			
Average caseload per counselor (average)	C1CASELOA	694	312.7	15.72	5.78	7.41	2.72
Whether students are required to have a career or education plan	C1PLAN	693	61.7	4.07	1.85	4.86	2.21
Whether school has a formal dropout prevention program	C1DROPOUT	687	47.0	4.48	1.91	5.53	2.35
All 9th graders placed in same math course	C1G9MSAME	690	20.3	3.26	1.53	4.52	2.13
School has a counselor whose primary responsibility is workforce preparation	C1WORKFOR	688	32.3	5.34	1.78	8.98	3.00
Summary statistics							
Mean						6.26	2.48
Minimum						4.52	2.13
Median						5.53	2.35
Maximum						8.98	3.00
Standard deviation						1.88	0.37

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-3. School-level standard errors and design effects—Private schools

Survey item[1]	Variable	N	Estimate	Design standard error[2]	Simple random sample standard error[3]	*deff*	*deft*
School type (2 levels)	X1CONTROL	177	0.0	0.00			
Average caseload per counselor (average)	C1CASELOA	158	130.1	16.28	8.58	3.60	1.90
Whether students are required to have a career or education plan	C1PLAN	158	28.3	6.96	3.60	3.75	1.94
Whether school has a formal dropout prevention program	C1DROPOUT	158	11.7!	4.72	2.57	3.37	1.84
All 9th graders placed in same math course	C1G9MSAME	158	25.6!	8.69	3.48	6.22	2.49
School has a counselor whose primary responsibility is workforce preparation	C1WORKFOR	157	18.8!	6.23	3.13	3.95	1.99
Summary statistics							
Mean						4.18	2.03
Minimum						3.37	1.84
Median						3.75	1.94
Maximum						6.22	2.49
Standard deviation						1.16	0.27

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-4. School-level standard errors and design effects—Northeast schools

Survey item[1]	Variable	N	Estimate	Design standard error[2]	Simple random sample standard error[3]	*deff*	*deft*
School type (2 levels)	X1CONTROL	149	73.9	1.80	3.61	0.25	0.50
Average caseload per counselor (average)	C1CASELOA	128	227.9	17.06	9.47	3.24	1.80
Whether students are required to have a career or education plan	C1PLAN	127	50.5	8.09	4.45	3.30	1.82
Whether school has a formal dropout prevention program	C1DROPOUT	128	29.6	6.76	4.05	2.78	1.67
All 9th graders placed in same math course	C1G9MSAME	128	15.9!	5.06	3.24	2.44	1.56
School has a counselor whose primary responsibility is workforce preparation	C1WORKFOR	127	30.4	7.09	4.10	2.99	1.73
Summary statistics							
Mean						2.50	1.51
Minimum						0.25	0.50
Median						2.89	1.70
Maximum						3.30	1.82
Standard deviation						1.15	0.50

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-5. School-level standard errors and design effects—Midwest schools

Survey item[1]	Variable	N	Estimate	Design standard error[2]	Simple random sample standard error[3]	*deff*	*deft*
School type (2 levels)	X1CONTROL	251	80.9	0.76	2.48	0.09	0.31
Average caseload per counselor (average)	C1CASELOA	227	287.1	21.42	12.14	3.11	1.76
Whether students are required to have a career or education plan	C1PLAN	227	48.5	6.11	3.32	3.37	1.84
Whether school has a formal dropout prevention program	C1DROPOUT	226	28.3	6.17	3.00	4.22	2.05
All 9th graders placed in same math course	C1G9MSAME	227	19.2	5.16	2.62	3.88	1.97
School has a counselor whose primary responsibility is workforce preparation	C1WORKFOR	227	30.0	6.09	3.05	4.00	2.00
Summary statistics							
Mean						3.11	1.66
Minimum						0.09	0.31
Median						3.63	1.90
Maximum						4.22	2.05
Standard deviation						1.53	0.67

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-6. School-level standard errors and design effects—South schools

Survey item[1]	Variable	N	Estimate	Design standard error[2]	Simple random sample standard error[3]	*deff*	*deft*
School type (2 levels)	X1CONTROL	380	73.2	0.77	2.27	0.12	0.34
Average caseload per counselor (average)	C1CASELOA	348	296.4	16.03	7.99	4.03	2.01
Whether students are required to have a career or education plan	C1PLAN	348	54.0	5.20	2.68	3.77	1.94
Whether school has a formal dropout prevention program	C1DROPOUT	343	55.7	5.02	2.69	3.49	1.87
All 9th graders placed in same math course	C1G9MSAME	345	21.9	4.12	2.23	3.40	1.84
School has a counselor whose primary responsibility is workforce preparation	C1WORKFOR	343	28.4	5.05	2.44	4.29	2.07
Summary statistics							
Mean						3.18	1.68
Minimum						0.12	0.34
Median						3.63	1.91
Maximum						4.29	2.07
Standard deviation						1.54	0.66

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-7. School-level standard errors and design effects—West schools

Survey item[1]	Variable	N	Estimate	Design standard error[2]	Simple random sample standard error[3]	*deff*	*deft*
School type (2 levels)	X1CONTROL	164	75.8	2.15	3.35	0.41	0.64
Average caseload per counselor (average)	C1CASELOA	149	249.0	56.16	14.68	14.63	3.82
Whether students are required to have a career or education plan	C1PLAN	149	67.2	10.11	3.86	6.86	2.62
Whether school has a formal dropout prevention program	C1DROPOUT	148	35.6!	12.33	3.95	9.75	3.12
All 9th graders placed in same math course	C1G9MSAME	148	28.7!	12.47	3.73	11.18	3.34
School has a counselor whose primary responsibility is workforce preparation	C1WORKFOR	148	28.9!	15.73	3.74	17.70	4.21
Summary statistics							
Mean						10.09	2.96
Minimum						0.41	0.64
Median						10.46	3.23
Maximum						17.70	4.21
Standard deviation						6.07	1.26

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-8. School-level standard errors and design effects—City schools

Survey item[1]	Variable	N	Estimate	Design standard error[2]	Simple random sample standard error[3]	*deff*	*deft*
School type (2 levels)	X1CONTROL	272	59.2	6.74	2.98	5.11	2.26
Average caseload per counselor (average)	C1CASELOA	243	264.6	17.75	9.42	3.55	1.88
Whether students are required to have a career or education plan	C1PLAN	243	50.7	6.50	3.21	4.10	2.02
Whether school has a formal dropout prevention program	C1DROPOUT	241	32.7	6.40	3.03	4.47	2.11
All 9th graders placed in same math course	C1G9MSAME	241	19.7	4.06	2.57	2.50	1.58
School has a counselor whose primary responsibility is workforce preparation	C1WORKFOR	241	29.7	6.63	2.95	5.06	2.25
Summary statistics							
Mean						4.13	2.02
Minimum						2.50	1.58
Median						4.28	2.07
Maximum						5.11	2.26
Standard deviation						0.99	0.26

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-9. School-level standard errors and design effects—Suburban schools

Survey item[1]	Variable	N	Estimate	Design standard error[2]	Simple random sample standard error[3]	*deff*	*deft*
School type (2 levels)	X1CONTROL	335	68.2	5.77	2.55	5.12	2.26
Average caseload per counselor (average)	C1CASELOA	296	249.2	20.12	8.79	5.24	2.29
Whether students are required to have a career or education plan	C1PLAN	296	38.7	5.41	2.84	3.64	1.91
Whether school has a formal dropout prevention program	C1DROPOUT	296	32.9	5.52	2.74	4.07	2.02
All 9th graders placed in same math course	C1G9MSAME	296	20.6	5.46	2.36	5.37	2.32
School has a counselor whose primary responsibility is workforce preparation	C1WORKFOR	295	28.6	5.70	2.64	4.67	2.16
Summary statistics							
Mean						4.69	2.16
Minimum						3.64	1.91
Median						4.89	2.21
Maximum						5.37	2.32
Standard deviation						0.70	0.16

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-10. School-level standard errors and design effects—Town schools

Survey item[1]	Variable	N	Estimate	Design standard error[2]	Simple random sample standard error[3]	*deff*	*deft*
School type (2 levels)	X1CONTROL	117	71.7	10.14	4.18	5.88	2.43
Average caseload per counselor (average)	C1CASELOA	111	268.7	37.46	15.62	5.75	2.40
Whether students are required to have a career or education plan	C1PLAN	111	58.6	7.87	4.70	2.81	1.68
Whether school has a formal dropout prevention program	C1DROPOUT	109	34.3	7.75	4.57	2.88	1.70
All 9th graders placed in same math course	C1G9MSAME	109	24.4!	9.44	4.13	5.23	2.29
School has a counselor whose primary responsibility is workforce preparation	C1WORKFOR	109	27.9	6.88	4.32	2.54	1.59
Summary statistics							
Mean						4.18	2.01
Minimum						2.54	1.59
Median						4.05	1.99
Maximum						5.88	2.43
Standard deviation						1.60	0.40

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-11. School-level standard errors and design effects—Rural schools

Survey item[1]	Variable	N	Estimate	Design standard error[2]	Simple random sample standard error[3]	*deff*	*deft*
School type (2 levels)	X1CONTROL	220	91.5	3.35	1.88	3.17	1.78
Average caseload per counselor (average)	C1CASELOA	202	291.7	29.31	12.14	5.83	2.41
Whether students are required to have a career or education plan	C1PLAN	201	63.0	6.80	3.41	3.96	1.99
Whether school has a formal dropout prevention program	C1DROPOUT	199	48.1	7.91	3.55	4.96	2.23
All 9th graders placed in same math course	C1G9MSAME	202	21.6	5.79	2.90	3.98	2.00
School has a counselor whose primary responsibility is workforce preparation	C1WORKFOR	200	30.1	8.70	3.25	7.16	2.68
Summary statistics							
Mean						4.85	2.18
Minimum						3.17	1.78
Median						4.47	2.11
Maximum						7.16	2.68
Standard deviation						1.46	0.33

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-12. Student standard errors and design effects—overall

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	21,403	55.6	0.78	0.34	5.31	2.30
Student's first language is English (5 levels)	S1LANG1ST	21,419	82.3	0.79	0.26	9.13	3.02
Previous grade (4 levels)	S1GRD0809	21,427	93.6	0.43	0.17	6.50	2.55
Grade in math 8 (6 levels)	S1M8GRADE	20,992	38.0	0.54	0.34	2.56	1.60
Participated in a science competition	S1SCOMPETE	21,076	3.1	0.22	0.12	3.26	1.80
How often reads science books or magazines (4 levels)	S1SBOOKS	21,185	32.7	0.59	0.32	3.35	1.83
Student sees self as math person	S1MPERSON1	21,347	51.8	0.59	0.34	2.99	1.73
Student is taking algebra I in fall 2009	S1ALG1M09	19,131	57.2	1.18	0.36	10.95	3.31
Student is enjoying math class (4 levels)	S1MENJOYING	19,080	48.8	0.63	0.36	3.02	1.74
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	18,864	47.6	0.74	0.36	4.10	2.02
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	18,926	57.3	0.58	0.36	2.64	1.63
Student sees self as science person	S1SPERSON1	21,330	41.9	0.59	0.34	3.05	1.75
Student is taking biology I in fall 2009	S1BIO1S09	17,627	41.8	1.77	0.37	22.70	4.76
Taking science course because likes to be challenged	S1MCHALLENGE	19,022	16.1	0.44	0.27	2.73	1.65
Thinks science course is a waste of time (4 levels)	S1MWASTE	19,030	49.2	0.68	0.36	3.50	1.87
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	17,413	60.1	0.62	0.37	2.83	1.68
Math or science is favorite subject	S1FAVSUBJ	21,094	24.2	0.48	0.30	2.69	1.64
Math or science is least favorite subject	S1LEASTSUBJ	20,925	42.1	0.61	0.34	3.17	1.78
Student never comes to class without books	S1NOBOOKS	21,043	53.2	0.72	0.34	4.41	2.10
Student feels safe at school (4 levels)	S1SAFE	21,127	59.4	0.66	0.34	3.81	1.95
Even if study, cannot afford college (4 levels)	S1AFFORD	20,910	50.3	0.65	0.35	3.56	1.89
Comparison of males and females in science (5 levels)	S1SCICOMP	20,656	64.1	0.52	0.33	2.39	1.55
Participates in Upward Bound	S1UPWARDBND	20,423	2.8	0.25	0.12	4.79	2.19
Whether plans to take SAT (4 levels)	S1SAT	20,613	62.2	0.77	0.34	5.13	2.27

See notes at end of table.

Table G-12. Student standard errors and design effects—overall—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	20,883	83.2	0.54	0.26	4.36	2.09
Number of years of high school math expects to take (4 levels)	S1MYRS	21,073	61.3	0.90	0.34	7.14	2.67
Number of years of high school science expects to take (4 levels)	S1SYRS	20,986	45.0	0.77	0.34	4.99	2.23
At age 30 expects to be a manager	X1STU30OCC2 (composite)	21,018	2.2	0.17	0.10	2.87	1.69
At age 30 expects to be in the military	X1STU30OCC2 (composite)	21,018	2.7	0.17	0.11	2.35	1.53
At age 30 expects to be an operative	X1STU30OCC2 (composite)	21,018	0.4	0.07	0.04	2.29	1.51
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	21,018	1.1	0.14	0.07	4.07	2.02
At age 30 expects to be a technician	X1STU30OCC2 (composite)	21,018	19.9	0.76	0.28	7.53	2.74
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	21,018	28.7	0.77	0.31	6.09	2.47
Student's educational expectations	P1EDUEXPECT	15,356	28.9	0.61	0.37	2.82	1.68
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	20,971	9.0	0.36	0.20	3.28	1.81
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	21,013	82.9	0.45	0.26	2.96	1.72
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	14,869	68.6	0.62	0.38	2.65	1.63
Math theta (raw)	X1TXMTH	10,928	75.2	1.27	0.54	5.56	2.36
Summary statistics							
Mean						4.67	2.07
Minimum						2.29	1.51
Median						3.43	1.85
Maximum						22.70	4.76
Standard deviation						3.58	0.62

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-13. Student standard errors and design effects—Public schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	17,478	55.0	0.83	0.38	4.81	2.19
Student's first language is English (5 levels)	S1LANG1ST	17,489	81.7	0.85	0.29	8.40	2.90
Previous grade (4 levels)	S1GRD0809	17,496	93.2	0.46	0.19	5.79	2.41
Grade in math 8 (6 levels)	S1M8GRADE	17,113	38.1	0.57	0.37	2.38	1.54
Participated in a science competition	S1SCOMPETE	17,203	2.8	0.22	0.13	3.14	1.77
How often reads science books or magazines (4 levels)	S1SBOOKS	17,297	32.6	0.61	0.36	2.94	1.72
Student sees self as math person	S1MPERSON1	17,430	51.5	0.63	0.38	2.78	1.67
Student is taking algebra I in fall 2009	S1ALG1M09	15,388	57.3	1.23	0.40	9.46	3.08
Student is enjoying math class (4 levels)	S1MENJOYING	15,349	48.5	0.68	0.40	2.85	1.69
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	15,175	47.3	0.79	0.41	3.76	1.94
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	15,215	57.1	0.63	0.40	2.45	1.57
Student sees self as science person	S1SPERSON1	17,408	41.5	0.63	0.37	2.86	1.69
Student is taking biology I in fall 2009	S1BIO1S09	14,092	40.9	1.84	0.41	19.77	4.45
Taking science course because likes to be challenged	S1MCHALLENGE	15,303	15.9	0.46	0.30	2.44	1.56
Thinks science course is a waste of time (4 levels)	S1MWASTE	15,304	48.9	0.74	0.40	3.31	1.82
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	13,918	60.0	0.67	0.42	2.57	1.60
Math or science is favorite subject	S1FAVSUBJ	17,222	23.9	0.51	0.33	2.42	1.56
Math or science is least favorite subject	S1LEASTSUBJ	17,079	42.5	0.65	0.38	2.94	1.72
Student never comes to class without books	S1NOBOOKS	17,173	53.0	0.77	0.38	4.06	2.02
Student feels safe at school (4 levels)	S1SAFE	17,248	61.0	0.69	0.37	3.45	1.86
Even if study, cannot afford college (4 levels)	S1AFFORD	17,064	49.9	0.69	0.38	3.27	1.81
Comparison of males and females in science (5 levels)	S1SCICOMP	16,867	64.0	0.56	0.37	2.31	1.52
Participates in Upward Bound	S1UPWARDBND	16,680	3.0	0.27	0.13	4.26	2.06
Whether plans to take SAT (4 levels)	S1SAT	16,822	60.9	0.82	0.38	4.79	2.19

See notes at end of table.

Table G-13. Student standard errors and design effects—Public schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	17,050	82.3	0.58	0.29	3.87	1.97
Number of years of high school math expects to take (4 levels)	S1MYRS	17,213	59.9	0.96	0.37	6.59	2.57
Number of years of high school science expects to take (4 levels)	S1SYRS	17,127	43.6	0.81	0.38	4.58	2.14
At age 30 expects to be a manager	X1STU30OCC2 (composite)	17,157	2.2	0.19	0.11	2.72	1.65
At age 30 expects to be in the military	X1STU30OCC2 (composite)	17,157	2.8	0.18	0.13	2.18	1.48
At age 30 expects to be an operative	X1STU30OCC2 (composite)	17,157	0.4	0.07	0.05	2.07	1.44
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	17,157	1.1	0.15	0.08	3.64	1.91
At age 30 expects to be a technician	X1STU30OCC2 (composite)	17,157	19.8	0.81	0.30	7.00	2.65
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	17,157	28.5	0.81	0.35	5.47	2.34
Student's educational expectations	P1EDUEXPECT	12,247	28.8	0.66	0.41	2.61	1.61
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	17,114	9.4	0.38	0.22	2.96	1.72
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	17,151	82.6	0.47	0.29	2.67	1.63
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	12,206	69.1	0.66	0.42	2.47	1.57
Math theta (raw)	X1TXMTH	8,367	74.3	1.43	0.61	5.45	2.34
Summary statistics							
Mean						4.25	1.98
Minimum						2.07	1.44
Median						3.20	1.79
Maximum						19.77	4.45
Standard deviation						3.12	0.57

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-14. Student standard errors and design effects—Private schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	3,925	62.2	1.42	0.77	3.35	1.83
Student's first language is English (5 levels)	S1LANG1ST	3,930	89.5	1.58	0.49	10.42	3.23
Previous grade (4 levels)	S1GRD0809	3,931	97.9	0.37	0.23	2.60	1.61
Grade in math 8 (6 levels)	S1M8GRADE	3,879	37.6	1.26	0.78	2.63	1.62
Participated in a science competition	S1SCOMPETE	3,873	6.9	0.67	0.41	2.72	1.65
How often reads science books or magazines (4 levels)	S1SBOOKS	3,888	34.0	1.49	0.76	3.85	1.96
Student sees self as math person	S1MPERSON1	3,917	54.9	1.14	0.80	2.04	1.43
Student is taking algebra I in fall 2009	S1ALG1M09	3,743	56.1	2.83	0.81	12.20	3.49
Student is enjoying math class (4 levels)	S1MENJOYING	3,731	52.6	1.31	0.82	2.55	1.60
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	3,689	51.1	1.42	0.82	2.97	1.72
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	3,711	60.1	1.20	0.80	2.22	1.49
Student sees self as science person	S1SPERSON1	3,922	46.7	1.26	0.80	2.48	1.58
Student is taking biology I in fall 2009	S1BIO1S09	3,535	52.0	4.58	0.84	29.65	5.45
Taking science course because likes to be challenged	S1MCHALLENGE	3,719	18.2	0.94	0.63	2.20	1.48
Thinks science course is a waste of time (4 levels)	S1MWASTE	3,726	52.8	1.13	0.82	1.92	1.38
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	3,495	61.6	1.09	0.82	1.75	1.32
Math or science is favorite subject	S1FAVSUBJ	3,872	27.1	1.56	0.72	4.75	2.18
Math or science is least favorite subject	S1LEASTSUBJ	3,846	36.4	1.27	0.78	2.66	1.63
Student never comes to class without books	S1NOBOOKS	3,870	56.6	1.46	0.80	3.37	1.84
Student feels safe at school (4 levels)	S1SAFE	3,879	37.7	1.54	0.78	3.93	1.98
Even if study, cannot afford college (4 levels)	S1AFFORD	3,846	55.8	0.99	0.80	1.54	1.24
Comparison of males and females in science (5 levels)	S1SCICOMP	3,789	64.4	1.51	0.78	3.78	1.94
Participates in Upward Bound	S1UPWARDBND	3,743	1.0!	0.34	0.17	4.20	2.05
Whether plans to take SAT (4 levels)	S1SAT	3,791	77.8	1.59	0.68	5.58	2.36

See notes at end of table.

Table G-14. Student standard errors and design effects—Private schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	3,833	94.1	0.73	0.38	3.66	1.91
Number of years of high school math expects to take (4 levels)	S1MYRS	3,860	78.7	1.47	0.66	4.95	2.22
Number of years of high school science expects to take (4 levels)	S1SYRS	3,859	63.0	2.17	0.78	7.77	2.79
At age 30 expects to be a manager	X1STU30OCC2 (composite)	3,861	2.3	0.41	0.24	2.84	1.69
At age 30 expects to be in the military	X1STU30OCC2 (composite)	3,861	1.9	0.39	0.22	3.05	1.75
At age 30 expects to be an operative	X1STU30OCC2 (composite)	3,861	0.2!	0.07	0.06	1.14	1.07
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	3,861	0.9	0.27	0.16	3.09	1.76
At age 30 expects to be a technician	X1STU30OCC2 (composite)	3,861	21.0	0.88	0.66	1.80	1.34
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	3,861	31.4	1.14	0.75	2.33	1.53
Student's educational expectations	P1EDUEXPECT	3,109	30.7	1.69	0.83	4.15	2.04
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	3,857	3.8	0.57	0.31	3.45	1.86
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	3,862	86.5	0.88	0.55	2.59	1.61
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	2,663	62.2	1.49	0.94	2.53	1.59
Math theta (raw)	X1TXMTH	2,561	82.4	2.42	1.12	4.67	2.16
Summary statistics							
Mean						4.30	1.93
Minimum						1.14	1.07
Median						3.01	1.73
Maximum						29.65	5.45
Standard deviation						4.78	0.77

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-15. Student standard errors and design effects—Northeast schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	3,323	61.8	2.53	0.84	9.04	3.01
Student's first language is English (5 levels)	S1LANG1ST	3,323	83.6	1.96	0.64	9.26	3.04
Previous grade (4 levels)	S1GRD0809	3,325	94.8	0.90	0.39	5.49	2.34
Grade in math 8 (6 levels)	S1M8GRADE	3,260	39.2	1.34	0.86	2.44	1.56
Participated in a science competition	S1SCOMPETE	3,264	2.6	0.41	0.28	2.12	1.46
How often reads science books or magazines (4 levels)	S1SBOOKS	3,288	34.9	1.18	0.83	2.03	1.43
Student sees self as math person	S1MPERSON1	3,308	55.9	1.38	0.86	2.57	1.60
Student is taking algebra I in fall 2009	S1ALG1M09	3,038	55.9	4.24	0.90	22.13	4.70
Student is enjoying math class (4 levels)	S1MENJOYING	3,032	48.7	1.28	0.91	1.99	1.41
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	2,993	47.7	3.10	0.91	11.49	3.39
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	3,005	57.7	1.07	0.90	1.42	1.19
Student sees self as science person	S1SPERSON1	3,303	42.7	1.63	0.86	3.60	1.90
Student is taking biology I in fall 2009	S1BIO1S09	2,919	27.5	4.81	0.83	33.80	5.81
Taking science course because likes to be challenged	S1MCHALLENGE	3,020	16.6	0.93	0.68	1.88	1.37
Thinks science course is a waste of time (4 levels)	S1MWASTE	3,024	48.8	2.30	0.91	6.38	2.53
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	2,882	61.5	2.16	0.91	5.67	2.38
Math or science is favorite subject	S1FAVSUBJ	3,241	26.0	1.30	0.77	2.82	1.68
Math or science is least favorite subject	S1LEASTSUBJ	3,220	37.8	1.17	0.86	1.89	1.37
Student never comes to class without books	S1NOBOOKS	3,234	57.8	2.13	0.87	6.00	2.45
Student feels safe at school (4 levels)	S1SAFE	3,250	56.2	1.65	0.87	3.59	1.90
Even if study, cannot afford college (4 levels)	S1AFFORD	3,216	52.4	1.86	0.88	4.44	2.11
Comparison of males and females in science (5 levels)	S1SCICOMP	3,170	66.9	1.04	0.84	1.53	1.24
Participates in Upward Bound	S1UPWARDBND	3,137	1.6!	0.52	0.23	5.32	2.31
Whether plans to take SAT (4 levels)	S1SAT	3,170	67.7	1.67	0.83	4.04	2.01

See notes at end of table.

Table G-15. Student standard errors and design effects—Northeast schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	3,208	85.9	1.38	0.61	5.08	2.25
Number of years of high school math expects to take (4 levels)	S1MYRS	3,241	63.7	3.09	0.85	13.40	3.66
Number of years of high school science expects to take (4 levels)	S1SYRS	3,230	51.9	2.02	0.88	5.29	2.30
At age 30 expects to be a manager	X1STU30OCC2 (composite)	3,236	1.4	0.29	0.21	1.99	1.41
At age 30 expects to be in the military	X1STU30OCC2 (composite)	3,236	2.2	0.47	0.26	3.34	1.83
At age 30 expects to be an operative	X1STU30OCC2 (composite)	3,236	0.6!	0.25	0.14	3.26	1.81
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	3,236	1.3!	0.62	0.20	9.67	3.11
At age 30 expects to be a technician	X1STU30OCC2 (composite)	3,236	19.4	3.61	0.70	27.06	5.20
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	3,236	26.4	3.32	0.78	18.34	4.28
Student's educational expectations	P1EDUEXPECT	2,425	27.0	1.83	0.90	4.13	2.03
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	3,222	8.5	0.83	0.49	2.82	1.68
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	3,234	81.6	1.10	0.68	2.60	1.61
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	2,291	64.1	2.02	1.00	4.05	2.01
Math theta (raw)	X1TXMTH	1,855	78.5	3.01	1.30	5.39	2.32
Summary statistics							
Mean						6.77	2.36
Minimum						1.42	1.19
Median						4.09	2.02
Maximum						33.80	5.81
Standard deviation						7.28	1.11

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-16. Student standard errors and design effects—Midwest schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	5,684	50.9	1.27	0.66	3.69	1.92
Student's first language is English (5 levels)	S1LANG1ST	5,690	90.5	1.13	0.39	8.45	2.91
Previous grade (4 levels)	S1GRD0809	5,693	93.0	1.09	0.34	10.33	3.21
Grade in math 8 (6 levels)	S1M8GRADE	5,581	36.0	0.88	0.64	1.87	1.37
Participated in a science competition	S1SCOMPETE	5,604	3.8	0.57	0.26	4.86	2.21
How often reads science books or magazines (4 levels)	S1SBOOKS	5,625	32.1	1.04	0.62	2.77	1.66
Student sees self as math person	S1MPERSON1	5,672	52.4	1.25	0.66	3.53	1.88
Student is taking algebra I in fall 2009	S1ALG1M09	5,189	57.4	2.04	0.69	8.85	2.98
Student is enjoying math class (4 levels)	S1MENJOYING	5,186	48.5	1.22	0.69	3.10	1.76
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	5,113	50.0	1.13	0.70	2.62	1.62
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	5,136	56.7	1.17	0.69	2.89	1.70
Student sees self as science person	S1SPERSON1	5,667	42.4	1.15	0.66	3.08	1.76
Student is taking biology I in fall 2009	S1BIO1S09	4,950	41.3	3.83	0.70	30.00	5.48
Taking science course because likes to be challenged	S1MCHALLENGE	5,161	16.8	0.89	0.52	2.90	1.70
Thinks science course is a waste of time (4 levels)	S1MWASTE	5,173	51.6	1.23	0.70	3.11	1.76
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	4,900	61.6	1.04	0.70	2.25	1.50
Math or science is favorite subject	S1FAVSUBJ	5,629	25.3	0.98	0.58	2.87	1.69
Math or science is least favorite subject	S1LEASTSUBJ	5,578	39.6	1.09	0.66	2.75	1.66
Student never comes to class without books	S1NOBOOKS	5,621	51.8	1.35	0.67	4.11	2.03
Student feels safe at school (4 levels)	S1SAFE	5,639	57.7	1.10	0.66	2.82	1.68
Even if study, cannot afford college (4 levels)	S1AFFORD	5,584	51.8	1.03	0.67	2.36	1.54
Comparison of males and females in science (5 levels)	S1SCICOMP	5,527	65.6	1.17	0.64	3.38	1.84
Participates in Upward Bound	S1UPWARDBND	5,458	3.8	0.70	0.26	7.27	2.70
Whether plans to take SAT (4 levels)	S1SAT	5,523	60.7	1.49	0.66	5.11	2.26

See notes at end of table.

Table G-16. Student standard errors and design effects—Midwest schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	5,588	83.3	1.05	0.50	4.40	2.10
Number of years of high school math expects to take (4 levels)	S1MYRS	5,630	63.8	1.39	0.64	4.68	2.16
Number of years of high school science expects to take (4 levels)	S1SYRS	5,616	45.5	1.23	0.67	3.41	1.85
At age 30 expects to be a manager	X1STU30OCC2 (composite)	5,622	2.7	0.35	0.22	2.60	1.61
At age 30 expects to be in the military	X1STU30OCC2 (composite)	5,622	2.5	0.30	0.21	1.99	1.41
At age 30 expects to be an operative	X1STU30OCC2 (composite)	5,622	0.2!	0.09	0.06	2.58	1.61
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	5,622	1.0	0.20	0.13	2.39	1.55
At age 30 expects to be a technician	X1STU30OCC2 (composite)	5,622	19.1	0.86	0.52	2.70	1.64
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	5,622	29.6	1.17	0.61	3.70	1.92
Student's educational expectations	P1EDUEXPECT	4,132	32.7	1.25	0.73	2.93	1.71
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	5,590	9.7	0.70	0.40	3.12	1.77
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	5,609	82.4	0.76	0.51	2.24	1.50
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	3,896	68.4	1.03	0.75	1.91	1.38
Math theta (raw)	X1TXMTH	2,930	73.5	1.96	1.03	3.62	1.90
Summary statistics							
Mean						4.40	1.97
Minimum						1.87	1.37
Median						3.09	1.76
Maximum						30.00	5.48
Standard deviation						4.69	0.73

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-17. Student standard errors and design effects—South schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	8,691	50.1	1.16	0.54	4.66	2.16
Student's first language is English (5 levels)	S1LANG1ST	8,696	84.4	0.98	0.39	6.30	2.51
Previous grade (4 levels)	S1GRD0809	8,698	91.7	0.71	0.30	5.78	2.41
Grade in math 8 (6 levels)	S1M8GRADE	8,518	40.0	0.87	0.53	2.70	1.64
Participated in a science competition	S1SCOMPETE	8,562	3.1	0.35	0.19	3.39	1.84
How often reads science books or magazines (4 levels)	S1SBOOKS	8,607	32.1	0.88	0.50	3.05	1.75
Student sees self as math person	S1MPERSON1	8,669	51.3	0.87	0.54	2.62	1.62
Student is taking algebra I in fall 2009	S1ALG1M09	7,499	59.3	1.55	0.57	7.46	2.73
Student is enjoying math class (4 levels)	S1MENJOYING	7,472	48.3	1.00	0.58	2.97	1.72
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	7,389	46.3	0.85	0.58	2.13	1.46
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	7,425	56.4	0.95	0.58	2.74	1.66
Student sees self as science person	S1SPERSON1	8,665	42.9	0.93	0.53	3.06	1.75
Student is taking biology I in fall 2009	S1BIO1S09	6,712	51.0	2.17	0.61	12.60	3.55
Taking science course because likes to be challenged	S1MCHALLENGE	7,454	15.3	0.77	0.42	3.42	1.85
Thinks science course is a waste of time (4 levels)	S1MWASTE	7,444	47.1	0.92	0.58	2.55	1.60
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	6,622	57.9	0.88	0.61	2.08	1.44
Math or science is favorite subject	S1FAVSUBJ	8,559	23.2	0.68	0.46	2.20	1.48
Math or science is least favorite subject	S1LEASTSUBJ	8,502	44.3	0.95	0.54	3.14	1.77
Student never comes to class without books	S1NOBOOKS	8,534	54.1	1.11	0.54	4.20	2.05
Student feels safe at school (4 levels)	S1SAFE	8,571	59.9	1.01	0.53	3.63	1.91
Even if study, cannot afford college (4 levels)	S1AFFORD	8,477	48.5	0.91	0.54	2.80	1.67
Comparison of males and females in science (5 levels)	S1SCICOMP	8,362	59.3	0.81	0.54	2.27	1.51
Participates in Upward Bound	S1UPWARDBND	8,278	3.6	0.39	0.21	3.69	1.92
Whether plans to take SAT (4 levels)	S1SAT	8,342	61.9	1.20	0.53	5.07	2.25

See notes at end of table.

Table G-17. Student standard errors and design effects—South schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	8,450	84.9	0.77	0.39	3.94	1.99
Number of years of high school math expects to take (4 levels)	S1MYRS	8,537	61.8	1.26	0.53	5.71	2.39
Number of years of high school science expects to take (4 levels)	S1SYRS	8,494	50.7	1.31	0.54	5.81	2.41
At age 30 expects to be a manager	X1STU30OCC2 (composite)	8,517	2.5	0.33	0.17	3.75	1.94
At age 30 expects to be in the military	X1STU30OCC2 (composite)	8,517	3.0	0.29	0.19	2.39	1.55
At age 30 expects to be an operative	X1STU30OCC2 (composite)	8,517	0.6	0.12	0.08	1.91	1.38
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	8,517	1.1	0.13	0.11	1.38	1.18
At age 30 expects to be a technician	X1STU30OCC2 (composite)	8,517	21.9	1.00	0.45	4.93	2.22
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	8,517	26.6	0.79	0.48	2.72	1.65
Student's educational expectations	P1EDUEXPECT	6,176	27.1	0.95	0.57	2.80	1.67
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	8,513	8.5	0.54	0.30	3.24	1.80
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	8,520	82.7	0.76	0.41	3.41	1.85
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	6,145	72.3	0.89	0.57	2.44	1.56
Math theta (raw)	X1TXMTH	4,422	72.9	1.85	0.84	4.90	2.21
Summary statistics							
Mean						3.78	1.90
Minimum						1.38	1.18
Median						3.19	1.78
Maximum						12.59	3.55
Standard deviation						2.01	0.44

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-18. Student standard errors and design effects—West schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	3,705	64.4	1.82	0.79	5.35	2.31
Student's first language is English (5 levels)	S1LANG1ST	3,710	69.8	2.64	0.75	12.26	3.50
Previous grade (4 levels)	S1GRD0809	3,711	96.1	0.55	0.32	3.06	1.75
Grade in math 8 (6 levels)	S1M8GRADE	3,633	35.8	1.50	0.80	3.54	1.88
Participated in a science competition	S1SCOMPETE	3,646	2.8	0.40	0.27	2.12	1.46
How often reads science books or magazines (4 levels)	S1SBOOKS	3,665	32.8	1.41	0.78	3.32	1.82
Student sees self as math person	S1MPERSON1	3,698	48.8	1.41	0.82	2.96	1.72
Student is taking algebra I in fall 2009	S1ALG1M09	3,405	54.6	2.35	0.85	7.61	2.76
Student is enjoying math class (4 levels)	S1MENJOYING	3,390	50.0	1.44	0.86	2.80	1.67
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	3,369	46.9	1.41	0.86	2.68	1.64
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	3,360	59.1	1.48	0.85	3.03	1.74
Student sees self as science person	S1SPERSON1	3,695	39.1	1.30	0.80	2.63	1.62
Student is taking biology I in fall 2009	S1BIO1S09	3,046	39.9	4.54	0.89	26.15	5.11
Taking science course because likes to be challenged	S1MCHALLENGE	3,387	16.3	0.97	0.64	2.32	1.52
Thinks science course is a waste of time (4 levels)	S1MWASTE	3,389	50.4	1.49	0.86	3.00	1.73
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	3,009	61.2	1.08	0.89	1.48	1.22
Math or science is favorite subject	S1FAVSUBJ	3,665	23.2	1.35	0.70	3.73	1.93
Math or science is least favorite subject	S1LEASTSUBJ	3,625	44.0	1.76	0.83	4.56	2.14
Student never comes to class without books	S1NOBOOKS	3,654	49.7	1.86	0.83	5.06	2.25
Student feels safe at school (4 levels)	S1SAFE	3,667	62.5	1.52	0.80	3.59	1.90
Even if study, cannot afford college (4 levels)	S1AFFORD	3,633	50.5	1.64	0.83	3.92	1.98
Comparison of males and females in science (5 levels)	S1SCICOMP	3,597	68.2	1.48	0.78	3.63	1.90
Participates in Upward Bound	S1UPWARDBND	3,550	1.5	0.44	0.20	4.72	2.17
Whether plans to take SAT (4 levels)	S1SAT	3,578	59.8	2.21	0.82	7.25	2.69

See notes at end of table.

Table G-18. Student standard errors and design effects—West schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	3,637	78.1	1.80	0.69	6.85	2.62
Number of years of high school math expects to take (4 levels)	S1MYRS	3,665	56.1	2.35	0.82	8.19	2.86
Number of years of high school science expects to take (4 levels)	S1SYRS	3,646	30.0	1.78	0.76	5.47	2.34
At age 30 expects to be a manager	X1STU30OCC2 (composite)	3,643	2.0	0.37	0.23	2.55	1.60
At age 30 expects to be in the military	X1STU30OCC2 (composite)	3,643	2.7	0.39	0.27	2.06	1.44
At age 30 expects to be an operative	X1STU30OCC2 (composite)	3,643	0.2!	0.07	0.07	0.84	0.92
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	3,643	1.1	0.31	0.17	3.32	1.82
At age 30 expects to be a technician	X1STU30OCC2 (composite)	3,643	17.9	1.20	0.64	3.55	1.88
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	3,643	32.9	1.67	0.78	4.59	2.14
Student's educational expectations	P1EDUEXPECT	2,623	29.5	1.76	0.89	3.90	1.98
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	3,646	9.4	0.91	0.48	3.50	1.87
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	3,650	84.6	0.99	0.60	2.75	1.66
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	2,537	65.7	1.46	0.94	2.40	1.55
Math theta (raw)	X1TXMTH	1,721	77.6	3.64	1.37	7.01	2.65
Summary statistics							
Mean						4.68	2.05
Minimum						0.84	0.91
Median						3.54	1.88
Maximum						26.15	5.11
Standard deviation						4.19	0.71

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.

[2] Design-based standard error (SE) equal to the numerator term in the formulae above.

[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.

SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-19. Student standard errors and design effects—City schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	6,054	55.2	2.03	0.64	10.11	3.18
Student's first language is English (5 levels)	S1LANG1ST	6,056	74.8	2.28	0.56	16.73	4.09
Previous grade (4 levels)	S1GRD0809	6,062	92.3	1.01	0.34	8.72	2.95
Grade in math 8 (6 levels)	S1M8GRADE	5,931	36.0	1.05	0.62	2.84	1.69
Participated in a science competition	S1SCOMPETE	5,966	3.7	0.45	0.24	3.43	1.85
How often reads science books or magazines (4 levels)	S1SBOOKS	5,992	33.0	1.21	0.61	3.94	1.99
Student sees self as math person	S1MPERSON1	6,036	50.9	1.09	0.64	2.87	1.69
Student is taking algebra I in fall 2009	S1ALG1M09	5,532	56.9	2.57	0.67	14.85	3.85
Student is enjoying math class (4 levels)	S1MENJOYING	5,523	48.3	1.02	0.67	2.31	1.52
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	5,464	45.8	1.75	0.67	6.73	2.59
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	5,475	56.8	1.15	0.67	2.97	1.72
Student sees self as science person	S1SPERSON1	6,029	42.7	1.50	0.64	5.57	2.36
Student is taking biology I in fall 2009	S1BIO1S09	5,073	50.0	4.42	0.70	39.61	6.29
Taking science course because likes to be challenged	S1MCHALLENGE	5,494	16.4	0.98	0.50	3.87	1.97
Thinks science course is a waste of time (4 levels)	S1MWASTE	5,502	48.6	1.72	0.67	6.48	2.55
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	5,007	60.9	1.41	0.69	4.15	2.04
Math or science is favorite subject	S1FAVSUBJ	5,958	23.6	0.98	0.55	3.18	1.78
Math or science is least favorite subject	S1LEASTSUBJ	5,906	43.4	1.24	0.65	3.68	1.92
Student never comes to class without books	S1NOBOOKS	5,951	51.4	1.50	0.65	5.33	2.31
Student feels safe at school (4 levels)	S1SAFE	5,971	59.0	1.47	0.64	5.36	2.32
Even if study, cannot afford college (4 levels)	S1AFFORD	5,907	50.6	1.29	0.65	3.95	1.99
Comparison of males and females in science (5 levels)	S1SCICOMP	5,837	64.0	1.13	0.63	3.22	1.80
Participates in Upward Bound	S1UPWARDBND	5,779	3.5	0.65	0.24	7.07	2.66
Whether plans to take SAT (4 levels)	S1SAT	5,823	61.7	1.86	0.64	8.55	2.92

See notes at end of table.

Table G-19. Student standard errors and design effects—City schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	5,901	80.3	1.38	0.52	7.15	2.67
Number of years of high school math expects to take (4 levels)	S1MYRS	5,954	58.5	1.76	0.64	7.60	2.76
Number of years of high school science expects to take (4 levels)	S1SYRS	5,939	44.1	1.83	0.64	8.08	2.84
At age 30 expects to be a manager	X1STU30OCC2 (composite)	5,932	2.0	0.25	0.18	1.86	1.36
At age 30 expects to be in the military	X1STU30OCC2 (composite)	5,932	2.0	0.33	0.18	3.33	1.83
At age 30 expects to be an operative	X1STU30OCC2 (composite)	5,932	0.2!	0.07	0.06	1.69	1.30
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	5,932	1.3	0.38	0.15	6.74	2.60
At age 30 expects to be a technician	X1STU30OCC2 (composite)	5,932	21.9	2.02	0.54	14.19	3.77
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	5,932	29.4	2.06	0.59	12.10	3.48
Student's educational expectations	P1EDUEXPECT	4,420	25.6	1.39	0.66	4.48	2.12
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	5,930	8.3	0.83	0.36	5.31	2.30
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	5,932	83.0	1.00	0.49	4.22	2.06
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	4,095	68.1	1.72	0.73	5.58	2.36
Math theta (raw)	X1TXMTH	3,346	77.8	2.59	0.99	6.82	2.61
Summary statistics							
Mean						6.97	2.48
Minimum						1.69	1.30
Median						5.34	2.31
Maximum						39.61	6.29
Standard deviation						6.52	0.93

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-20. Student standard errors and design effects—Suburban schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	7,624	59.2	1.26	0.56	4.98	2.23
Student's first language is English (5 levels)	S1LANG1ST	7,630	81.0	1.66	0.45	13.63	3.69
Previous grade (4 levels)	S1GRD0809	7,632	94.6	0.49	0.26	3.57	1.89
Grade in math 8 (6 levels)	S1M8GRADE	7,495	40.1	0.99	0.57	3.06	1.75
Participated in a science competition	S1SCOMPETE	7,492	2.5	0.25	0.18	1.97	1.40
How often reads science books or magazines (4 levels)	S1SBOOKS	7,536	32.3	0.77	0.54	2.02	1.42
Student sees self as math person	S1MPERSON1	7,606	53.1	0.93	0.57	2.64	1.63
Student is taking algebra I in fall 2009	S1ALG1M09	6,923	55.7	1.61	0.60	7.24	2.69
Student is enjoying math class (4 levels)	S1MENJOYING	6,902	49.4	1.01	0.60	2.81	1.68
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	6,812	47.9	0.86	0.61	2.00	1.42
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	6,846	57.7	0.79	0.60	1.75	1.32
Student sees self as science person	S1SPERSON1	7,599	43.1	0.84	0.57	2.21	1.49
Student is taking biology I in fall 2009	S1BIO1S09	6,544	40.9	2.54	0.61	17.49	4.18
Taking science course because likes to be challenged	S1MCHALLENGE	6,884	17.0	0.58	0.45	1.64	1.28
Thinks science course is a waste of time (4 levels)	S1MWASTE	6,896	49.0	0.92	0.60	2.33	1.53
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	6,475	59.6	0.94	0.61	2.37	1.54
Math or science is favorite subject	S1FAVSUBJ	7,528	25.0	0.67	0.50	1.78	1.33
Math or science is least favorite subject	S1LEASTSUBJ	7,469	41.3	1.02	0.57	3.18	1.78
Student never comes to class without books	S1NOBOOKS	7,509	54.9	1.01	0.57	3.12	1.77
Student feels safe at school (4 levels)	S1SAFE	7,538	59.1	0.99	0.57	3.05	1.75
Even if study, cannot afford college (4 levels)	S1AFFORD	7,462	50.9	1.03	0.58	3.15	1.78
Comparison of males and females in science (5 levels)	S1SCICOMP	7,372	64.6	1.05	0.56	3.54	1.88
Participates in Upward Bound	S1UPWARDBND	7,296	2.1	0.31	0.17	3.42	1.85
Whether plans to take SAT (4 levels)	S1SAT	7,364	66.4	1.07	0.55	3.77	1.94

See notes at end of table.

Table G-20. Student standard errors and design effects—Suburban schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	7,462	85.1	0.83	0.41	4.06	2.02
Number of years of high school math expects to take (4 levels)	S1MYRS	7,517	63.9	1.41	0.55	6.48	2.55
Number of years of high school science expects to take (4 levels)	S1SYRS	7,480	48.0	1.45	0.58	6.26	2.50
At age 30 expects to be a manager	X1STU30OCC2 (composite)	7,505	2.2	0.24	0.17	2.05	1.43
At age 30 expects to be in the military	X1STU30OCC2 (composite)	7,505	2.4	0.27	0.18	2.30	1.52
At age 30 expects to be an operative	X1STU30OCC2 (composite)	7,505	0.3!	0.08	0.06	1.80	1.34
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	7,505	1.0	0.17	0.11	2.36	1.54
At age 30 expects to be a technician	X1STU30OCC2 (composite)	7,505	18.1	0.61	0.45	1.89	1.37
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	7,505	29.6	0.89	0.53	2.82	1.68
Student's educational expectations	P1EDUEXPECT	5,497	30.2	1.02	0.62	2.72	1.65
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	7,481	8.2	0.51	0.32	2.54	1.59
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	7,507	84.0	0.61	0.42	2.07	1.44
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	5,314	68.5	0.99	0.64	2.43	1.56
Math theta (raw)	X1TXMTH	4,036	78.7	1.88	0.90	4.37	2.09
Summary statistics							
Mean						3.71	1.83
Minimum						1.64	1.28
Median						2.76	1.66
Maximum						17.49	4.18
Standard deviation						3.16	0.61

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-21. Student standard errors and design effects—Town schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	2,569	51.0	2.32	0.99	5.53	2.35
Student's first language is English (5 levels)	S1LANG1ST	2,575	91.7	1.85	0.54	11.62	3.41
Previous grade (4 levels)	S1GRD0809	2,575	91.1	1.47	0.56	6.84	2.62
Grade in math 8 (6 levels)	S1M8GRADE	2,524	36.5	1.36	0.96	2.01	1.42
Participated in a science competition	S1SCOMPETE	2,539	2.8	0.56	0.33	2.91	1.71
How often reads science books or magazines (4 levels)	S1SBOOKS	2,556	31.4	1.17	0.92	1.63	1.28
Student sees self as math person	S1MPERSON1	2,568	50.5	1.97	0.99	3.98	2.00
Student is taking algebra I in fall 2009	S1ALG1M09	2,246	57.7	3.77	1.04	13.07	3.62
Student is enjoying math class (4 levels)	S1MENJOYING	2,237	48.2	1.93	1.06	3.33	1.83
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	2,222	46.2	1.24	1.06	1.38	1.18
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	2,228	56.2	1.63	1.05	2.41	1.55
Student sees self as science person	S1SPERSON1	2,567	39.5	1.45	0.97	2.27	1.51
Student is taking biology I in fall 2009	S1BIO1S09	2,038	29.1	4.87	1.01	23.40	4.84
Taking science course because likes to be challenged	S1MCHALLENGE	2,236	13.1	1.33	0.71	3.49	1.87
Thinks science course is a waste of time (4 levels)	S1MWASTE	2,226	51.0	1.65	1.06	2.42	1.56
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	2,022	61.0	1.41	1.09	1.70	1.30
Math or science is favorite subject	S1FAVSUBJ	2,549	22.8	1.29	0.83	2.41	1.55
Math or science is least favorite subject	S1LEASTSUBJ	2,530	41.9	2.17	0.98	4.89	2.21
Student never comes to class without books	S1NOBOOKS	2,542	53.3	1.85	0.99	3.49	1.87
Student feels safe at school (4 levels)	S1SAFE	2,549	62.7	1.63	0.96	2.88	1.70
Even if study, cannot afford college (4 levels)	S1AFFORD	2,526	47.6	1.57	0.99	2.50	1.58
Comparison of males and females in science (5 levels)	S1SCICOMP	2,494	60.4	2.15	0.98	4.83	2.20
Participates in Upward Bound	S1UPWARDBND	2,469	3.3	0.57	0.36	2.51	1.59
Whether plans to take SAT (4 levels)	S1SAT	2,505	55.4	1.97	0.99	3.92	1.98

See notes at end of table.

Table G-21. Student standard errors and design effects—Town schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	2,526	82.1	1.40	0.76	3.37	1.84
Number of years of high school math expects to take (4 levels)	S1MYRS	2,543	59.5	2.27	0.97	5.43	2.33
Number of years of high school science expects to take (4 levels)	S1SYRS	2,536	42.9	2.73	0.98	7.72	2.78
At age 30 expects to be a manager	X1STU30OCC2 (composite)	2,531	2.9	0.75	0.34	4.97	2.23
At age 30 expects to be in the military	X1STU30OCC2 (composite)	2,531	3.8	0.55	0.38	2.08	1.44
At age 30 expects to be an operative	X1STU30OCC2 (composite)	2,531	0.4!	0.14	0.13	1.12	1.06
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	2,531	1.0	0.28	0.20	2.05	1.43
At age 30 expects to be a technician	X1STU30OCC2 (composite)	2,531	20.3	1.42	0.80	3.14	1.77
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	2,531	27.5	1.44	0.89	2.63	1.62
Student's educational expectations	P1EDUEXPECT	1,803	30.6	1.70	1.09	2.46	1.57
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	2,530	11.9	1.00	0.65	2.43	1.56
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	2,533	80.1	1.08	0.79	1.85	1.36
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	1,811	69.8	1.15	1.08	1.14	1.07
Math theta (raw)	X1TXMTH	1,156	62.6	2.61	1.40	3.45	1.86
Summary statistics							
Mean						4.19	1.91
Minimum						1.12	1.06
Median						2.89	1.70
Maximum						23.40	4.84
Standard deviation						4.10	0.75

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-22. Student standard errors and design effects—Rural schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	5,156	53.2	1.74	0.70	6.23	2.50
Student's first language is English (5 levels)	S1LANG1ST	5,158	89.6	1.57	0.43	13.68	3.70
Previous grade (4 levels)	S1GRD0809	5,158	95.1	0.51	0.30	2.81	1.68
Grade in math 8 (6 levels)	S1M8GRADE	5,042	38.7	0.92	0.69	1.80	1.34
Participated in a science competition	S1SCOMPETE	5,079	3.3	0.48	0.25	3.68	1.92
How often reads science books or magazines (4 levels)	S1SBOOKS	5,101	33.8	1.15	0.66	3.03	1.74
Student sees self as math person	S1MPERSON1	5,137	51.6	1.30	0.70	3.45	1.86
Student is taking algebra I in fall 2009	S1ALG1M09	4,430	59.5	2.26	0.74	9.42	3.07
Student is enjoying math class (4 levels)	S1MENJOYING	4,418	49.1	1.35	0.75	3.24	1.80
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	4,366	50.1	1.26	0.76	2.78	1.67
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	4,377	58.1	1.37	0.75	3.38	1.84
Student sees self as science person	S1SPERSON1	5,135	40.1	0.97	0.68	1.99	1.41
Student is taking biology I in fall 2009	S1BIO1S09	3,972	38.0	4.58	0.77	35.40	5.95
Taking science course because likes to be challenged	S1MCHALLENGE	4,408	15.9	0.87	0.55	2.51	1.58
Thinks science course is a waste of time (4 levels)	S1MWASTE	4,406	49.4	1.33	0.75	3.13	1.77
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	3,909	59.4	0.98	0.79	1.57	1.25
Math or science is favorite subject	S1FAVSUBJ	5,059	24.4	1.18	0.60	3.81	1.95
Math or science is least favorite subject	S1LEASTSUBJ	5,020	41.5	1.17	0.70	2.84	1.68
Student never comes to class without books	S1NOBOOKS	5,041	53.3	1.70	0.70	5.86	2.42
Student feels safe at school (4 levels)	S1SAFE	5,069	58.6	1.32	0.69	3.63	1.91
Even if study, cannot afford college (4 levels)	S1AFFORD	5,015	50.5	1.33	0.71	3.55	1.88
Comparison of males and females in science (5 levels)	S1SCICOMP	4,953	65.3	1.22	0.68	3.25	1.80
Participates in Upward Bound	S1UPWARDBND	4,879	2.7	0.42	0.23	3.38	1.84
Whether plans to take SAT (4 levels)	S1SAT	4,921	60.2	1.54	0.70	4.89	2.21

See notes at end of table.

Table G-22. Student standard errors and design effects—Rural schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	4,994	84.8	0.73	0.51	2.06	1.44
Number of years of high school math expects to take (4 levels)	S1MYRS	5,059	62.2	1.81	0.68	7.04	2.65
Number of years of high school science expects to take (4 levels)	S1SYRS	5,031	42.9	2.11	0.70	9.17	3.03
At age 30 expects to be a manager	X1STU30OCC2 (composite)	5,050	2.3	0.36	0.21	2.89	1.70
At age 30 expects to be in the military	X1STU30OCC2 (composite)	5,050	3.4	0.35	0.26	1.88	1.37
At age 30 expects to be an operative	X1STU30OCC2 (composite)	5,050	0.9	0.23	0.14	2.91	1.71
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	5,050	1.1	0.19	0.14	1.84	1.36
At age 30 expects to be a technician	X1STU30OCC2 (composite)	5,050	19.5	0.95	0.56	2.91	1.71
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	5,050	27.0	1.31	0.63	4.37	2.09
Student's educational expectations	P1EDUEXPECT	3,636	30.8	1.41	0.77	3.40	1.84
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	5,030	9.5	0.74	0.41	3.23	1.80
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	5,041	82.5	0.76	0.54	2.02	1.42
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	3,649	68.7	1.11	0.77	2.10	1.45
Math theta (raw)	X1TXMTH	2,390	71.5	2.61	1.13	5.38	2.32
Summary statistics							
Mean						4.75	2.02
Minimum						1.57	1.25
Median						3.24	1.80
Maximum						35.40	5.95
Standard deviation						5.66	0.84

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-23. Student standard errors and design effects—Male students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	10,858	51.0	0.99	0.48	4.26	2.06
Student's first language is English (5 levels)	S1LANG1ST	10,872	82.9	1.04	0.36	8.23	2.87
Previous grade (4 levels)	S1GRD0809	10,878	92.4	0.51	0.25	3.95	1.99
Grade in math 8 (6 levels)	S1M8GRADE	10,612	38.6	0.79	0.47	2.79	1.67
Participated in a science competition	S1SCOMPETE	10,638	3.4	0.29	0.18	2.76	1.66
How often reads science books or magazines (4 levels)	S1SBOOKS	10,728	30.7	0.74	0.45	2.78	1.67
Student sees self as math person	S1MPERSON1	10,825	56.1	0.86	0.48	3.22	1.80
Student is taking algebra I in fall 2009	S1ALG1M09	9,630	57.2	1.22	0.50	5.89	2.43
Student is enjoying math class (4 levels)	S1MENJOYING	9,602	48.8	0.94	0.51	3.39	1.84
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	9,490	46.4	0.80	0.51	2.45	1.56
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	9,514	56.8	0.72	0.51	2.01	1.42
Student sees self as science person	S1SPERSON1	10,805	44.6	0.85	0.48	3.15	1.78
Student is taking biology I in fall 2009	S1BIO1S09	8,844	41.8	1.68	0.52	10.24	3.20
Taking science course because likes to be challenged	S1MCHALLENGE	9,557	16.0	0.63	0.38	2.83	1.68
Thinks science course is a waste of time (4 levels)	S1MWASTE	9,573	48.2	0.76	0.51	2.21	1.49
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	8,705	57.8	0.85	0.53	2.58	1.61
Math or science is favorite subject	S1FAVSUBJ	10,669	25.0	0.75	0.42	3.22	1.80
Math or science is least favorite subject	S1LEASTSUBJ	10,585	38.1	0.82	0.47	3.03	1.74
Student never comes to class without books	S1NOBOOKS	10,639	49.2	0.88	0.49	3.28	1.81
Student feels safe at school (4 levels)	S1SAFE	10,688	57.6	0.91	0.48	3.62	1.90
Even if study, cannot afford college (4 levels)	S1AFFORD	10,560	50.0	0.90	0.49	3.43	1.85
Comparison of males and females in science (5 levels)	S1SCICOMP	10,409	61.9	0.84	0.48	3.13	1.77
Participates in Upward Bound	S1UPWARDBND	10,279	3.3	0.34	0.18	3.67	1.92
Whether plans to take SAT (4 levels)	S1SAT	10,390	58.7	0.88	0.48	3.34	1.83

See notes at end of table.

Table G-23. Student standard errors and design effects—Male students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	10,559	81.6	0.72	0.38	3.60	1.90
Number of years of high school math expects to take (4 levels)	S1MYRS	10,654	59.7	1.04	0.48	4.78	2.19
Number of years of high school science expects to take (4 levels)	S1SYRS	10,597	42.7	0.91	0.48	3.61	1.90
At age 30 expects to be a manager	X1STU30OCC2 (composite)	10,628	2.9	0.30	0.16	3.46	1.86
At age 30 expects to be in the military	X1STU30OCC2 (composite)	10,628	4.5	0.29	0.20	1.99	1.41
At age 30 expects to be an operative	X1STU30OCC2 (composite)	10,628	0.6	0.12	0.08	2.48	1.57
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	10,628	0.6!	0.24	0.08	10.32	3.21
At age 30 expects to be a technician	X1STU30OCC2 (composite)	10,628	8.9	0.56	0.28	4.18	2.04
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	10,628	34.0	0.85	0.46	3.42	1.85
Student's educational expectations	P1EDUEXPECT	7,678	30.3	0.90	0.53	2.93	1.71
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	10,608	11.1	0.54	0.31	3.09	1.76
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	10,624	81.0	0.66	0.38	3.02	1.74
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	6,972	66.4	1.05	0.57	3.46	1.86
Math theta (raw)	X1TXMTH	5,560	77.6	1.49	0.77	3.74	1.93
Summary statistics							
Mean						3.78	1.90
Minimum						1.99	1.41
Median						3.31	1.82
Maximum						10.32	3.21
Standard deviation						1.89	0.41

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-24. Student standard errors and design effects—Female students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	10,545	60.2	0.87	0.48	3.36	1.83
Student's first language is English (5 levels)	S1LANG1ST	10,547	81.6	0.78	0.38	4.26	2.06
Previous grade (4 levels)	S1GRD0809	10,549	94.7	0.50	0.22	5.27	2.30
Grade in math 8 (6 levels)	S1M8GRADE	10,380	37.5	0.78	0.48	2.68	1.64
Participated in a science competition	S1SCOMPETE	10,438	2.8	0.26	0.16	2.68	1.64
How often reads science books or magazines (4 levels)	S1SBOOKS	10,457	34.8	0.83	0.47	3.20	1.79
Student sees self as math person	S1MPERSON1	10,522	47.4	0.81	0.49	2.78	1.67
Student is taking algebra I in fall 2009	S1ALG1M09	9,501	57.2	1.39	0.51	7.54	2.75
Student is enjoying math class (4 levels)	S1MENJOYING	9,478	48.9	0.99	0.51	3.70	1.92
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	9,374	48.7	1.21	0.52	5.49	2.34
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	9,412	57.8	0.86	0.51	2.86	1.69
Student sees self as science person	S1SPERSON1	10,525	39.1	0.87	0.48	3.30	1.82
Student is taking biology I in fall 2009	S1BIO1S09	8,783	41.9	2.09	0.53	15.70	3.96
Taking science course because likes to be challenged	S1MCHALLENGE	9,465	16.2	0.58	0.38	2.37	1.54
Thinks science course is a waste of time (4 levels)	S1MWASTE	9,457	50.1	1.13	0.51	4.87	2.21
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	8,708	62.5	0.90	0.52	3.01	1.74
Math or science is favorite subject	S1FAVSUBJ	10,425	23.4	0.62	0.41	2.27	1.51
Math or science is least favorite subject	S1LEASTSUBJ	10,340	46.1	0.85	0.49	2.98	1.73
Student never comes to class without books	S1NOBOOKS	10,404	57.2	0.91	0.49	3.53	1.88
Student feels safe at school (4 levels)	S1SAFE	10,439	61.1	0.92	0.48	3.74	1.93
Even if study, cannot afford college (4 levels)	S1AFFORD	10,350	50.7	0.81	0.49	2.70	1.64
Comparison of males and females in science (5 levels)	S1SCICOMP	10,247	66.2	0.74	0.47	2.48	1.58
Participates in Upward Bound	S1UPWARDBND	10,144	2.3	0.30	0.15	3.93	1.98
Whether plans to take SAT (4 levels)	S1SAT	10,223	65.6	0.96	0.47	4.13	2.03

See notes at end of table.

Table G-24. Student standard errors and design effects—Female students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	10,324	84.7	0.74	0.35	4.39	2.10
Number of years of high school math expects to take (4 levels)	S1MYRS	10,419	62.8	1.08	0.47	5.23	2.29
Number of years of high school science expects to take (4 levels)	S1SYRS	10,389	47.3	0.92	0.49	3.51	1.87
At age 30 expects to be a manager	X1STU30OCC2 (composite)	10,390	1.5	0.18	0.12	2.30	1.52
At age 30 expects to be in the military	X1STU30OCC2 (composite)	10,390	0.8	0.15	0.09	2.80	1.67
At age 30 expects to be an operative	X1STU30OCC2 (composite)	10,390	0.2!	0.06	0.04	1.99	1.41
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	10,390	1.6	0.19	0.12	2.55	1.60
At age 30 expects to be a technician	X1STU30OCC2 (composite)	10,390	30.9	1.01	0.45	4.91	2.22
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	10,390	23.4	0.89	0.42	4.57	2.14
Student's educational expectations	P1EDUEXPECT	7,678	27.6	0.82	0.51	2.59	1.61
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	10,363	6.9	0.47	0.25	3.48	1.87
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	10,389	84.7	0.48	0.35	1.82	1.35
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	7,897	70.4	0.78	0.51	2.31	1.52
Math theta (raw)	X1TXMTH	5,368	72.7	1.58	0.75	4.48	2.12
Summary statistics							
Mean						3.84	1.91
Minimum						1.82	1.35
Median						3.33	1.82
Maximum						15.70	3.96
Standard deviation						2.30	0.46

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-25. Student standard errors and design effects—Hispanic students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	3,508	55.5	1.80	0.84	4.60	2.14
Student's first language is English (5 levels)	S1LANG1ST	3,511	45.0	2.15	0.84	6.57	2.56
Previous grade (4 levels)	S1GRD0809	3,514	92.8	0.85	0.44	3.81	1.95
Grade in math 8 (6 levels)	S1M8GRADE	3,431	40.3	1.65	0.84	3.89	1.97
Participated in a science competition	S1SCOMPETE	3,450	2.2	0.39	0.25	2.37	1.54
How often reads science books or magazines (4 levels)	S1SBOOKS	3,475	32.3	1.44	0.79	3.27	1.81
Student sees self as math person	S1MPERSON1	3,498	47.3	1.32	0.84	2.46	1.57
Student is taking algebra I in fall 2009	S1ALG1M09	3,008	62.2	2.28	0.88	6.64	2.58
Student is enjoying math class (4 levels)	S1MENJOYING	3,006	51.3	1.77	0.91	3.77	1.94
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	2,962	46.9	1.49	0.92	2.65	1.63
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	2,974	58.6	1.52	0.90	2.84	1.69
Student sees self as science person	S1SPERSON1	3,499	36.1	1.32	0.81	2.66	1.63
Student is taking biology I in fall 2009	S1BIO1S09	2,746	48.8	2.86	0.95	9.00	3.00
Taking science course because likes to be challenged	S1MCHALLENGE	2,994	12.8	1.04	0.61	2.89	1.70
Thinks science course is a waste of time (4 levels)	S1MWASTE	2,996	49.9	1.67	0.91	3.35	1.83
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	2,705	61.4	1.44	0.94	2.38	1.54
Math or science is favorite subject	S1FAVSUBJ	3,447	22.9	1.27	0.72	3.13	1.77
Math or science is least favorite subject	S1LEASTSUBJ	3,419	45.3	1.72	0.85	4.06	2.01
Student never comes to class without books	S1NOBOOKS	3,437	48.3	1.49	0.85	3.06	1.75
Student feels safe at school (4 levels)	S1SAFE	3,462	63.0	1.63	0.82	3.94	1.99
Even if study, cannot afford college (4 levels)	S1AFFORD	3,411	48.9	1.85	0.86	4.64	2.16
Comparison of males and females in science (5 levels)	S1SCICOMP	3,359	65.4	1.43	0.82	3.05	1.75
Participates in Upward Bound	S1UPWARDBND	3,322	2.6	0.48	0.27	3.09	1.76
Whether plans to take SAT (4 levels)	S1SAT	3,360	52.4	1.78	0.86	4.28	2.07

See notes at end of table.

Table G-25. Student standard errors and design effects—Hispanic students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	3,424	73.9	1.51	0.75	4.06	2.02
Number of years of high school math expects to take (4 levels)	S1MYRS	3,437	52.2	1.78	0.85	4.38	2.09
Number of years of high school science expects to take (4 levels)	S1SYRS	3,425	33.7	1.42	0.81	3.10	1.76
At age 30 expects to be a manager	X1STU30OCC2 (composite)	3,428	1.4	0.27	0.20	1.88	1.37
At age 30 expects to be in the military	X1STU30OCC2 (composite)	3,428	2.4	0.48	0.26	3.37	1.84
At age 30 expects to be an operative	X1STU30OCC2 (composite)	3,428	0.3!	0.12	0.10	1.61	1.27
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	3,428	1.6!	0.58	0.22	7.16	2.68
At age 30 expects to be a technician	X1STU30OCC2 (composite)	3,428	18.1	1.30	0.66	3.93	1.98
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	3,428	32.9	1.87	0.80	5.43	2.33
Student's educational expectations	P1EDUEXPECT	2,407	21.9	1.55	0.84	3.35	1.83
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	3,429	11.5	1.03	0.55	3.58	1.89
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	3,436	83.2	1.31	0.64	4.22	2.06
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	2,295	66.7	2.26	0.98	5.27	2.29
Math theta (raw)	X1TXMTH	1,344	65.3	2.03	1.32	2.39	1.55
Summary statistics							
Mean						3.84	1.93
Minimum						1.61	1.27
Median						3.48	1.86
Maximum						9.00	3.00
Standard deviation						1.52	0.36

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-26. Student standard errors and design effects—Asian students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	1,670	69.2	2.94	1.13	6.75	2.60
Student's first language is English (5 levels)	S1LANG1ST	1,670	36.2	2.58	1.18	4.79	2.19
Previous grade (4 levels)	S1GRD0809	1,672	96.1	0.95	0.48	4.04	2.01
Grade in math 8 (6 levels)	S1M8GRADE	1,633	33.1	2.41	1.17	4.29	2.07
Participated in a science competition	S1SCOMPETE	1,642	9.2	1.67	0.71	5.47	2.34
How often reads science books or magazines (4 levels)	S1SBOOKS	1,656	30.7	1.80	1.13	2.51	1.58
Student sees self as math person	S1MPERSON1	1,662	67.5	1.64	1.15	2.02	1.42
Student is taking algebra I in fall 2009	S1ALG1M09	1,492	30.4	2.54	1.19	4.53	2.13
Student is enjoying math class (4 levels)	S1MENJOYING	1,486	52.2	2.50	1.30	3.72	1.93
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	1,477	44.3	2.60	1.29	4.04	2.01
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	1,475	55.3	2.96	1.30	5.24	2.29
Student sees self as science person	S1SPERSON1	1,660	52.2	2.63	1.23	4.61	2.15
Student is taking biology I in fall 2009	S1BIO1S09	1,427	53.5	5.48	1.32	17.23	4.15
Taking science course because likes to be challenged	S1MCHALLENGE	1,486	28.3	2.84	1.17	5.92	2.43
Thinks science course is a waste of time (4 levels)	S1MWASTE	1,484	47.4	2.30	1.30	3.14	1.77
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	1,413	62.1	2.60	1.29	4.07	2.02
Math or science is favorite subject	S1FAVSUBJ	1,646	33.0	1.96	1.16	2.87	1.69
Math or science is least favorite subject	S1LEASTSUBJ	1,632	33.8	2.55	1.17	4.74	2.18
Student never comes to class without books	S1NOBOOKS	1,646	57.1	2.63	1.22	4.65	2.16
Student feels safe at school (4 levels)	S1SAFE	1,646	54.7	2.44	1.23	3.96	1.99
Even if study, cannot afford college (4 levels)	S1AFFORD	1,630	53.5	1.85	1.24	2.24	1.50
Comparison of males and females in science (5 levels)	S1SCICOMP	1,621	67.3	2.31	1.17	3.92	1.98
Participates in Upward Bound	S1UPWARDBND	1,569	2.8	0.82	0.42	3.89	1.97
Whether plans to take SAT (4 levels)	S1SAT	1,607	75.0	2.66	1.08	6.05	2.46

See notes at end of table.

Table G-26. Student standard errors and design effects—Asian students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	1,625	84.0	2.11	0.91	5.38	2.32
Number of years of high school math expects to take (4 levels)	S1MYRS	1,640	73.4	2.30	1.09	4.45	2.11
Number of years of high school science expects to take (4 levels)	S1SYRS	1,635	55.0	3.07	1.23	6.21	2.49
At age 30 expects to be a manager	X1STU30OCC2 (composite)	1,641	1.6!	0.57	0.31	3.35	1.83
At age 30 expects to be in the military	X1STU30OCC2 (composite)	1,641	0.8!	0.50	0.22	5.41	2.33
At age 30 expects to be an operative	X1STU30OCC2 (composite)	1,641	0.0!	0.02	0.04	0.15	0.39
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	1,641	0.3!	0.19	0.14	1.70	1.31
At age 30 expects to be a technician	X1STU30OCC2 (composite)	1,641	29.4	3.23	1.13	8.22	2.87
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	1,641	36.0	2.78	1.19	5.51	2.35
Student's educational expectations	P1EDUEXPECT	1,147	25.3	2.75	1.29	4.57	2.14
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	1,630	4.0	0.89	0.49	3.34	1.83
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	1,642	89.1	1.75	0.77	5.16	2.27
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	1,042	56.6	2.90	1.54	3.57	1.89
Math theta (raw)	X1TXMTH	1,268	1.1	0.05	0.02	5.86	2.42
Summary statistics							
Mean						4.67	2.09
Minimum						0.15	0.38
Median						4.49	2.12
Maximum						17.23	4.15
Standard deviation						2.58	0.55

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-27. Student standard errors and design effects—Black students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	2,214	47.6	1.99	1.06	3.51	1.87
Student's first language is English (5 levels)	S1LANG1ST	2,214	94.1	1.00	0.50	3.96	1.99
Previous grade (4 levels)	S1GRD0809	2,215	87.9	1.53	0.69	4.91	2.22
Grade in math 8 (6 levels)	S1M8GRADE	2,156	37.7	1.94	1.04	3.47	1.86
Participated in a science competition	S1SCOMPETE	2,172	1.5	0.44	0.26	2.89	1.70
How often reads science books or magazines (4 levels)	S1SBOOKS	2,173	28.6	3.00	0.97	9.61	3.10
Student sees self as math person	S1MPERSON1	2,203	52.6	1.67	1.06	2.45	1.56
Student is taking algebra I in fall 2009	S1ALG1M09	1,894	63.2	2.38	1.11	4.61	2.15
Student is enjoying math class (4 levels)	S1MENJOYING	1,882	47.4	2.22	1.15	3.72	1.93
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	1,855	37.4	2.63	1.12	5.50	2.34
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	1,870	56.8	2.08	1.15	3.30	1.82
Student sees self as science person	S1SPERSON1	2,195	36.5	1.52	1.03	2.19	1.48
Student is taking biology I in fall 2009	S1BIO1S09	1,681	44.0	4.06	1.21	11.24	3.35
Taking science course because likes to be challenged	S1MCHALLENGE	1,876	13.0	1.44	0.78	3.41	1.85
Thinks science course is a waste of time (4 levels)	S1MWASTE	1,880	44.2	2.22	1.15	3.76	1.94
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	1,641	60.7	2.02	1.21	2.82	1.68
Math or science is favorite subject	S1FAVSUBJ	2,158	24.8	1.55	0.93	2.79	1.67
Math or science is least favorite subject	S1LEASTSUBJ	2,130	47.5	1.83	1.08	2.85	1.69
Student never comes to class without books	S1NOBOOKS	2,139	55.8	2.32	1.07	4.67	2.16
Student feels safe at school (4 levels)	S1SAFE	2,162	56.8	1.85	1.07	3.01	1.74
Even if study, cannot afford college (4 levels)	S1AFFORD	2,129	44.9	1.52	1.08	1.98	1.41
Comparison of males and females in science (5 levels)	S1SCICOMP	2,087	52.4	1.59	1.09	2.12	1.46
Participates in Upward Bound	S1UPWARDBND	2,059	8.8	1.25	0.62	3.98	2.00
Whether plans to take SAT (4 levels)	S1SAT	2,076	61.4	1.87	1.07	3.05	1.75

See notes at end of table.

Table G-27. Student standard errors and design effects—Black students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	2,133	85.8	1.16	0.76	2.33	1.53
Number of years of high school math expects to take (4 levels)	S1MYRS	2,168	48.7	1.76	1.07	2.69	1.64
Number of years of high school science expects to take (4 levels)	S1SYRS	2,135	36.1	1.72	1.04	2.74	1.66
At age 30 expects to be a manager	X1STU30OCC2 (composite)	2,143	4.3	0.74	0.44	2.84	1.69
At age 30 expects to be in the military	X1STU30OCC2 (composite)	2,143	1.8	0.47	0.29	2.68	1.64
At age 30 expects to be an operative	X1STU30OCC2 (composite)	2,143	0.2!	0.12	0.09	1.64	1.28
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	2,143	0.9!	0.28	0.20	1.83	1.35
At age 30 expects to be a technician	X1STU30OCC2 (composite)	2,143	22.8	2.55	0.91	7.92	2.81
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	2,143	22.9	2.00	0.91	4.87	2.21
Student's educational expectations	P1EDUEXPECT	1,431	18.1	1.83	1.02	3.22	1.80
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	2,143	5.5	0.81	0.50	2.69	1.64
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	2,138	80.2	1.30	0.86	2.28	1.51
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	1,644	77.5	1.53	1.03	2.22	1.49
Math theta (raw)	X1TXMTH	715	56.2	3.10	1.74	3.18	1.78
Summary statistics							
Mean						3.66	1.86
Minimum						1.64	1.28
Median						3.03	1.74
Maximum						11.24	3.35
Standard deviation						2.01	0.44

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-28. Student standard errors and design effects—White students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	11,831	56.7	0.72	0.46	2.49	1.58
Student's first language is English (5 levels)	S1LANG1ST	11,840	97.1	0.28	0.16	3.24	1.80
Previous grade (4 levels)	S1GRD0809	11,843	95.3	0.36	0.19	3.39	1.84
Grade in math 8 (6 levels)	S1M8GRADE	11,633	37.5	0.63	0.45	1.94	1.39
Participated in a science competition	S1SCOMPETE	11,658	3.3	0.30	0.17	3.27	1.81
How often reads science books or magazines (4 levels)	S1SBOOKS	11,716	34.5	0.68	0.44	2.39	1.54
Student sees self as math person	S1MPERSON1	11,810	52.5	0.79	0.46	2.92	1.71
Student is taking algebra I in fall 2009	S1ALG1M09	10,776	54.9	1.05	0.48	4.78	2.19
Student is enjoying math class (4 levels)	S1MENJOYING	10,751	48.2	0.73	0.48	2.32	1.52
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	10,633	51.2	0.68	0.49	1.97	1.41
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	10,678	57.4	0.69	0.48	2.07	1.44
Student sees self as science person	S1SPERSON1	11,804	44.4	0.66	0.46	2.06	1.44
Student is taking biology I in fall 2009	S1BIO1S09	9,969	38.2	1.75	0.49	12.86	3.59
Taking science course because likes to be challenged	S1MCHALLENGE	10,713	17.1	0.58	0.36	2.55	1.60
Thinks science course is a waste of time (4 levels)	S1MWASTE	10,718	50.6	0.68	0.48	1.96	1.40
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	9,868	60.1	0.67	0.49	1.83	1.35
Math or science is favorite subject	S1FAVSUBJ	11,687	24.1	0.56	0.40	1.98	1.41
Math or science is least favorite subject	S1LEASTSUBJ	11,607	39.4	0.65	0.45	2.08	1.44
Student never comes to class without books	S1NOBOOKS	11,671	54.8	0.82	0.46	3.15	1.77
Student feels safe at school (4 levels)	S1SAFE	11,703	58.9	0.80	0.46	3.13	1.77
Even if study, cannot afford college (4 levels)	S1AFFORD	11,614	52.5	0.65	0.46	1.99	1.41
Comparison of males and females in science (5 levels)	S1SCICOMP	11,483	66.6	0.61	0.44	1.94	1.39
Participates in Upward Bound	S1UPWARDBND	11,386	1.3	0.13	0.11	1.56	1.25
Whether plans to take SAT (4 levels)	S1SAT	11,469	65.9	0.74	0.44	2.83	1.68

See notes at end of table.

Table G-28. Student standard errors and design effects—White students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	11,581	86.9	0.44	0.31	2.00	1.41
Number of years of high school math expects to take (4 levels)	S1MYRS	11,677	68.7	0.84	0.43	3.85	1.96
Number of years of high school science expects to take (4 levels)	S1SYRS	11,644	52.0	0.89	0.46	3.73	1.93
At age 30 expects to be a manager	X1STU30OCC2 (composite)	11,664	2.1	0.19	0.13	2.05	1.43
At age 30 expects to be in the military	X1STU30OCC2 (composite)	11,664	3.1	0.21	0.16	1.75	1.32
At age 30 expects to be an operative	X1STU30OCC2 (composite)	11,664	0.5	0.11	0.07	2.57	1.60
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	11,664	1.0	0.12	0.09	1.81	1.35
At age 30 expects to be a technician	X1STU30OCC2 (composite)	11,664	19.2	0.55	0.37	2.28	1.51
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	11,664	28.6	0.68	0.42	2.63	1.62
Student's educational expectations	P1EDUEXPECT	8,865	33.7	0.75	0.50	2.21	1.49
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	11,626	9.0	0.41	0.27	2.34	1.53
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	11,654	83.1	0.48	0.35	1.89	1.37
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	8,272	67.2	0.70	0.52	1.82	1.35
Math theta (raw)	X1TXMTH	6,518	78.4	1.22	0.70	3.05	1.75
Summary statistics							
Mean						2.75	1.61
Minimum						1.56	1.25
Median						2.30	1.52
Maximum						12.86	3.59
Standard deviation						1.82	0.39

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-29. Student standard errors and design effects—Multiracial students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	1,907	56.8	1.88	1.14	2.74	1.66
Student's first language is English (5 levels)	S1LANG1ST	1,911	93.1	0.90	0.58	2.38	1.54
Previous grade (4 levels)	S1GRD0809	1,910	93.0	1.02	0.58	3.07	1.75
Grade in math 8 (6 levels)	S1M8GRADE	1,872	36.4	1.76	1.11	2.50	1.58
Participated in a science competition	S1SCOMPETE	1,886	4.4	0.62	0.47	1.71	1.31
How often reads science books or magazines (4 levels)	S1SBOOKS	1,895	31.5	1.77	1.07	2.74	1.66
Student sees self as math person	S1MPERSON1	1,905	51.0	2.06	1.15	3.23	1.80
Student is taking algebra I in fall 2009	S1ALG1M09	1,735	60.1	2.06	1.18	3.06	1.75
Student is enjoying math class (4 levels)	S1MENJOYING	1,729	45.8	2.34	1.20	3.80	1.95
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	1,713	45.4	2.00	1.20	2.76	1.66
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	1,704	54.8	2.10	1.21	3.04	1.74
Student sees self as science person	S1SPERSON1	1,900	46.3	1.99	1.14	3.03	1.74
Student is taking biology I in fall 2009	S1BIO1S09	1,593	39.0	2.85	1.22	5.43	2.33
Taking science course because likes to be challenged	S1MCHALLENGE	1,728	19.2	1.51	0.95	2.54	1.60
Thinks science course is a waste of time (4 levels)	S1MWASTE	1,729	46.7	2.03	1.20	2.87	1.69
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	1,577	55.1	1.98	1.25	2.49	1.58
Math or science is favorite subject	S1FAVSUBJ	1,886	22.6	1.48	0.96	2.36	1.54
Math or science is least favorite subject	S1LEASTSUBJ	1,871	43.7	1.93	1.15	2.82	1.68
Student never comes to class without books	S1NOBOOKS	1,882	52.1	1.88	1.15	2.68	1.64
Student feels safe at school (4 levels)	S1SAFE	1,886	57.5	2.14	1.14	3.53	1.88
Even if study, cannot afford college (4 levels)	S1AFFORD	1,860	48.3	1.99	1.16	2.95	1.72
Comparison of males and females in science (5 levels)	S1SCICOMP	1,851	63.6	1.84	1.12	2.71	1.65
Participates in Upward Bound	S1UPWARDBND	1,829	2.8	0.63	0.39	2.71	1.65
Whether plans to take SAT (4 levels)	S1SAT	1,847	62.1	1.95	1.13	2.99	1.73

See notes at end of table.

Table G-29. Student standard errors and design effects—Multiracial students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	1,859	81.6	2.06	0.90	5.23	2.29
Number of years of high school math expects to take (4 levels)	S1MYRS	1,883	58.0	2.24	1.14	3.86	1.97
Number of years of high school science expects to take (4 levels)	S1SYRS	1,880	44.8	1.93	1.15	2.83	1.68
At age 30 expects to be a manager	X1STU30OCC2 (composite)	1,879	2.6	0.52	0.37	2.00	1.41
At age 30 expects to be in the military	X1STU30OCC2 (composite)	1,879	3.0	0.68	0.40	2.93	1.71
At age 30 expects to be an operative	X1STU30OCC2 (composite)	1,879	0.3!	0.13	0.13	1.11	1.05
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	1,879	0.8!	0.29	0.21	1.95	1.40
At age 30 expects to be a technician	X1STU30OCC2 (composite)	1,879	20.3	1.45	0.93	2.43	1.56
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	1,879	22.7	1.65	0.97	2.91	1.71
Student's educational expectations	P1EDUEXPECT	1,322	33.9	2.57	1.30	3.89	1.97
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	1,879	8.9	1.60	0.66	5.94	2.44
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	1,880	82.0	1.59	0.89	3.20	1.79
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	1,434	70.7	2.60	1.20	4.67	2.16
Math theta (raw)	X1TXMTH	982	68.6	2.85	1.74	2.69	1.64
Summary statistics							
Mean						3.05	1.73
Minimum						1.10	1.05
Median						2.85	1.69
Maximum						5.94	2.44
Standard deviation						0.97	0.27

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-30. Student standard errors and design effects—Low percentile SES students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	3,423	44.8	1.61	0.85	3.59	1.90
Student's first language is English (5 levels)	S1LANG1ST	3,429	61.6	2.07	0.83	6.21	2.49
Previous grade (4 levels)	S1GRD0809	3,431	89.0	1.08	0.53	4.08	2.02
Grade in math 8 (6 levels)	S1M8GRADE	3,317	38.2	1.47	0.84	3.05	1.75
Participated in a science competition	S1SCOMPETE	3,376	1.2	0.25	0.18	1.79	1.34
How often reads science books or magazines (4 levels)	S1SBOOKS	3,378	30.8	1.50	0.79	3.55	1.88
Student sees self as math person	S1MPERSON1	3,407	47.0	1.56	0.86	3.31	1.82
Student is taking algebra I in fall 2009	S1ALG1M09	2,806	63.1	2.36	0.91	6.68	2.59
Student is enjoying math class (4 levels)	S1MENJOYING	2,791	50.9	1.66	0.95	3.09	1.76
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	2,749	45.8	1.61	0.95	2.86	1.69
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	2,763	60.2	1.39	0.93	2.22	1.49
Student sees self as science person	S1SPERSON1	3,395	34.3	1.29	0.82	2.52	1.59
Student is taking biology I in fall 2009	S1BIO1S09	2,495	39.3	2.99	0.98	9.31	3.05
Taking science course because likes to be challenged	S1MCHALLENGE	2,772	10.9	0.95	0.59	2.55	1.60
Thinks science course is a waste of time (4 levels)	S1MWASTE	2,769	51.3	1.85	0.95	3.78	1.95
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	2,455	60.7	2.14	0.99	4.72	2.17
Math or science is favorite subject	S1FAVSUBJ	3,352	23.2	0.97	0.73	1.77	1.33
Math or science is least favorite subject	S1LEASTSUBJ	3,323	45.3	1.56	0.86	3.25	1.80
Student never comes to class without books	S1NOBOOKS	3,340	50.2	1.50	0.87	3.00	1.73
Student feels safe at school (4 levels)	S1SAFE	3,359	61.0	1.47	0.84	3.03	1.74
Even if study, cannot afford college (4 levels)	S1AFFORD	3,297	44.5	1.77	0.87	4.17	2.04
Comparison of males and females in science (5 levels)	S1SCICOMP	3,247	61.7	1.26	0.85	2.18	1.48
Participates in Upward Bound	S1UPWARDBND	3,218	4.6	0.75	0.37	4.05	2.01
Whether plans to take SAT (4 levels)	S1SAT	3,224	45.5	1.59	0.88	3.30	1.82

See notes at end of table.

Table G-30. Student standard errors and design effects—Low percentile SES students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	3,310	72.1	1.29	0.78	2.74	1.66
Number of years of high school math expects to take (4 levels)	S1MYRS	3,338	47.5	1.64	0.86	3.58	1.89
Number of years of high school science expects to take (4 levels)	S1SYRS	3,323	29.3	1.22	0.79	2.40	1.55
At age 30 expects to be a manager	X1STU30OCC2 (composite)	3,327	2.0	0.35	0.24	2.15	1.47
At age 30 expects to be in the military	X1STU30OCC2 (composite)	3,327	2.8	0.47	0.29	2.67	1.63
At age 30 expects to be an operative	X1STU30OCC2 (composite)	3,327	0.6	0.15	0.13	1.23	1.11
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	3,327	1.6!	0.63	0.22	8.16	2.86
At age 30 expects to be a technician	X1STU30OCC2 (composite)	3,327	18.7	1.31	0.68	3.75	1.94
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	3,327	31.7	1.69	0.81	4.40	2.10
Student's educational expectations	P1EDUEXPECT	2,559	15.6	1.21	0.72	2.86	1.69
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	3,308	15.7	1.15	0.63	3.30	1.82
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	3,323	78.4	1.35	0.71	3.60	1.90
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	2,264	70.6	1.50	0.96	2.46	1.57
Math theta (raw)	X1TXMTH	931	52.6	2.55	1.40	3.31	1.82
Summary statistics							
Mean						3.54	1.84
Minimum						1.23	1.11
Median						3.27	1.81
Maximum						9.31	3.05
Standard deviation						1.64	0.39

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-31. Student standard errors and design effects—Middle percentile SES students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	12,471	56.1	0.87	0.44	3.79	1.95
Student's first language is English (5 levels)	S1LANG1ST	12,476	86.4	0.77	0.31	6.24	2.50
Previous grade (4 levels)	S1GRD0809	12,481	93.5	0.45	0.22	4.17	2.04
Grade in math 8 (6 levels)	S1M8GRADE	12,226	39.2	0.70	0.44	2.48	1.58
Participated in a science competition	S1SCOMPETE	12,283	2.8	0.25	0.15	2.85	1.69
How often reads science books or magazines (4 levels)	S1SBOOKS	12,332	32.3	0.73	0.42	3.01	1.74
Student sees self as math person	S1MPERSON1	12,435	51.2	0.70	0.45	2.46	1.57
Student is taking algebra I in fall 2009	S1ALG1M09	11,151	60.4	1.16	0.46	6.32	2.51
Student is enjoying math class (4 levels)	S1MENJOYING	11,125	47.6	0.76	0.47	2.59	1.61
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	10,999	47.5	0.80	0.48	2.81	1.68
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	11,029	57.1	0.68	0.47	2.06	1.44
Student sees self as science person	S1SPERSON1	12,428	40.6	0.74	0.44	2.85	1.69
Student is taking biology I in fall 2009	S1BIO1S09	10,216	39.6	1.82	0.48	14.10	3.76
Taking science course because likes to be challenged	S1MCHALLENGE	11,098	14.9	0.49	0.34	2.13	1.46
Thinks science course is a waste of time (4 levels)	S1MWASTE	11,101	48.5	0.97	0.47	4.15	2.04
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	10,081	60.4	0.69	0.49	2.02	1.42
Math or science is favorite subject	S1FAVSUBJ	12,302	23.5	0.60	0.38	2.45	1.57
Math or science is least favorite subject	S1LEASTSUBJ	12,192	43.2	0.93	0.45	4.29	2.07
Student never comes to class without books	S1NOBOOKS	12,275	53.2	0.90	0.45	4.01	2.00
Student feels safe at school (4 levels)	S1SAFE	12,322	60.5	0.67	0.44	2.29	1.51
Even if study, cannot afford college (4 levels)	S1AFFORD	12,192	51.0	0.72	0.45	2.51	1.59
Comparison of males and females in science (5 levels)	S1SCICOMP	12,058	63.7	0.65	0.44	2.20	1.48
Participates in Upward Bound	S1UPWARDBND	11,917	2.8	0.27	0.15	3.26	1.81
Whether plans to take SAT (4 levels)	S1SAT	12,032	61.9	0.80	0.44	3.23	1.80

See notes at end of table.

Table G-31. Student standard errors and design effects—Middle percentile SES students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	12,195	83.0	0.64	0.34	3.58	1.89
Number of years of high school math expects to take (4 levels)	S1MYRS	12,296	60.0	1.02	0.44	5.32	2.31
Number of years of high school science expects to take (4 levels)	S1SYRS	12,234	43.8	0.89	0.45	3.96	1.99
At age 30 expects to be a manager	X1STU30OCC2 (composite)	12,256	2.4	0.22	0.14	2.45	1.57
At age 30 expects to be in the military	X1STU30OCC2 (composite)	12,256	3.0	0.23	0.16	2.17	1.47
At age 30 expects to be an operative	X1STU30OCC2 (composite)	12,256	0.4	0.08	0.06	2.05	1.43
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	12,256	1.0	0.12	0.09	1.73	1.31
At age 30 expects to be a technician	X1STU30OCC2 (composite)	12,256	19.8	0.83	0.36	5.33	2.31
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	12,256	27.7	0.77	0.40	3.63	1.90
Student's educational expectations	P1EDUEXPECT	8,077	31.8	0.83	0.52	2.55	1.60
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	12,237	9.0	0.39	0.26	2.25	1.50
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	12,260	82.1	0.57	0.35	2.67	1.63
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	8,809	69.6	0.74	0.49	2.29	1.51
Math theta (raw)	X1TXMTH	5,854	67.2	1.36	0.67	4.16	2.04
Summary statistics							
Mean						3.48	1.81
Minimum						1.73	1.31
Median						2.83	1.68
Maximum						14.10	3.76
Standard deviation						2.12	0.44

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-32. Student standard errors and design effects—High percentile SES students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Student's birth year	S1BIRTHYR	5,509	64.4	1.14	0.65	3.11	1.76
Student's first language is English (5 levels)	S1LANG1ST	5,514	90.1	0.92	0.40	5.17	2.27
Previous grade (4 levels)	S1GRD0809	5,515	98.2	0.24	0.18	1.77	1.33
Grade in math 8 (6 levels)	S1M8GRADE	5,449	34.6	0.98	0.64	2.33	1.53
Participated in a science competition	S1SCOMPETE	5,417	6.0	0.58	0.32	3.24	1.80
How often reads science books or magazines (4 levels)	S1SBOOKS	5,475	36.0	1.06	0.65	2.67	1.63
Student sees self as math person	S1MPERSON1	5,505	58.0	1.12	0.67	2.83	1.68
Student is taking algebra I in fall 2009	S1ALG1M09	5,174	43.2	1.56	0.69	5.12	2.26
Student is enjoying math class (4 levels)	S1MENJOYING	5,164	50.6	1.10	0.70	2.52	1.59
Student thinks math class will be useful in career (4 levels)	S1MUSEJOB	5,116	49.2	1.17	0.70	2.78	1.67
Confident can do excellent job on math tests (4 levels)	S1MASSEXCL	5,134	55.7	1.22	0.69	3.12	1.77
Student sees self as science person	S1SPERSON1	5,507	52.8	1.02	0.67	2.32	1.52
Student is taking biology I in fall 2009	S1BIO1S09	4,916	49.8	2.19	0.71	9.38	3.06
Taking science course because likes to be challenged	S1MCHALLENGE	5,152	24.0	0.90	0.60	2.30	1.52
Thinks science course is a waste of time (4 levels)	S1MWASTE	5,160	49.3	1.23	0.70	3.12	1.77
Confident can do excellent job on science assignments (4 levels)	S1SASSEXCL	4,877	59.1	1.21	0.70	2.94	1.71
Math or science is favorite subject	S1FAVSUBJ	5,440	27.1	0.90	0.60	2.24	1.50
Math or science is least favorite subject	S1LEASTSUBJ	5,410	35.6	1.15	0.65	3.13	1.77
Student never comes to class without books	S1NOBOOKS	5,428	56.1	1.19	0.67	3.12	1.77
Student feels safe at school (4 levels)	S1SAFE	5,446	54.4	1.25	0.68	3.41	1.85
Even if study, cannot afford college (4 levels)	S1AFFORD	5,421	53.9	1.10	0.68	2.63	1.62
Comparison of males and females in science (5 levels)	S1SCICOMP	5,351	67.3	1.00	0.64	2.42	1.56
Participates in Upward Bound	S1UPWARDBND	5,288	1.1	0.24	0.15	2.74	1.66
Whether plans to take SAT (4 levels)	S1SAT	5,357	78.5	1.03	0.56	3.36	1.83

See notes at end of table.

Table G-32. Student standard errors and design effects—High percentile SES students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
How sure will graduate from high school (4 levels)	S1SUREHSGRAD	5,378	94.3	0.52	0.32	2.66	1.63
Number of years of high school math expects to take (4 levels)	S1MYRS	5,439	78.2	1.06	0.56	3.60	1.90
Number of years of high school science expects to take (4 levels)	S1SYRS	5,429	63.2	1.25	0.66	3.63	1.91
At age 30 expects to be a manager	X1STU30OCC2 (composite)	5,435	2.0	0.24	0.19	1.63	1.28
At age 30 expects to be in the military	X1STU30OCC2 (composite)	5,435	1.5	0.29	0.17	3.14	1.77
At age 30 expects to be an operative	X1STU30OCC2 (composite)	5,435	0.2!	0.10	0.07	2.16	1.47
At age 30 expects to be a clergyman	X1STU30OCC2 (composite)	5,435	0.8	0.14	0.12	1.42	1.19
At age 30 expects to be a technician	X1STU30OCC2 (composite)	5,435	21.5	1.01	0.56	3.26	1.80
At age 30 doesn't know what to be	X1STU30OCC2 (composite)	5,435	28.7	0.99	0.61	2.60	1.61
Student's educational expectations	P1EDUEXPECT	4,720	33.5	1.08	0.69	2.47	1.57
Student's belief in ability to complete bachelor's degree	S1ABILITYBA	5,426	2.5	0.29	0.21	1.80	1.34
Student would be disappointed if did not have bachelor's degree by age 30	S1BAAGE30	5,430	89.5	0.63	0.42	2.32	1.53
How much student has thought about occupation at age 30 (4 levels)	S1OCC30THINK	3,796	63.7	1.27	0.78	2.63	1.62
Math theta (raw)	X1TXMTH	4,143	96.4	1.80	0.96	3.51	1.87
Summary statistics							
Mean						3.01	1.71
Minimum						1.42	1.19
Median						2.76	1.66
Maximum						9.38	3.06
Standard deviation						1.31	0.32

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample standard error (SE) equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-33. Parent standard errors and design effects—overall

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	16,415	72.64	0.71	0.35	4.14	2.04
Student lives with mother and father	x1parpattern	16,429	56.34	0.70	0.39	3.28	1.81
Student lives with parent questionnaire respondent all of the time	P1HHTIME	15,437	92.50	0.40	0.21	3.63	1.91
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	15,446	46.05	0.74	0.40	3.40	1.84
Parent's age (calculated from birth year)	P1YRBORN1	15,551	44.21	0.11	0.06	4.14	2.04
Whether respondent was born in the United States (3 levels)	P1USBORN1	15,644	78.17	0.81	0.33	6.00	2.45
Whether a language other than English is regularly spoken in home	P1HOMELANG	15,642	23.64	0.80	0.34	5.49	2.34
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	15,428	89.04	0.66	0.25	6.91	2.63
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	16,245	43.29	0.82	0.39	4.48	2.12
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	16,429	36.88	1.05	0.38	7.78	2.79
Whether parent respondent is currently employed	P1JOBNOW1	15,681	71.77	0.70	0.36	3.77	1.94
Mother's occupation	X1MOMOCC2 (composite)	14,596	27.90	0.64	0.37	2.95	1.72
Father's occupation	X1DADOCC2 (composite)	12,621	17.41	0.56	0.34	2.77	1.66
Whether own or rent home (3 levels)	P1OWNHOME	15,362	70.42	0.84	0.37	5.22	2.28
Whether student ever stopped attending school for a month or more	P1DROPOUT	15,446	2.67	0.23	0.13	3.05	1.75
Whether student ever suspended or expelled	P1SUSPEND	15,447	14.31	0.56	0.28	3.98	1.99
Whether student skipped a grade	P1SKIPGRD	15,454	1.47	0.18	0.10	3.33	1.82
Student was held back a grade	P1REPEATGRD	15,480	12.70	0.58	0.27	4.63	2.15
Student changed schools two times since kindergarten	P1CHANGESCH	15,411	11.16	0.47	0.25	3.49	1.87
How often parent helps with homework (5 levels)	P1HWOFTEN	15,389	32.93	0.62	0.38	2.66	1.63

See notes at end of table.

Table G-33. Parent standard errors and design effects—overall—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	15,335	40.29	0.59	0.40	2.20	1.48
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	14,447	72.87	0.54	0.37	2.12	1.46
Parent attended a school science fair	P1SCIFAIR	15,136	16.55	0.61	0.30	4.10	2.03
Parents have begun to prepare for student's education after high school	P1PREPPAY	11,305	66.89	0.92	0.44	4.36	2.09
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	15,356	28.88	0.63	0.37	3.01	1.74
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	14,125	78.83	0.65	0.34	3.61	1.90
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	14,102	50.49	1.15	0.42	7.46	2.73
Summary statistics							
Mean						4.15	2.01
Minimum						2.12	1.46
Median						3.77	1.94
Maximum						7.78	2.79
Standard deviation						1.49	0.35

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-34. Parent standard errors and design effects—Public schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	13,156	72.72	0.74	0.39	3.67	1.92
Student lives with mother and father	x1parpattern	13,168	54.77	0.76	0.43	3.08	1.75
Student lives with parent questionnaire respondent all of the time	P1HHTIME	12,331	92.51	0.42	0.24	3.14	1.77
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	12,337	45.89	0.80	0.45	3.18	1.78
Parent's age (calculated from birth year)	P1YRBORN1	12,431	44.00	0.12	0.06	3.46	1.86
Whether respondent was born in the United States (3 levels)	P1USBORN1	12,498	77.64	0.86	0.37	5.35	2.31
Whether a language other than English is regularly spoken in home	P1HOMELANG	12,497	24.27	0.86	0.38	4.98	2.23
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	12,326	88.51	0.71	0.29	6.04	2.46
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	13,000	44.77	0.88	0.44	4.04	2.01
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	13,168	34.13	1.11	0.41	7.21	2.69
Whether parent respondent is currently employed	P1JOBNOW1	12,533	71.50	0.74	0.40	3.36	1.83
Mother's occupation	X1MOMOCC2 (composite)	11,561	26.83	0.68	0.41	2.71	1.65
Father's occupation	X1DADOCC2 (composite)	9,850	16.51	0.60	0.37	2.57	1.60
Whether own or rent home (3 levels)	P1OWNHOME	12,267	68.91	0.91	0.42	4.74	2.18
Whether student ever stopped attending school for a month or more	P1DROPOUT	12,330	2.77	0.24	0.15	2.63	1.62
Whether student ever suspended or expelled	P1SUSPEND	12,332	15.12	0.60	0.32	3.47	1.86
Whether student skipped a grade	P1SKIPGRD	12,337	1.47	0.19	0.11	3.00	1.73
Student was held back a grade	P1REPEATGRD	12,357	13.31	0.61	0.31	4.05	2.01
Student changed schools two times since kindergarten	P1CHANGESCH	12,295	11.14	0.50	0.28	3.11	1.76
How often parent helps with homework (5 levels)	P1HWOFTEN	12,278	33.07	0.65	0.42	2.33	1.53

See notes at end of table.

Table G-34. Parent standard errors and design effects—Public schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	12,235	40.55	0.63	0.44	1.99	1.41
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	11,507	72.90	0.57	0.41	1.90	1.38
Parent attended a school science fair	P1SCIFAIR	12,073	15.87	0.66	0.33	3.88	1.97
Parents have begun to prepare for student's education after high school	P1PREPPAY	8,705	65.84	0.96	0.51	3.55	1.88
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	12,247	28.74	0.67	0.41	2.70	1.64
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	11,056	78.26	0.69	0.39	3.10	1.76
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	11,034	48.21	1.23	0.48	6.66	2.58
Summary statistics							
Mean						3.70	1.90
Minimum						1.90	1.38
Median						3.36	1.83
Maximum						7.21	2.69
Standard deviation						1.35	0.33

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-35. Parent standard errors and design effects—Private schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	3,259	71.67	1.49	0.79	3.54	1.88
Student lives with mother and father	x1parpattern	3,261	76.53	1.76	0.74	5.61	2.37
Student lives with parent questionnaire respondent all of the time	P1HHTIME	3,106	92.36	1.09	0.48	5.24	2.29
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	3,109	48.01	2.40	0.90	7.15	2.67
Parent's age (calculated from birth year)	P1YRBORN1	3,120	46.82	0.28	0.11	7.22	2.69
Whether respondent was born in the United States (3 levels)	P1USBORN1	3,146	84.70	2.28	0.64	12.62	3.55
Whether a language other than English is regularly spoken in home	P1HOMELANG	3,145	15.78	2.14	0.65	10.86	3.30
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	3,102	95.70	0.95	0.36	6.80	2.61
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	3,245	24.36	2.36	0.75	9.82	3.13
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	3,261	72.06	2.54	0.79	10.46	3.23
Whether parent respondent is currently employed	P1JOBNOW1	3,148	75.11	1.48	0.77	3.69	1.92
Mother's occupation	X1MOMOCC2 (composite)	3,035	40.73	1.66	0.89	3.47	1.86
Father's occupation	X1DADOCC2 (composite)	2,771	27.04	1.60	0.84	3.58	1.89
Whether own or rent home (3 levels)	P1OWNHOME	3,095	89.30	1.09	0.56	3.83	1.96
Whether student ever stopped attending school for a month or more	P1DROPOUT	3,116	1.34	0.34	0.21	2.65	1.63
Whether student ever suspended or expelled	P1SUSPEND	3,115	4.28	0.84	0.36	5.31	2.31
Whether student skipped a grade	P1SKIPGRD	3,117	1.41	0.35	0.21	2.68	1.64
Student was held back a grade	P1REPEATGRD	3,123	5.20	0.90	0.40	5.13	2.27
Student changed schools two times since kindergarten	P1CHANGESCH	3,116	11.48	0.87	0.57	2.30	1.52
How often parent helps with homework (5 levels)	P1HWOFTEN	3,111	31.15	1.59	0.83	3.67	1.92

See notes at end of table.

Table G-35. Parent standard errors and design effects—Private schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	31,00	37.16	1.67	0.87	3.70	1.92
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	2,940	72.50	1.83	0.82	4.95	2.22
Parent attended a school science fair	P1SCIFAIR	3,063	24.89	2.15	0.78	7.54	2.75
Parents have begun to prepare for student's education after high school	P1PREPPAY	2,600	77.71	1.85	0.82	5.13	2.27
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	3,109	30.70	1.85	0.83	4.99	2.23
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	3,069	85.36	1.49	0.64	5.42	2.33
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	3,068	76.37	2.97	0.77	14.96	3.87
Summary statistics							
Mean						6.01	2.38
Minimum						2.30	1.52
Median						5.13	2.27
Maximum						14.96	3.87
Standard deviation						3.21	0.61

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-36. Parent standard errors and design effects—Northeast schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	2,592	74.69	1.67	0.85	3.80	1.95
Student lives with mother and father	x1parpattern	2,596	58.17	3.28	0.97	11.44	3.38
Student lives with parent questionnaire respondent all of the time	P1HHTIME	2,434	93.05	1.02	0.52	3.91	1.98
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	2,437	45.62	2.95	1.01	8.54	2.92
Parent's age (calculated from birth year)	P1YRBORN1	2,443	44.68	0.42	0.14	9.39	3.06
Whether respondent was born in the United States (3 levels)	P1USBORN1	2,468	76.52	2.61	0.85	9.32	3.05
Whether a language other than English is regularly spoken in home	P1HOMELANG	2,469	22.96	2.33	0.85	7.57	2.75
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	2,435	90.85	1.02	0.58	3.05	1.75
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	2,565	41.53	2.06	0.97	4.47	2.11
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	2,596	41.72	3.46	0.97	12.76	3.57
Whether parent respondent is currently employed	P1JOBNOW1	2,473	73.64	2.46	0.89	7.71	2.78
Mother's occupation	X1MOMOCC2 (composite)	2,336	31.86	1.55	0.96	2.60	1.61
Father's occupation	X1DADOCC2 (composite)	2,025	18.82	1.50	0.87	2.97	1.72
Whether own or rent home (3 levels)	P1OWNHOME	2,419	69.89	4.57	0.93	24.00	4.90
Whether student ever stopped attending school for a month or more	P1DROPOUT	2,439	2.36	0.60	0.31	3.75	1.94
Whether student ever suspended or expelled	P1SUSPEND	2,437	12.39	2.51	0.67	14.17	3.76
Whether student skipped a grade	P1SKIPGRD	2,440	0.68!	0.22	0.17	1.70	1.30
Student was held back a grade	P1REPEATGRD	2,445	12.02	1.78	0.66	7.29	2.70
Student changed schools two times since kindergarten	P1CHANGESCH	2,437	9.60	1.14	0.60	3.62	1.90
How often parent helps with homework (5 levels)	P1HWOFTEN	2,430	29.97	1.73	0.93	3.46	1.86

See notes at end of table.

Table G-36. Parent standard errors and design effects—Northeast schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	2,425	40.16	1.93	1.00	3.75	1.94
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	2,260	74.88	1.16	0.91	1.62	1.27
Parent attended a school science fair	P1SCIFAIR	2,392	16.03	1.25	0.75	2.77	1.67
Parents have begun to prepare for student's education after high school	P1PREPPAY	1,755	65.59	4.32	1.13	14.51	3.81
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	2,425	27.22	1.79	0.90	3.91	1.98
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	2,260	76.39	1.53	0.89	2.94	1.71
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	2,256	54.01	3.56	1.05	11.51	3.39
Summary statistics							
Mean						6.91	2.47
Minimum						1.62	1.27
Median						3.91	1.98
Maximum						24.00	4.90
Standard deviation						5.22	0.91

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-37. Parent standard errors and design effects—Midwest schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	4,384	72.16	0.86	0.68	1.61	1.27
Student lives with mother and father	x1parpattern	4,385	58.12	1.69	0.75	5.15	2.27
Student lives with parent questionnaire respondent all of the time	P1HHTIME	4,143	91.62	0.81	0.43	3.52	1.88
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	4,143	52.55	1.63	0.78	4.40	2.10
Parent's age (calculated from birth year)	P1YRBORN1	4,174	44.09	0.17	0.10	2.55	1.60
Whether respondent was born in the United States (3 levels)	P1USBORN1	4,199	90.82	1.15	0.45	6.64	2.58
Whether a language other than English is regularly spoken in home	P1HOMELANG	4,197	10.98	1.28	0.48	7.05	2.66
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	4,142	91.72	0.91	0.43	4.56	2.14
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	4,343	43.98	1.40	0.75	3.44	1.85
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	4,385	38.92	2.02	0.74	7.53	2.74
Whether parent respondent is currently employed	P1JOBNOW1	4,209	72.87	1.34	0.69	3.80	1.95
Mother's occupation	X1MOMOCC2 (composite)	3,,926	29.53	1.17	0.73	2.57	1.60
Father's occupation	X1DADOCC2 (composite)	3,421	16.99	1.05	0.64	2.65	1.63
Whether own or rent home (3 levels)	P1OWNHOME	4,125	74.90	1.76	0.68	6.76	2.60
Whether student ever stopped attending school for a month or more	P1DROPOUT	4,149	2.19	0.41	0.23	3.24	1.80
Whether student ever suspended or expelled	P1SUSPEND	4,151	13.99	1.15	0.54	4.57	2.14
Whether student skipped a grade	P1SKIPGRD	4,152	1.47	0.34	0.19	3.35	1.83
Student was held back a grade	P1REPEATGRD	4,157	9.16	0.93	0.45	4.36	2.09
Student changed schools two times since kindergarten	P1CHANGESCH	4,144	9.47	0.58	0.45	1.63	1.28
How often parent helps with homework (5 levels)	P1HWOFTEN	4,136	32.10	1.08	0.73	2.22	1.49

See notes at end of table.

Table G-37. Parent standard errors and design effects—Midwest schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	4,122	41.35	1.26	0.77	2.71	1.65
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	3,906	74.00	0.96	0.70	1.89	1.37
Parent attended a school science fair	P1SCIFAIR	4,073	15.06	0.92	0.56	2.71	1.65
Parents have begun to prepare for student's education after high school	P1PREPPAY	3,034	67.57	1.37	0.85	2.62	1.62
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	4,132	32.70	1.27	0.73	3.02	1.74
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	3,808	80.33	1.01	0.64	2.45	1.57
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	3,800	52.06	1.85	0.81	5.20	2.28
Summary statistics							
Mean						3.79	1.90
Minimum						1.60	1.27
Median						3.35	1.83
Maximum						7.53	2.74
Standard deviation						1.69	0.42

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-38. Parent standard errors and design effects—South schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	6,655	73.35	1.08	0.54	3.99	2.00
Student lives with mother and father	x1parpattern	6,660	52.17	1.21	0.61	3.91	1.98
Student lives with parent questionnaire respondent all of the time	P1HHTIME	6,222	92.46	0.60	0.33	3.20	1.79
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	6,227	43.59	1.17	0.63	3.47	1.86
Parent's age (calculated from birth year)	P1YRBORN1	6,275	43.87	0.18	0.09	3.90	1.98
Whether respondent was born in the United States (3 levels)	P1USBORN1	6,306	80.52	1.27	0.50	6.51	2.55
Whether a language other than English is regularly spoken in home	P1HOMELANG	6,305	20.76	1.10	0.51	4.66	2.16
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	6,215	89.18	0.71	0.39	3.21	1.79
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	6,584	43.10	1.22	0.61	3.97	1.99
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	6,660	35.57	1.40	0.59	5.73	2.39
Whether parent respondent is currently employed	P1JOBNOW1	6,322	71.56	0.95	0.57	2.81	1.68
Mother's occupation	X1MOMOCC2 (composite)	5,891	26.77	0.91	0.58	2.49	1.58
Father's occupation	X1DADOCC2 (composite)	5,075	16.99	0.87	0.53	2.71	1.65
Whether own or rent home (3 levels)	P1OWNHOME	6,186	71.34	1.15	0.57	3.97	1.99
Whether student ever stopped attending school for a month or more	P1DROPOUT	6,221	2.75	0.28	0.21	1.88	1.37
Whether student ever suspended or expelled	P1SUSPEND	6,221	15.28	0.77	0.46	2.81	1.68
Whether student skipped a grade	P1SKIPGRD	6,225	1.47	0.23	0.15	2.27	1.51
Student was held back a grade	P1REPEATGRD	6,233	17.46	1.04	0.48	4.68	2.16
Student changed schools two times since kindergarten	P1CHANGESCH	6,199	12.77	0.76	0.42	3.21	1.79
How often parent helps with homework (5 levels)	P1HWOFTEN	6,193	33.14	0.86	0.60	2.05	1.43

See notes at end of table.

Table G-38. Parent standard errors and design effects—South schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	6,166	40.85	0.93	0.63	2.20	1.48
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	5,824	70.55	0.79	0.60	1.77	1.33
Parent attended a school science fair	P1SCIFAIR	6,091	16.17	1.05	0.47	4.92	2.22
Parents have begun to prepare for student's education after high school	P1PREPPAY	4,634	67.10	1.19	0.69	2.99	1.73
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	6,176	27.02	1.02	0.57	3.25	1.80
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	5,667	80.55	0.79	0.53	2.26	1.50
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	5,660	53.57	1.39	0.66	4.37	2.09
Summary statistics							
Mean						3.45	1.83
Minimum						1.77	1.33
Median						3.21	1.79
Maximum						6.51	2.55
Standard deviation						1.18	0.31

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-39. Parent standard errors and design effects—West schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	2,784	70.40	1.77	0.87	4.17	2.04
Student lives with mother and father	x1parpattern	2,788	60.12	1.75	0.93	3.58	1.89
Student lives with parent questionnaire respondent all of the time	P1HHTIME	2,638	92.97	0.89	0.50	3.18	1.78
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	2,639	44.09	1.58	0.97	2.67	1.64
Parent's age (calculated from birth year)	P1YRBORN1	2,659	44.50	0.27	0.14	3.77	1.94
Whether respondent was born in the United States (3 levels)	P1USBORN1	2,671	63.37	2.16	0.93	5.35	2.31
Whether a language other than English is regularly spoken in home	P1HOMELANG	2,671	41.03	2.78	0.95	8.56	2.93
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	2,636	84.89	2.20	0.70	9.97	3.16
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	2,753	44.26	1.98	0.95	4.36	2.09
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	2,788	33.34	2.49	0.89	7.79	2.79
Whether parent respondent is currently employed	P1JOBNOW1	2,677	69.64	1.90	0.89	4.55	2.13
Mother's occupation	X1MOMOCC2 (composite)	2,443	24.92	2.06	0.88	5.53	2.35
Father's occupation	X1DADOCC2 (composite)	2,100	17.38	1.17	0.83	2.01	1.42
Whether own or rent home (3 levels)	P1OWNHOME	2,632	65.04	2.06	0.93	4.90	2.21
Whether student ever stopped attending school for a month or more	P1DROPOUT	2,637	3.23	0.62	0.34	3.20	1.79
Whether student ever suspended or expelled	P1SUSPEND	2,638	14.49	1.33	0.69	3.78	1.94
Whether student skipped a grade	P1SKIPGRD	2,637	2.05	0.55	0.28	4.03	2.01
Student was held back a grade	P1REPEATGRD	2,645	8.96	0.99	0.56	3.16	1.78
Student changed schools two times since kindergarten	P1CHANGESCH	2,631	11.39	1.35	0.62	4.76	2.18
How often parent helps with homework (5 levels)	P1HWOFTEN	2,630	35.63	1.46	0.93	2.43	1.56

See notes at end of table.

Table G-39. Parent standard errors and design effects—West schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	2,622	38.46	1.32	0.95	1.92	1.39
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	2,457	74.02	1.54	0.88	3.04	1.74
Parent attended a school science fair	P1SCIFAIR	2,580	18.98	1.74	0.77	5.05	2.25
Parents have begun to prepare for student's education after high school	P1PREPPAY	1,882	66.82	1.97	1.09	3.29	1.82
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	2,623	29.43	1.79	0.89	4.04	2.01
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	2,390	76.50	1.95	0.87	5.06	2.25
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	2,386	41.38	2.94	1.01	8.49	2.91
Summary statistics							
Mean						4.54	2.09
Minimum						1.92	1.39
Median						4.04	2.01
Maximum						9.97	3.16
Standard deviation						2.03	0.45

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-40. Parent standard errors and design effects—City schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	4,711	73.65	1.24	0.64	3.74	1.93
Student lives with mother and father	x1parpattern	4,714	53.25	1.85	0.73	6.50	2.55
Student lives with parent questionnaire respondent all of the time	P1HHTIME	4,447	93.36	0.76	0.37	4.12	2.03
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	4,447	40.20	1.80	0.74	5.99	2.45
Parent's age (calculated from birth year)	P1YRBORN1	4,467	44.14	0.26	0.11	5.85	2.42
Whether respondent was born in the United States (3 levels)	P1USBORN1	4,496	68.81	2.37	0.69	11.77	3.43
Whether a language other than English is regularly spoken in home	P1HOMELANG	4,496	33.79	2.58	0.71	13.41	3.66
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	4,440	85.29	1.76	0.53	10.97	3.31
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	4,666	40.31	1.34	0.72	3.48	1.86
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	4,714	36.13	2.09	0.70	8.95	2.99
Whether parent respondent is currently employed	P1JOBNOW1	4,504	67.00	1.43	0.70	4.19	2.05
Mother's occupation	X1MOMOCC2 (composite)	4,240	25.21	1.14	0.67	2.94	1.71
Father's occupation	X1DADOCC2 (composite)	3,620	18.44	1.13	0.64	3.05	1.75
Whether own or rent home (3 levels)	P1OWNHOME	4,429	61.18	2.27	0.73	9.61	3.10
Whether student ever stopped attending school for a month or more	P1DROPOUT	4,442	2.53	0.42	0.24	3.25	1.80
Whether student ever suspended or expelled	P1SUSPEND	4,442	16.61	1.49	0.56	7.13	2.67
Whether student skipped a grade	P1SKIPGRD	4,445	2.10	0.44	0.22	4.16	2.04
Student was held back a grade	P1REPEATGRD	4,455	13.09	1.34	0.51	7.05	2.66
Student changed schools two times since kindergarten	P1CHANGESCH	4,433	12.74	1.02	0.50	4.14	2.03
How often parent helps with homework (5 levels)	P1HWOFTEN	4,427	31.83	1.36	0.70	3.76	1.94

See notes at end of table.

Table G-40. Parent standard errors and design effects—City schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	4,407	41.85	1.28	0.74	2.98	1.73
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	4,184	73.32	1.24	0.68	3.26	1.81
Parent attended a school science fair	P1SCIFAIR	4,357	18.70	1.31	0.59	4.93	2.22
Parents have begun to prepare for student's education after high school	P1PREPPAY	3,367	65.74	2.30	0.82	7.87	2.81
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	4,420	25.50	1.37	0.66	4.35	2.08
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	4,132	77.82	1.33	0.65	4.24	2.06
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	4,135	49.66	2.35	0.78	9.17	3.03
Summary statistics							
Mean						5.96	2.37
Minimum						2.94	1.71
Median						4.35	2.08
Maximum						13.41	3.66
Standard deviation						2.98	0.57

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-41. Parent standard errors and design effects—Suburban schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	5,870	72.10	1.05	0.59	3.24	1.80
Student lives with mother and father	x1parpattern	5,876	59.74	1.22	0.64	3.62	1.90
Student lives with parent questionnaire respondent all of the time	P1HHTIME	5,514	92.11	0.56	0.36	2.39	1.54
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	5,522	46.32	1.01	0.67	2.28	1.51
Parent's age (calculated from birth year)	P1YRBORN1	5,555	44.88	0.18	0.09	3.73	1.93
Whether respondent was born in the United States (3 levels)	P1USBORN1	5,589	76.02	1.88	0.57	10.81	3.29
Whether a language other than English is regularly spoken in home	P1HOMELANG	5,591	24.67	1.82	0.58	9.93	3.15
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	5,515	88.78	0.97	0.43	5.20	2.28
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	5,807	41.10	1.49	0.65	5.30	2.30
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	5,876	42.24	1.68	0.64	6.80	2.61
Whether parent respondent is currently employed	P1JOBNOW1	5,603	74.37	1.09	0.58	3.49	1.87
Mother's occupation	X1MOMOCC2 (composite)	5,232	28.94	1.14	0.63	3.29	1.81
Father's occupation	X1DADOCC2 (composite)	4,544	18.56	0.97	0.58	2.82	1.68
Whether own or rent home (3 levels)	P1OWNHOME	5,484	73.37	1.21	0.60	4.11	2.03
Whether student ever stopped attending school for a month or more	P1DROPOUT	5,522	2.71	0.31	0.22	2.04	1.43
Whether student ever suspended or expelled	P1SUSPEND	5,526	14.27	0.87	0.47	3.41	1.85
Whether student skipped a grade	P1SKIPGRD	5,527	1.36	0.25	0.16	2.54	1.59
Student was held back a grade	P1REPEATGRD	5,532	11.56	0.79	0.43	3.42	1.85
Student changed schools two times since kindergarten	P1CHANGESCH	5,514	10.84	0.66	0.42	2.50	1.58
How often parent helps with homework (5 levels)	P1HWOFTEN	5,509	33.41	0.93	0.64	2.15	1.47

See notes at end of table.

Table G-41. Parent standard errors and design effects—Suburban schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	5,489	38.23	0.76	0.66	1.36	1.16
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	5,147	72.57	0.85	0.62	1.85	1.36
Parent attended a school science fair	P1SCIFAIR	5,423	15.43	0.95	0.49	3.78	1.95
Parents have begun to prepare for student's education after high school	P1PREPPAY	4,081	70.37	1.15	0.71	2.58	1.61
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	5,497	30.27	1.07	0.62	3.00	1.73
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	5,110	78.42	1.02	0.58	3.14	1.77
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	5,102	54.69	1.91	0.70	7.52	2.74
Summary statistics							
Mean						3.94	1.92
Minimum						1.36	1.16
Median						3.29	1.81
Maximum						10.81	3.29
Standard deviation						2.33	0.52

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-42. Parent standard errors and design effects—Town schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	1,943	70.93	2.09	1.03	4.13	2.03
Student lives with mother and father	x1parpattern	1,945	51.61	2.37	1.13	4.39	2.09
Student lives with parent questionnaire respondent all of the time	P1HHTIME	1,821	91.56	1.40	0.65	4.59	2.14
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	1,820	49.85	1.99	1.17	2.89	1.70
Parent's age (calculated from birth year)	P1YRBORN1	1,835	43.30	0.23	0.16	2.06	1.43
Whether respondent was born in the United States (3 levels)	P1USBORN1	1,844	93.27	1.56	0.58	7.17	2.68
Whether a language other than English is regularly spoken in home	P1HOMELANG	1,842	10.18	2.34	0.70	11.04	3.32
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	1,817	92.68	1.34	0.61	4.84	2.20
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	1,919	49.13	1.87	1.14	2.68	1.64
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	1,945	27.45	2.41	1.01	5.67	2.38
Whether parent respondent is currently employed	P1JOBNOW1	1,853	72.65	1.97	1.04	3.62	1.90
Mother's occupation	X1MOMOCC2 (composite)	1,691	26.79	1.85	1.08	2.94	1.72
Father's occupation	X1DADOCC2 (composite)	1,458	14.22	1.55	0.92	2.88	1.70
Whether own or rent home (3 levels)	P1OWNHOME	1,812	73.95	2.18	1.03	4.47	2.11
Whether student ever stopped attending school for a month or more	P1DROPOUT	1,818	2.22	0.49	0.35	2.00	1.41
Whether student ever suspended or expelled	P1SUSPEND	1,817	13.12	1.36	0.79	2.93	1.71
Whether student skipped a grade	P1SKIPGRD	1,820	1.19!	0.38	0.25	2.18	1.48
Student was held back a grade	P1REPEATGRD	1,823	15.54	2.42	0.85	8.13	2.85
Student changed schools two times since kindergarten	P1CHANGESCH	1,810	10.90	1.15	0.73	2.46	1.57
How often parent helps with homework (5 levels)	P1HWOFTEN	1,807	33.72	1.82	1.11	2.68	1.64

See notes at end of table.

Table G-42. Parent standard errors and design effects—Town schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	1,808	42.78	1.82	1.16	2.46	1.57
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	1,699	73.53	1.72	1.07	2.59	1.61
Parent attended a school science fair	P1SCIFAIR	1,776	13.40	1.88	0.81	5.41	2.33
Parents have begun to prepare for student's education after high school	P1PREPPAY	1,259	61.96	2.30	1.37	2.81	1.68
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	1,803	30.46	1.74	1.08	2.59	1.61
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	1,605	79.94	1.88	1.00	3.54	1.88
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	1,598	41.50	2.94	1.23	5.70	2.39
Summary statistics							
Mean						4.03	1.95
Minimum						2.00	1.41
Median						2.94	1.72
Maximum						11.04	3.32
Standard deviation						2.11	0.47

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-43. Parent standard errors and design effects—Rural schools

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	3,891	72.92	1.10	0.71	2.40	1.55
Student lives with mother and father	x1parpattern	3,894	58.13	1.62	0.79	4.17	2.04
Student lives with parent questionnaire respondent all of the time	P1HHTIME	3,655	92.33	0.68	0.44	2.38	1.54
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	3,657	51.79	1.85	0.83	5.04	2.24
Parent's age (calculated from birth year)	P1YRBORN1	3,694	43.78	0.20	0.11	3.37	1.84
Whether respondent was born in the United States (3 levels)	P1USBORN1	3,715	86.40	2.12	0.56	14.20	3.77
Whether a language other than English is regularly spoken in home	P1HOMELANG	3,713	15.11	2.67	0.59	20.69	4.55
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	3,656	92.70	0.87	0.43	4.10	2.03
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	3,853	47.56	1.88	0.80	5.46	2.34
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	3,894	34.96	2.21	0.76	8.33	2.89
Whether parent respondent is currently employed	P1JOBNOW1	3,721	74.07	1.33	0.72	3.44	1.85
Mother's occupation	X1MOMOCC2 (composite)	3,433	30.59	1.71	0.79	4.73	2.17
Father's occupation	X1DADOCC2 (composite)	2,999	16.06	0.97	0.67	2.09	1.45
Whether own or rent home (3 levels)	P1OWNHOME	3,637	76.99	1.09	0.70	2.42	1.56
Whether student ever stopped attending school for a month or more	P1DROPOUT	3,664	3.01	0.55	0.28	3.76	1.94
Whether student ever suspended or expelled	P1SUSPEND	3,662	11.84	0.94	0.53	3.11	1.76
Whether student skipped a grade	P1SKIPGRD	3,662	0.89	0.24	0.16	2.39	1.55
Student was held back a grade	P1REPEATGRD	3,670	12.41	1.18	0.54	4.74	2.18
Student changed schools two times since kindergarten	P1CHANGESCH	3,654	9.63	0.81	0.49	2.73	1.65
How often parent helps with homework (5 levels)	P1HWOFTEN	3,646	33.33	1.10	0.78	2.00	1.41

See notes at end of table.

Table G-43. Parent standard errors and design effects—Rural schools—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	3,631	39.92	1.45	0.81	3.20	1.79
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	3,417	72.38	1.09	0.77	2.02	1.42
Parent attended a school science fair	P1SCIFAIR	3,580	16.80	1.39	0.62	4.95	2.22
Parents have begun to prepare for student's education after high school	P1PREPPAY	2,598	65.72	1.58	0.93	2.89	1.70
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	3,636	30.67	1.41	0.76	3.42	1.85
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	3,278	80.28	1.21	0.70	3.03	1.74
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	3,267	49.70	1.78	0.87	4.15	2.04
Summary statistics							
Mean						4.64	2.04
Minimum						2.00	1.41
Median						3.42	1.85
Maximum						20.69	4.55
Standard deviation						4.04	0.70

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-44. Parent standard errors and design effects—Male students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	8,231	71.10	0.90	0.50	3.27	1.81
Student lives with mother and father	x1parpattern	8,237	57.37	0.90	0.54	2.72	1.65
Student lives with parent questionnaire respondent all of the time	P1HHTIME	7,726	92.33	0.46	0.30	2.29	1.51
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	7,726	46.65	1.11	0.57	3.81	1.95
Parent's age (calculated from birth year)	P1YRBORN1	7,783	44.42	0.15	0.08	3.50	1.87
Whether respondent was born in the United States (3 levels)	P1USBORN1	7,826	77.50	0.99	0.47	4.40	2.10
Whether a language other than English is regularly spoken in home	P1HOMELANG	7,826	24.38	0.96	0.49	3.92	1.98
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	7,720	89.08	0.77	0.35	4.66	2.16
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	8,143	44.11	0.95	0.55	2.95	1.72
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	8,237	37.13	1.14	0.53	4.62	2.15
Whether parent respondent is currently employed	P1JOBNOW1	7,848	71.84	0.90	0.51	3.12	1.77
Mother's occupation	X1MOMOCC2 (composite)	7,299	27.86	0.77	0.52	2.13	1.46
Father's occupation	X1DADOCC2 (composite)	6,394	18.01	0.76	0.48	2.52	1.59
Whether own or rent home (3 levels)	P1OWNHOME	7,694	70.36	1.01	0.52	3.80	1.95
Whether student ever stopped attending school for a month or more	P1DROPOUT	7,736	2.94	0.33	0.19	3.00	1.73
Whether student ever suspended or expelled	P1SUSPEND	7,736	19.22	0.73	0.45	2.68	1.64
Whether student skipped a grade	P1SKIPGRD	7,738	1.51	0.25	0.14	3.17	1.78
Student was held back a grade	P1REPEATGRD	7,746	15.15	0.80	0.41	3.90	1.97
Student changed schools two times since kindergarten	P1CHANGESCH	7,718	10.81	0.72	0.35	4.18	2.04
How often parent helps with homework (5 levels)	P1HWOFTEN	7,697	32.47	0.93	0.53	3.06	1.75

See notes at end of table.

Table G-44. Parent standard errors and design effects—Male—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	7,676	40.22	0.96	0.56	2.97	1.72
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	7,239	71.72	0.85	0.53	2.59	1.61
Parent attended a school science fair	P1SCIFAIR	7,572	15.79	0.84	0.42	3.98	1.99
Parents have begun to prepare for student's education after high school	P1PREPPAY	5,528	67.72	1.18	0.63	3.52	1.88
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	7,678	30.31	0.92	0.52	3.06	1.75
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	6,919	79.07	0.92	0.49	3.52	1.88
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	6,901	48.39	1.42	0.60	5.53	2.35
Summary statistics							
Mean						3.44	1.84
Minimum						2.13	1.46
Median						3.27	1.81
Maximum						5.53	2.35
Standard deviation						0.80	0.21

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-45. Parent standard errors and design effects—Female students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	8,184	74.21	0.95	0.48	3.84	1.96
Student lives with mother and father	x1parpattern	8,192	55.30	0.99	0.55	3.23	1.80
Student lives with parent questionnaire respondent all of the time	P1HHTIME	7,711	92.67	0.51	0.30	2.90	1.70
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	7,720	45.45	0.96	0.57	2.86	1.69
Parent's age (calculated from birth year)	P1YRBORN1	7,768	43.99	0.14	0.08	3.06	1.75
Whether respondent was born in the United States (3 levels)	P1USBORN1	7,818	78.84	0.89	0.46	3.70	1.92
Whether a language other than English is regularly spoken in home	P1HOMELANG	7,816	22.89	0.94	0.48	3.93	1.98
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	7,708	89.01	0.80	0.36	5.10	2.26
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	8,102	42.44	1.06	0.55	3.75	1.94
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	8,192	36.62	1.28	0.53	5.77	2.40
Whether parent respondent is currently employed	P1JOBNOW1	7,833	71.69	0.93	0.51	3.33	1.83
Mother's occupation	X1MOMOCC2 (composite)	7,297	27.93	0.88	0.53	2.83	1.68
Father's occupation	X1DADOCC2 (composite)	6,227	16.78	0.68	0.47	2.05	1.43
Whether own or rent home (3 levels)	P1OWNHOME	7,668	70.49	1.09	0.52	4.37	2.09
Whether student ever stopped attending school for a month or more	P1DROPOUT	7,710	2.39	0.26	0.17	2.21	1.49
Whether student ever suspended or expelled	P1SUSPEND	7,711	9.34	0.69	0.33	4.36	2.09
Whether student skipped a grade	P1SKIPGRD	7,716	1.42	0.22	0.13	2.68	1.64
Student was held back a grade	P1REPEATGRD	7,734	10.24	0.69	0.34	4.03	2.01
Student changed schools two times since kindergarten	P1CHANGESCH	7,693	11.52	0.59	0.36	2.65	1.63
How often parent helps with homework (5 levels)	P1HWOFTEN	7,692	33.40	0.82	0.54	2.31	1.52

See notes at end of table.

Table G-45. Parent standard errors and design effects—Female students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	7,659	40.36	0.94	0.56	2.83	1.68
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	7,208	74.04	0.82	0.52	2.52	1.59
Parent attended a school science fair	P1SCIFAIR	7,564	17.30	0.85	0.43	3.86	1.97
Parents have begun to prepare for student's education after high school	P1PREPPAY	5,777	66.09	1.17	0.62	3.52	1.88
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	7,678	27.45	0.85	0.51	2.77	1.67
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	7,206	78.61	0.95	0.48	3.90	1.98
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	7,201	52.48	1.26	0.59	4.61	2.15
Summary statistics							
Mean						3.44	1.84
Minimum						2.05	1.43
Median						3.33	1.83
Maximum						5.77	2.40
Standard deviation						0.91	0.24

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-46. Parent standard errors and design effects—Hispanic students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	2,602	72.81	1.85	0.87	4.47	2.11
Student lives with mother and father	x1parpattern	2,604	53.74	1.99	0.98	4.15	2.04
Student lives with parent questionnaire respondent all of the time	P1HHTIME	2,436	95.67	0.60	0.41	2.12	1.46
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	2,440	40.16	2.04	0.99	4.20	2.05
Parent's age (calculated from birth year)	P1YRBORN1	2,450	42.87	0.33	0.14	5.18	2.28
Whether respondent was born in the United States (3 levels)	P1USBORN1	2,466	39.43	2.34	0.98	5.65	2.38
Whether a language other than English is regularly spoken in home	P1HOMELANG	2,465	71.35	1.99	0.91	4.76	2.18
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	2,432	70.38	2.29	0.93	6.11	2.47
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	2,576	40.79	1.85	0.97	3.64	1.91
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	2,604	19.61	1.63	0.78	4.41	2.10
Whether parent respondent is currently employed	P1JOBNOW1	2,478	65.29	1.85	0.96	3.74	1.93
Mother's occupation	X1MOMOCC2 (composite)	2,120	16.87	1.48	0.81	3.29	1.81
Father's occupation	X1DADOCC2 (composite)	1,897	8.91	1.01	0.65	2.37	1.54
Whether own or rent home (3 levels)	P1OWNHOME	2,421	55.40	1.93	1.01	3.64	1.91
Whether student ever stopped attending school for a month or more	P1DROPOUT	2,426	2.51	0.45	0.32	2.01	1.42
Whether student ever suspended or expelled	P1SUSPEND	2,425	14.48	1.30	0.71	3.32	1.82
Whether student skipped a grade	P1SKIPGRD	2,424	2.12	0.58	0.29	3.97	1.99
Student was held back a grade	P1REPEATGRD	2,437	15.24	1.36	0.73	3.48	1.86
Student changed schools two times since kindergarten	P1CHANGESCH	2,420	13.00	1.32	0.68	3.71	1.93
How often parent helps with homework (5 levels)	P1HWOFTEN	2,417	33.98	1.62	0.96	2.83	1.68

See notes at end of table.

Table G-46. Parent standard errors and design effects—Hispanic students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	2,405	39.96	1.82	1.00	3.31	1.82
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	2,280	74.12	1.62	0.92	3.12	1.77
Parent attended a school science fair	P1SCIFAIR	2,374	19.00	1.55	0.81	3.69	1.92
Parents have begun to prepare for student's education after high school	P1PREPPAY	1,474	55.37	2.40	1.30	3.44	1.86
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	2,407	21.94	1.58	0.84	3.49	1.87
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	2,158	67.59	2.07	1.01	4.20	2.05
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	2,151	32.39	2.16	1.01	4.60	2.14
Summary statistics							
Mean						3.81	1.94
Minimum						2.01	1.42
Median						3.69	1.92
Maximum						6.11	2.47
Standard deviation						0.96	0.25

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-47. Parent standard errors and design effects—Asian students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	1,239	53.53	3.29	1.42	5.39	2.32
Student lives with mother and father	x1parpattern	1,239	79.87	2.45	1.14	4.61	2.15
Student lives with parent questionnaire respondent all of the time	P1HHTIME	1,163	96.45	0.89	0.54	2.71	1.65
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	1,165	40.00	2.39	1.44	2.77	1.66
Parent's age (calculated from birth year)	P1YRBORN1	1,164	46.84	0.41	0.19	4.68	2.16
Whether respondent was born in the United States (3 levels)	P1USBORN1	1,182	12.67	2.24	0.97	5.37	2.32
Whether a language other than English is regularly spoken in home	P1HOMELANG	1,182	81.25	2.89	1.14	6.47	2.54
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	1,161	72.83	2.61	1.31	3.99	2.00
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	1,217	24.34	3.15	1.23	6.53	2.56
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	1,239	64.56	3.57	1.36	6.88	2.62
Whether parent respondent is currently employed	P1JOBNOW1	1,182	72.47	2.40	1.30	3.42	1.85
Mother's occupation	X1MOMOCC2 (composite)	1,020	35.84	2.93	1.50	3.81	1.95
Father's occupation	X1DADOCC2 (composite)	1,050	31.42	2.34	1.43	2.68	1.64
Whether own or rent home (3 levels)	P1OWNHOME	1,138	76.64	2.80	1.25	4.98	2.23
Whether student ever stopped attending school for a month or more	P1DROPOUT	1,155	4.11!	1.53	0.58	6.89	2.62
Whether student ever suspended or expelled	P1SUSPEND	1,154	5.16!	1.95	0.65	8.95	2.99
Whether student skipped a grade	P1SKIPGRD	1,156	1.87!	0.79	0.40	3.96	1.99
Student was held back a grade	P1REPEATGRD	1,157	3.87	1.13	0.57	3.96	1.99
Student changed schools two times since kindergarten	P1CHANGESCH	1,152	11.92	1.86	0.96	3.78	1.95
How often parent helps with homework (5 levels)	P1HWOFTEN	1,148	25.23	2.96	1.28	5.32	2.31

See notes at end of table.

Table G-47. Parent standard errors and design effects—Asian students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	1,137	32.20	3.80	1.39	7.50	2.74
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	1,070	65.81	2.12	1.45	2.14	1.46
Parent attended a school science fair	P1SCIFAIR	1,123	25.41	2.62	1.30	4.05	2.01
Parents have begun to prepare for student's education after high school	P1PREPPAY	830	69.00	3.20	1.61	3.97	1.99
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	1,147	25.47	2.93	1.29	5.19	2.28
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	1,123	71.72	3.30	1.34	6.04	2.46
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	1,123	67.02	3.02	1.40	4.64	2.15
Summary statistics							
Mean						4.84	2.17
Minimum						2.14	1.46
Median						4.64	2.15
Maximum						8.95	2.99
Standard deviation						1.63	0.37

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-48. Parent standard errors and design effects—Black students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	1577	75.10	1.83	1.09	2.81	1.68
Student lives with mother and father	x1parpattern	1579	29.45	2.62	1.15	5.23	2.29
Student lives with parent questionnaire respondent all of the time	P1HHTIME	1471	92.27	1.47	0.70	4.46	2.11
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	1472	40.61	2.48	1.28	3.74	1.93
Parent's age (calculated from birth year)	P1YRBORN1	1467	42.96	0.36	0.21	2.75	1.66
Whether respondent was born in the United States (3 levels)	P1USBORN1	1488	88.53	1.58	0.83	3.65	1.91
Whether a language other than English is regularly spoken in home	P1HOMELANG	1486	7.84	1.27	0.70	3.32	1.82
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	1468	92.00	1.09	0.71	2.38	1.54
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	1553	50.40	2.21	1.27	3.04	1.74
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	1579	24.14	2.27	1.08	4.45	2.11
Whether parent respondent is currently employed	P1JOBNOW1	1485	65.38	2.37	1.24	3.68	1.92
Mother's occupation	X1MOMOCC2 (composite)	1363	19.56	1.79	1.07	2.78	1.67
Father's occupation	X1DADOCC2 (composite)	811	13.03	2.02	1.18	2.92	1.71
Whether own or rent home (3 levels)	P1OWNHOME	1446	50.70	2.56	1.32	3.80	1.95
Whether student ever stopped attending school for a month or more	P1DROPOUT	1452	2.18!	0.66	0.38	2.93	1.71
Whether student ever suspended or expelled	P1SUSPEND	1453	30.94	1.90	1.21	2.46	1.57
Whether student skipped a grade	P1SKIPGRD	1453	1.93!	0.60	0.36	2.73	1.65
Student was held back a grade	P1REPEATGRD	1457	24.99	2.37	1.13	4.35	2.09
Student changed schools two times since kindergarten	P1CHANGESCH	1441	14.57	1.57	0.93	2.84	1.69
How often parent helps with homework (5 levels)	P1HWOFTEN	1444	35.67	2.52	1.26	3.98	2.00

See notes at end of table.

Table G-48. Parent standard errors and design effects—Black students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	1,436	46.53	2.21	1.32	2.82	1.68
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	1,338	66.37	1.88	1.29	2.12	1.46
Parent attended a school science fair	P1SCIFAIR	1,424	19.36	1.86	1.05	3.16	1.78
Parents have begun to prepare for student's education after high school	P1PREPPAY	1,085	60.29	2.58	1.49	3.02	1.74
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	1,431	18.07	1.83	1.02	3.22	1.80
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	1,304	79.47	2.84	1.12	6.44	2.54
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	1,312	52.50	2.99	1.38	4.71	2.17
Summary statistics							
Mean						3.47	1.85
Minimum						2.12	1.46
Median						3.16	1.78
Maximum						6.44	2.54
Standard deviation						0.97	0.25

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-49. Parent standard errors and design effects—White students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	9,377	73.32	0.71	0.46	2.41	1.55
Student lives with mother and father	x1parpattern	9,386	63.90	0.74	0.50	2.24	1.50
Student lives with parent questionnaire respondent all of the time	P1HHTIME	8,853	91.27	0.46	0.30	2.40	1.55
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	8,856	50.37	0.76	0.53	2.07	1.44
Parent's age (calculated from birth year)	P1YRBORN1	8,942	44.98	0.12	0.07	3.00	1.73
Whether respondent was born in the United States (3 levels)	P1USBORN1	8,975	95.04	0.39	0.23	2.84	1.68
Whether a language other than English is regularly spoken in home	P1HOMELANG	8,976	5.09	0.36	0.23	2.37	1.54
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	8,854	96.08	0.35	0.21	2.82	1.68
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	9,302	42.57	0.97	0.51	3.55	1.88
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	9,386	45.76	1.21	0.51	5.56	2.36
Whether parent respondent is currently employed	P1JOBNOW1	9,004	75.73	0.68	0.45	2.29	1.51
Mother's occupation	X1MOMOCC2 (composite)	8,643	33.71	0.86	0.51	2.87	1.69
Father's occupation	X1DADOCC2 (composite)	7,698	20.06	0.66	0.46	2.12	1.46
Whether own or rent home (3 levels)	P1OWNHOME	8,854	81.67	0.61	0.41	2.20	1.48
Whether student ever stopped attending school for a month or more	P1DROPOUT	8,900	2.59	0.23	0.17	1.90	1.38
Whether student ever suspended or expelled	P1SUSPEND	8,902	9.64	0.49	0.31	2.46	1.57
Whether student skipped a grade	P1SKIPGRD	8,907	1.05	0.16	0.11	2.25	1.50
Student was held back a grade	P1REPEATGRD	8,916	9.29	0.55	0.31	3.20	1.79
Student changed schools two times since kindergarten	P1CHANGESCH	8,888	9.16	0.47	0.31	2.34	1.53
How often parent helps with homework (5 levels)	P1HWOFTEN	8,871	32.58	0.65	0.50	1.72	1.31

See notes at end of table.

Table G-49. Parent standard errors and design effects—White students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	8,859	39.45	0.76	0.52	2.14	1.46
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	8,345	74.41	0.56	0.48	1.35	1.16
Parent attended a school science fair	P1SCIFAIR	8,731	14.42	0.63	0.38	2.79	1.67
Parents have begun to prepare for student's education after high school	P1PREPPAY	6,829	72.00	0.84	0.54	2.37	1.54
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	8,865	33.71	0.77	0.50	2.33	1.53
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	8,180	83.34	0.70	0.41	2.92	1.71
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	8,157	55.62	1.14	0.55	4.32	2.08
Summary statistics							
Mean						2.62	1.60
Minimum						1.35	1.16
Median						2.37	1.54
Maximum						5.56	2.36
Standard deviation						0.83	0.23

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-50. Parent standard errors and design effects—Multiracial students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	1419	72.59	2.43	1.18	4.22	2.05
Student lives with mother and father	x1parpattern	1420	47.67	2.52	1.33	3.61	1.90
Student lives with parent questionnaire respondent all of the time	P1HHTIME	1327	90.91	1.23	0.79	2.41	1.55
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	1326	43.88	2.43	1.36	3.19	1.79
Parent's age (calculated from birth year)	P1YRBORN1	1340	43.57	0.34	0.19	3.11	1.76
Whether respondent was born in the United States (3 levels)	P1USBORN1	1343	85.33	1.44	0.97	2.22	1.49
Whether a language other than English is regularly spoken in home	P1HOMELANG	1343	12.71	1.48	0.91	2.66	1.63
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	1326	96.66	0.59	0.49	1.44	1.20
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	1398	47.92	2.30	1.34	2.96	1.72
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	1420	36.62	2.07	1.28	2.62	1.62
Whether parent respondent is currently employed	P1JOBNOW1	1341	73.01	1.67	1.21	1.89	1.38
Mother's occupation	X1MOMOCC2 (composite)	1282	26.33	2.74	1.23	4.96	2.23
Father's occupation	X1DADOCC2 (composite)	1025	17.55	1.35	1.19	1.29	1.14
Whether own or rent home (3 levels)	P1OWNHOME	1317	65.60	2.50	1.31	3.65	1.91
Whether student ever stopped attending school for a month or more	P1DROPOUT	1327	1.50	0.37	0.33	1.21	1.10
Whether student ever suspended or expelled	P1SUSPEND	1328	21.46	2.22	1.13	3.87	1.97
Whether student skipped a grade	P1SKIPGRD	1328	1.44!	0.54	0.33	2.75	1.66
Student was held back a grade	P1REPEATGRD	1328	11.46	1.23	0.87	1.96	1.40
Student changed schools two times since kindergarten	P1CHANGESCH	1325	13.03	1.51	0.93	2.66	1.63
How often parent helps with homework (5 levels)	P1HWOFTEN	1324	32.90	2.63	1.29	4.13	2.03

See notes at end of table.

Table G-50. Parent standard errors and design effects—Multiracial students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	1,313	41.22	2.16	1.36	2.52	1.59
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	1,244	74.40	1.81	1.24	2.15	1.47
Parent attended a school science fair	P1SCIFAIR	1,304	15.01	1.48	0.99	2.24	1.50
Parents have begun to prepare for student's education after high school	P1PREPPAY	976	64.84	3.00	1.53	3.86	1.96
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	1,322	33.68	2.58	1.30	3.92	1.98
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	1,206	81.38	1.79	1.12	2.55	1.60
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	1,206	55.86	2.81	1.43	3.86	1.97
Summary statistics							
Mean						2.89	1.67
Minimum						1.21	1.10
Median						2.66	1.63
Maximum						4.96	2.23
Standard deviation						0.96	0.29

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-51. Parent standard errors and design effects—Low percentile SES students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	2,837	75.69	1.32	0.81	2.70	1.64
Student lives with mother and father	x1parpattern	2,839	33.80	1.55	0.89	3.06	1.75
Student lives with parent questionnaire respondent all of the time	P1HHTIME	2,614	93.66	0.77	0.48	2.62	1.62
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	2,613	41.07	1.76	0.96	3.35	1.83
Parent's age (calculated from birth year)	P1YRBORN1	2,635	42.71	0.29	0.16	3.46	1.86
Whether respondent was born in the United States (3 levels)	P1USBORN1	2,653	57.42	2.25	0.96	5.47	2.34
Whether a language other than English is regularly spoken in home	P1HOMELANG	2,651	46.03	2.20	0.97	5.16	2.27
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	2,609	74.84	1.72	0.85	4.11	2.03
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	2,808	52.13	1.67	0.94	3.12	1.77
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	2,839	1.18	0.30	0.20	2.17	1.47
Whether parent respondent is currently employed	P1JOBNOW1	2,684	51.80	1.79	0.96	3.43	1.85
Mother's occupation	X1MOMOCC2 (composite)	2,161	0.86!	0.31	0.20	2.41	1.55
Father's occupation	X1DADOCC2 (composite)	1,358	0.51!	0.21	0.19	1.14	1.07
Whether own or rent home (3 levels)	P1OWNHOME	2,581	37.07	1.61	0.95	2.87	1.70
Whether student ever stopped attending school for a month or more	P1DROPOUT	2,594	4.09	0.57	0.39	2.18	1.48
Whether student ever suspended or expelled	P1SUSPEND	2,593	22.97	1.33	0.83	2.59	1.61
Whether student skipped a grade	P1SKIPGRD	2,593	1.87	0.40	0.27	2.29	1.51
Student was held back a grade	P1REPEATGRD	2,606	24.91	1.74	0.85	4.22	2.05
Student changed schools two times since kindergarten	P1CHANGESCH	2,578	13.23	1.19	0.67	3.20	1.79
How often parent helps with homework (5 levels)	P1HWOFTEN	2,579	31.09	1.60	0.91	3.09	1.76

See notes at end of table.

Table G-51. Parent standard errors and design effects—Low percentile SES students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	2,546	38.82	1.57	0.97	2.63	1.62
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	2,394	73.05	1.55	0.91	2.92	1.71
Parent attended a school science fair	P1SCIFAIR	2,516	13.95	1.23	0.69	3.16	1.78
Parents have begun to prepare for student's education after high school	P1PREPPAY	1,229	45.66	2.32	1.42	2.67	1.64
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	2,559	15.63	1.19	0.72	2.77	1.66
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	2,009	59.96	1.65	1.09	2.28	1.51
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	2,001	23.73	1.91	0.95	4.01	2.00
Summary statistics							
Mean						3.08	1.74
Minimum						1.14	1.07
Median						2.92	1.71
Maximum						5.47	2.34
Standard deviation						0.92	0.26

! Interpret data with caution. Estimate is unstable because the standard error represents more than 30 percent of the estimate.
[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-52. Parent standard errors and design effects—Middle percentile SES students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	8,689	72.29	0.87	0.48	3.32	1.82
Student lives with mother and father	x1parpattern	8,696	55.98	0.84	0.53	2.51	1.58
Student lives with parent questionnaire respondent all of the time	P1HHTIME	8,112	91.70	0.50	0.31	2.66	1.63
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	8,118	47.14	0.86	0.55	2.40	1.55
Parent's age (calculated from birth year)	P1YRBORN1	8,189	43.79	0.14	0.08	3.25	1.80
Whether respondent was born in the United States (3 levels)	P1USBORN1	8,233	83.58	0.83	0.41	4.15	2.04
Whether a language other than English is regularly spoken in home	P1HOMELANG	8,233	19.05	0.91	0.43	4.46	2.11
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	8,111	91.37	0.65	0.31	4.34	2.08
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	8,588	55.80	0.95	0.54	3.13	1.77
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	8,696	25.75	0.93	0.47	3.92	1.98
Whether parent respondent is currently employed	P1JOBNOW1	8,237	75.40	0.66	0.47	1.95	1.40
Mother's occupation	X1MOMOCC2 (composite)	7,816	21.35	0.82	0.46	3.12	1.77
Father's occupation	X1DADOCC2 (composite)	6,872	9.15	0.58	0.35	2.78	1.67
Whether own or rent home (3 levels)	P1OWNHOME	8,072	73.31	0.93	0.49	3.57	1.89
Whether student ever stopped attending school for a month or more	P1DROPOUT	8,125	2.43	0.31	0.17	3.37	1.84
Whether student ever suspended or expelled	P1SUSPEND	8,127	14.91	0.69	0.40	3.08	1.75
Whether student skipped a grade	P1SKIPGRD	8,131	1.31	0.26	0.13	4.14	2.03
Student was held back a grade	P1REPEATGRD	8,139	11.45	0.60	0.35	2.89	1.70
Student changed schools two times since kindergarten	P1CHANGESCH	8,112	11.07	0.68	0.35	3.78	1.94
How often parent helps with homework (5 levels)	P1HWOFTEN	8,099	33.88	0.75	0.53	2.02	1.42

See notes at end of table.

Table G-52. Parent standard errors and design effects—Middle percentile SES students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	8,081	42.49	0.82	0.55	2.25	1.50
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	7,566	71.73	0.84	0.52	2.61	1.62
Parent attended a school science fair	P1SCIFAIR	7,949	15.34	0.72	0.40	3.21	1.79
Parents have begun to prepare for student's education after high school	P1PREPPAY	5,906	63.61	1.03	0.63	2.70	1.64
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	8,077	31.70	0.86	0.52	2.77	1.66
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	7,457	79.46	0.79	0.47	2.84	1.68
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	7,447	46.13	1.11	0.58	3.69	1.92
Summary statistics							
Mean						3.14	1.76
Minimum						1.95	1.40
Median						3.12	1.77
Maximum						4.46	2.11
Standard deviation						0.69	0.19

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table G-53. Parent standard errors and design effects—High percentile SES students

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Biological mother completed parent questionnaire	P1RELSHP	4,889	70.74	1.11	0.65	2.91	1.70
Student lives with mother and father	x1parpattern	4,894	77.37	0.90	0.60	2.28	1.51
Student lives with parent questionnaire respondent all of the time	P1HHTIME	4,711	93.30	0.54	0.36	2.21	1.48
Whether student has siblings who have attended high school in last 5 years	P1HSSIB	4,715	47.84	1.24	0.73	2.90	1.70
Parent's age (calculated from birth year)	P1YRBORN1	4,727	46.42	0.19	0.08	4.91	2.22
Whether respondent was born in the U.S. (3 levels)	P1USBORN1	4,758	83.67	0.94	0.54	3.11	1.76
Whether a language other than English is regularly spoken in home	P1HOMELANG	4,758	14.86	1.07	0.52	4.28	2.07
Whether student ever enrolled in an English Language Learners program (3 levels)	P1ELLEVER	4,708	95.91	0.42	0.29	2.10	1.45
Parent respondent's highest level of education (7 levels)	P1HIDEG1 (composite version)	4,849	6.37	0.54	0.35	2.33	1.53
Highest level of education of both parents (7 levels)	Composite from P1HIDEG1 & P1HIDEG2	4,894	94.79	0.45	0.32	2.03	1.43
Whether parent respondent is currently employed	P1JOBNOW1	4,760	80.84	1.02	0.57	3.17	1.78
Mother's occupation	X1MOMOCC2 (composite)	4,619	61.82	1.29	0.71	3.26	1.81
Father's occupation	X1DADOCC2 (composite)	4,391	42.12	1.22	0.75	2.69	1.64
Whether own or rent home (3 levels)	P1OWNHOME	4,709	92.08	0.84	0.39	4.57	2.14
Whether student ever stopped attending school for a month or more	P1DROPOUT	4,727	2.00	0.30	0.20	2.22	1.49
Whether student ever suspended or expelled	P1SUSPEND	4,727	5.72	0.62	0.34	3.41	1.85
Whether student skipped a grade	P1SKIPGRD	4,730	1.47	0.31	0.17	3.18	1.78
Student was held back a grade	P1REPEATGRD	4,735	5.18	0.68	0.32	4.47	2.11
Student changed schools two times since kindergarten	P1CHANGESCH	4,721	9.64	0.60	0.43	1.97	1.40
How often parent helps with homework (5 levels)	P1HWOFTEN	4,711	32.36	1.19	0.68	3.05	1.75

See notes at end of table.

Table G-53. Parent standard errors and design effects—High percentile SES students—Continued

Survey item[1]	Variable	n	Estimate	Design-based SE[2]	Simple random sample SE[3]	*deff*	*deft*
Parent's confidence in helping student with math homework (3 levels)	P1MTHHWEFF	4,708	36.63	1.11	0.70	2.50	1.58
Parent's comparison of males and females in science (5 levels)	P1SCICOMP	4,487	75.23	1.06	0.64	2.71	1.65
Parent attended a school science fair	P1SCIFAIR	4,671	21.34	1.09	0.60	3.33	1.83
Parents have begun to prepare for student's education after high school	P1PREPPAY	4,170	82.36	1.25	0.59	4.49	2.12
Highest level of education parent respondent's think student will attain (11 levels)	P1EDUEXPECT	4,720	33.63	1.08	0.69	2.46	1.57
Whether family plans to help student pay for education after high school (3 levels)	P1HELPPAY	4,659	90.19	0.64	0.44	2.14	1.46
Type of school parent thinks student will attend first (4 levels)	P1TYPEPS	4,654	77.43	1.40	0.61	5.21	2.28
Summary statistics							
Mean						3.11	1.74
Minimum						1.97	1.40
Median						2.91	1.70
Maximum						5.21	2.28
Standard deviation						0.95	0.26

[1] Survey items include the questions in the study instruments as well as composite variables. The associated variable names on the HSLS:09 public-use file are included in parentheses.
[2] Design-based standard error (SE) equal to the numerator term in the formulae above.
[3] Simple random sample SE equal to the denominator term in the formulae above.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Appendix H.
Unit and Item Nonresponse Bias Analyses

Tabular results for the unit and item nonresponse bias analysis conducted with the High School Longitudinal Study of 2009 (HSLS:09) base-year data are presented below in sections H.1 and H.2, respectively. Detailed information is first provided for school-level data, followed by student-level data within each analysis section.

H.1 Unit Nonresponse Bias

Unit nonresponse bias analyses were conducted for the HSLS:09 base-year study. The primary purpose of this task was first to test for detectable levels of nonresponse bias in the values known for respondents and nonrespondents, and then to determine whether those levels still exist after adjusting the analytic weights through a subsequent test.

The unit nonresponse bias tables are presented in this section for each HSLS:09 base-year analytic weight—W1SCHOOL (school), W1STUDENT (student), W1PARENT (home-life contextual), W1SCITCH (science course enrollee contextual), and W1MATHTCH (mathematics course enrollee contextual) (tables H-1 through H-5). Details of the analysis procedure along with the summary of the analysis tables are included in section 6.7.

Table H-1. Unit nonresponse bias before and after adjustments were applied to the school base weights for selected variables

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
School type								
Public	75.2	79.8	69.6	4.53 *	6.02	76.1	0.88	1.16
Private	24.8	20.2	30.4	-4.53 *	-18.29	23.9	-0.88	-3.54
Asian 9th-grade enrollment percent								
≤ 2 percent	65.0	69.1	59.8	4.16 *	6.40	64.3	-0.64	-0.99
> 2 percent	35.0	30.9	40.2	-4.16 *	-11.86	35.7	0.64	1.84
Black 9th-grade enrollment percent								
≤ 7 percent	64.6	65.9	63.1	1.25	1.93	66.6	1.98	3.06
> 7 percent	35.4	34.1	36.9	-1.25	-3.53	33.4	-1.98	-5.59
Hispanic 9th-grade enrollment percent								
≤ 5 percent	61.2	61.3	61.0	0.15	0.25	57.3	-3.91	-6.38
> 5 percent	38.8	38.7	39.0	-0.15	-0.40	42.7	3.91	10.06
Other 9th-grade enrollment percent								
< 80 percent	41.9	40.6	43.6	-1.34	-3.19	43.4	1.47	3.52
≥ 80 percent	58.1	59.4	56.4	1.34	2.31	56.6	-1.47	-2.54
Charter school								
Yes	3.8	3.9	3.7	0.09	2.39	3.8	-0.06	-1.53
No	70.5	74.7	65.2	4.22	5.98	71.6	1.13	1.61
Private	25.7	21.4	31.1	-4.31 *	-16.79	24.6	-1.08	-4.19

See notes at end of table.

Table H-1. Unit nonresponse bias before and after adjustments were applied to the school base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
Total enrollment								
< 499 students	49.2	55.8	41.0	6.56 *	13.32	52.8	3.55	7.20
500–999 students	24.1	20.2	29.1	-3.96 *	-16.41	23.8	-0.34	-1.41
1,000–1,499 students	11.1	10.8	11.4	-0.26	-2.38	11.2	0.12	1.12
1,500–2,000 students	8.8	7.7	10.1	-1.07	-12.23	6.7	-2.09 *	-23.86
> 2,000 students	6.8	5.5	8.4	-1.26 *	-18.56	5.6	-1.24 *	-18.16
9th-grade enrollment								
0–149 9th-grade students	59.9	63.2	55.8	3.27 *	5.45	61.0	1.07	1.78
150–299 9th-grade students	16.5	15.5	17.8	-1.02	-6.17	18.1	1.63	9.88
300–449 9th-grade students	11.0	10.8	11.3	-0.22	-2.04	10.2	-0.79	-7.16
450–600 9th-grade students	6.8	5.9	8.0	-0.96	-13.99	5.9	-0.92	-13.42
600+ 9th-grade students	5.8	4.7	7.1	-1.07 *	-18.51	4.8	-1.00 *	-17.28
Number of full-time teachers								
≤ 50	64.6	70.1	57.6	5.44 *	8.42	67.8	3.18	4.91
51–100	23.3	20.6	26.8	-2.72 *	-11.69	22.3	-0.96	-4.10
101–150	9.5	7.3	12.3	-2.18 *	-23.08	7.6	-1.88 *	-19.85
> 150	2.6	2.1	3.3	-0.54 *	-20.60	2.3	-0.34	-13.21
Student to teacher ratio								
≤ 10	15.4	17.7	12.5	2.26	14.70	17.2	1.84	11.94
11–15	38.4	39.9	36.6	1.42	3.69	40.3	1.92	4.98
15–20	36.1	34.4	38.3	-1.70	-4.70	34.6	-1.47	-4.06
20–25	9.0	7.8	10.4	-1.12	-12.55	7.5	-1.45	-16.19
> 25	1.1	0.3	2.2	-0.86	-76.22	0.3	-0.84	-74.37

See notes at end of table.

Table H-1. Unit nonresponse bias before and after adjustments were applied to the school base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
Census region								
Northeast	17.7	13.0	23.4	-4.63 *	-26.24	17.4	-0.26	-1.46
Midwest	28.4	33.1	22.4	4.77 *	16.81	29.4	1.06	3.75
South	34.4	37.2	30.9	2.82	8.20	34.0	-0.42	-1.22
West	19.6	16.6	23.3	-2.96	-15.11	19.2	-0.38	-1.96
School urbanity								
City	20.7	16.4	26.0	-4.25 *	-20.57	21.2	0.48	2.35
Suburban	32.3	27.0	39.0	-5.33 *	-16.46	22.7	-9.67 *	-29.90
Town	11.7	14.2	8.5	2.52	21.61	16.6	4.93 *	42.24
Rural	35.3	42.4	26.5	7.05 *	19.98	39.6	4.25	12.04
Range of grades in school								
High school only	60.4	58.7	62.7	-1.71	-2.84	59.5	-0.94	-1.56
Middle and high school	21.3	25.1	16.3	3.79 *	17.75	21.8	0.48	2.26
Elementary to high school	18.3	16.2	21.0	-2.07	-11.36	18.7	0.46	2.52
Religious affiliation								
Yes	23.4	18.8	29.1	-4.61 *	-19.71	21.6	-1.80	-7.68
No	1.4	1.5	1.3	0.08	5.81	2.3	0.92	66.85
Public	75.2	79.8	69.6	4.53 *	6.02	76.1	0.88	1.16
School is regular secondary								
Yes	20.9	19.2	23.2	-1.79	-8.53	22.2	1.26	6.01
No	3.8	1.1	7.2	-2.74 *	-71.88	1.7	-2.13 *	-55.95
Public	75.2	79.8	69.6	4.53 *	6.02	76.1	0.88	1.16

[1] Estimates were calculated with the student base weights excluding questionnaire-incapable student records.
[2] Estimates were calculated with the school analytic weights (W1SCHOOL).
[3] Estimated bias is calculated as a function of the weighted nonresponse rate times the difference in the weighted respondent and nonrespondent means as shown in equation 6.20. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
[4] The relative bias is calculated as the estimated bias divided by the (before adjustments) overall mean.
[5] Estimated bias is calculated as the difference in the weighted overall mean before and after the adjustments following the equations discussed in section 6.7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-2. Unit nonresponse bias before and after adjustments were applied to the student base weights for selected variables

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
School type								
Public	92.8	92.8	92.7	0.01	0.01	92.8	0.00	0.00
Private	7.2	7.2	7.3	-0.01	-0.09	7.2	-0.00	-0.02
Asian 9th-grade enrollment percent								
≤ 2 percent	49.4	50.2	44.3	0.75	1.52	49.7	0.29	0.60
> 2 percent	50.6	49.8	55.7	-0.75	-1.48	50.3	-0.29	-0.58
Black 9th-grade enrollment percent								
≤ 7 percent	53.6	53.8	52.0	0.23	0.43	53.5	-0.11	-0.20
> 7 percent	46.4	46.2	48.0	-0.23	-0.49	46.5	0.11	0.23
Hispanic 9th-grade enrollment percent								
≤ 5 percent	43.8	44.1	41.7	0.30	0.68	43.6	-0.15	-0.33
> 5 percent	56.2	55.9	58.3	-0.30	-0.53	56.4	0.15	0.26
Other 9th-grade enrollment percent								
< 80 percent	62.5	62.1	65.2	-0.40	-0.63	62.5	0.00	0.00
≥ 80 percent	37.5	37.9	34.8	0.40	1.06	37.5	-0.00	0.00

See notes at end of table.

Table H-2. Unit nonresponse bias before and after adjustments were applied to the student base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
Charter school								
Yes	1.8	1.8	1.4	0.05	2.81	1.7	-0.06	-3.43
No	90.3	90.1	91.3	-0.15	-0.16	90.3	0.01	0.02
Private	8.0	8.1	7.3	0.10	1.23	8.0	0.05	0.59
Total enrollment								
< 499 students	12.9	13.5	8.4	0.66 *	5.08	12.8	-0.08	-0.60
500–999 students	23.1	23.9	18.0	0.76 *	3.27	23.1	-0.05	-0.22
1,000–1,499 students	20.9	20.3	25.1	-0.62	-2.96	21.0	0.13	0.61
1,500–2,000 students	18.6	18.5	19.1	-0.08	-0.42	18.7	0.12	0.63
> 2,000 students	24.5	23.8	29.3	-0.71	-2.92	24.4	-0.12	-0.48
9th-grade enrollment								
0–149 9th-grade students	17.4	18.3	11.4	0.88 *	5.09	17.3	-0.08	-0.45
150–299 9th-grade students	22.0	22.5	18.5	0.51	2.34	21.9	-0.05	-0.24
300–449 9th-grade students	21.0	20.4	24.8	-0.56	-2.67	21.1	0.10	0.47
450–600 9th-grade students	18.4	18.6	17.3	0.17	0.91	18.7	0.30	1.61
600+ 9th-grade students	21.2	20.2	28.1	-1.01 *	-4.74	21.0	-0.26	-1.24
Number of full-time teachers								
≤ 50	25.9	26.9	18.6	1.07 *	4.14	25.8	-0.08	-0.32
51–100	39.6	39.4	40.4	-0.12	-0.30	39.6	0.09	0.22
101–150	24.5	23.8	29.4	-0.72	-2.95	24.5	-0.03	-0.14
> 150	10.1	9.8	11.6	-0.23	-2.30	10.1	0.03	0.32

See notes at end of table.

Table H-2. Unit nonresponse bias before and after adjustments were applied to the student base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
Student to teacher ratio								
≤ 10	4.2	4.3	3.1	0.16	3.93	4.2	0.03	0.68
11–15	27.9	28.5	23.8	0.61	2.19	27.9	-0.06	-0.21
15–20	47.5	46.5	54.2	-0.99 *	-2.09	47.5	-0.05	-0.10
20–25	19.7	19.8	18.5	0.17	0.86	19.7	0.07	0.37
> 25	0.7	0.8	0.4	0.05	6.44	0.7	0.01	0.82
Census region								
Northeast	17.3	17.5	16.1	0.17	1.01	17.3	-0.00	-0.01
Midwest	22.2	22.0	23.4	-0.18	-0.83	22.2	-0.00	0.00
South	37.6	37.7	37.3	0.05	0.13	37.6	-0.00	0.00
West	22.9	22.9	23.2	-0.04	-0.17	22.9	0.00	0.01
School urbanity								
City	31.9	31.8	32.3	-0.06	-0.20	31.9	0.00	0.01
Suburban	33.3	32.0	42.4	-1.34 *	-4.02	33.3	-0.00	-0.01
Town	11.7	12.2	8.2	0.52 *	4.48	11.7	-0.00	0.00
Rural	23.1	24.0	17.1	0.88 *	3.80	23.1	-0.00	0.00
Range of grades in school								
High school only	85.8	85.8	86.0	-0.03	-0.04	85.8	0.06	0.07
Middle and high school	10.1	10.0	10.8	-0.10	-0.95	10.0	-0.07	-0.73
Elementary to high school	4.1	4.2	3.2	0.13	3.17	4.1	0.02	0.38

See notes at end of table.

Table H-2. Unit nonresponse bias before and after adjustments were applied to the student base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
Religious affiliation								
Yes	6.9	6.9	6.9	-0.00	0.00	6.9	-0.01	-0.07
No	0.3	0.3	0.4	-0.01	-2.13	0.3	0.00	1.23
Public	92.8	92.8	92.7	0.01	0.01	92.8	0.00	0.00
School is regular secondary								
Yes	6.6	6.6	6.2	0.05	0.79	6.6	0.04	0.55
No	0.7	0.6	1.1	-0.06	-8.90	0.6	-0.04	-5.64
Public	92.8	92.8	92.7	0.01	0.01	92.8	0.00	0.00
Student sex								
Male	50.3	50.1	51.8	-0.22	-0.44	50.3	0.04	0.08
Female	49.7	49.9	48.2	0.22	0.44	49.7	-0.04	-0.08
Student race[6]								
Hispanic	4.1	4.1	4.1	-0.00	-0.01	4.1	0.00	0.06
Asian	14.5	14.6	14.1	0.06	0.39	14.5	-0.03	-0.19
Black	17.2	17.5	15.3	0.28	1.64	17.2	0.03	0.20
Other	64.3	63.9	66.6	-0.34	-0.53	64.3	-0.01	-0.01

[1] Estimates were calculated with the student base weights excluding questionnaire-incapable student records.
[2] Estimates were calculated with the school analytic weights (W1STUDENT) excluding questionnaire-incapable student records.
[3] Estimated bias is calculated as a function of the weighted nonresponse rate times the difference in the weighted respondent and nonrespondent means as shown in equation 6.20. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
[4] The relative bias is calculated as the estimated bias divided by the (before adjustments) overall mean.
[5] Estimated bias is calculated as the difference in the weighted overall mean before and after the adjustments following the equations discussed in section 6.7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
[6] Student race as defined on the school enrollment lists used for sampling purposes.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-3. Unit nonresponse bias before and after adjustments were applied to the home-life base weights for selected variables

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
School type								
Public	92.8	92.1	95.1	-0.73 *	-0.78	92.8	-0.01	-0.01
Private	7.2	7.9	4.9	0.73 *	10.09	7.2	0.01	0.18
Asian 9th-grade enrollment percent								
≤ 2 percent	49.7	49.3	51.1	-0.44	-0.88	49.2	-0.49	-0.99
> 2 percent	50.3	50.7	48.9	0.44	0.87	50.8	0.49	0.98
Black 9th-grade enrollment percent								
≤ 7 percent	53.5	54.6	50.0	1.10 *	2.05	53.8	0.30	0.55
> 7 percent	46.5	45.4	50.0	-1.10 *	-2.36	46.2	-0.30	-0.63
Hispanic 9th-grade enrollment percent								
≤ 5 percent	43.6	44.4	41.3	0.73 *	1.68	44.0	0.38	0.88
> 5 percent	56.4	55.6	58.7	-0.73 *	-1.30	56.0	-0.38	-0.68
Other 9th-grade enrollment percent								
< 80 percent	62.5	61.2	66.5	-1.25 *	-1.99	62.2	-0.31	-0.50
≥ 80 percent	37.5	38.8	33.5	1.25 *	3.32	37.8	0.31	0.83

See notes at end of table.

Table H-3. Unit nonresponse bias before and after adjustments were applied to the home-life base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
Charter school	1.7	1.6	2.0	-0.10	-5.76	1.7	-0.01	-0.53
Yes	90.3	89.6	92.5	-0.71 *	-0.79	90.2	-0.10	-0.11
No	8.0	8.8	5.4	0.81 *	10.11	8.1	0.10	1.31
Private								
Total enrollment	12.8	13.0	12.2	0.19	1.47	12.6	-0.17	-1.30
< 499 students	23.1	23.3	22.5	0.18	0.80	23.2	0.08	0.36
500–999 students	21.0	21.1	20.9	0.03	0.14	21.1	0.12	0.57
1,000–1,499 students	18.7	18.4	19.9	-0.37	-1.97	18.5	-0.23	-1.23
1,500–2,000 students	24.4	24.3	24.5	-0.04	-0.15	24.5	0.19	0.79
> 2,000 students								
9th-grade enrollment	17.3	17.8	15.8	0.48 *	2.78	17.2	-0.10	-0.56
0–149 9th-grade students	21.9	22.0	21.6	0.09	0.43	22.0	0.08	0.36
150–299 9th-grade students	21.1	21.1	21.0	0.04	0.21	21.3	0.17	0.81
300–449 9th-grade students	18.7	18.2	20.2	-0.46	-2.45	18.4	-0.27	-1.42
450–600 9th-grade students	21.0	20.8	21.5	-0.16	-0.77	21.1	0.11	0.53
600+ 9th-grade students								
Number of full-time teachers	25.8	26.4	23.9	0.61 *	2.35	25.9	0.12	0.46
≤ 50	39.6	39.5	40.1	-0.15	-0.38	39.7	0.03	0.08
51–100	24.5	24.0	25.8	-0.43	-1.76	24.2	-0.30	-1.24
101–150	10.1	10.1	10.2	-0.03	-0.27	10.2	0.15	1.52
> 150	1.7	1.6	2.0	-0.10	-5.76	1.7	-0.01	-0.53

See notes at end of table.

Table H-3. Unit nonresponse bias before and after adjustments were applied to the home-life base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
Student to teacher ratio								
≤ 10	4.2	4.4	3.4	0.24	5.63	4.3	0.12	2.79
11–15	27.9	27.7	28.4	-0.17	-0.62	27.6	-0.28	-1.00
15–20	47.5	47.7	46.9	0.18	0.39	47.8	0.34	0.71
20–25	19.7	19.5	20.6	-0.26	-1.33	19.6	-0.19	-0.96
> 25	0.7	0.7	0.7	0.02	2.43	0.7	0.02	2.12
Census region								
Northeast	17.3	17.4	16.8	0.15	0.89	17.4	0.11	0.64
Midwest	22.2	22.6	21.0	0.37	1.65	22.2	0.02	0.07
South	37.6	37.1	39.4	-0.55	-1.47	37.6	0.03	0.07
West	22.9	22.9	22.8	0.03	0.15	22.7	-0.15	-0.66
School urbanity								
City	31.9	31.6	32.6	-0.24	-0.75	31.8	-0.05	-0.15
Suburban	33.3	33.4	33.1	0.08	0.25	33.4	0.02	0.05
Town	11.7	11.7	11.7	-0.00	-0.02	11.8	0.04	0.34
Rural	23.1	23.2	22.6	0.16	0.67	23.1	-0.01	-0.05
Range of grades in school								
High school only	85.8	85.3	87.7	-0.57 *	-0.66	85.5	-0.31	-0.36
Middle and high school	10.0	10.4	8.8	0.38	3.79	10.3	0.31	3.04
Elementary to high school	4.1	4.3	3.5	0.19 *	4.56	4.1	0.00	0.10

See notes at end of table.

Table H-3. Unit nonresponse bias before and after adjustments were applied to the home-life base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
Religious affiliation								
Yes	6.9	7.6	4.6	0.72 *	10.40	6.9	0.03	0.49
No	0.3	0.3	0.3	0.01	3.24	0.3	-0.02 *	-6.74
Public only	92.8	92.1	95.1	-0.73 *	-0.78	92.8	-0.01	-0.01
School is regular secondary	6.6	7.3	4.4	0.70 *	10.57	6.6	0.02	0.31
Yes	0.6	0.7	0.5	0.03	5.00	0.6	-0.01	-1.24
No	92.8	92.1	95.1	-0.73 *	-0.78	92.8	-0.01	-0.01
Public	6.9	7.6	4.6	0.72 *	10.40	6.9	0.03	0.49
Student sex	50.3	50.1	51.1	-0.25	-0.49	50.4	0.10	0.19
Male	49.7	49.9	48.9	0.25	0.50	49.6	-0.10	-0.19
Female								
Student race[6]	4.1	3.9	4.5	-0.13	-3.22	4.1	0.06	1.41
Hispanic	14.5	13.7	17.0	-0.80 *	-5.53	14.5	0.03	0.22
Asian	17.2	16.8	18.5	-0.41	-2.36	17.0	-0.26	-1.51
Black	64.3	65.6	60.0	1.34 *	2.08	64.4	0.17	0.27
Other	50.3	50.1	51.1	-0.25	-0.49	50.4	0.10	0.19

[1] Estimates were calculated with the home-life contextual base weights excluding questionnaire-incapable student records.
[2] Estimates were calculated with the home-life contextual analytic weights (W1PARENT) excluding questionnaire-incapable student records.
[3] Estimated bias is calculated as a function of the weighted nonresponse rate times the difference in the weighted respondent and nonrespondent means as shown in equation 6.20. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
[4] The relative bias is calculated as the estimated bias divided by the (before adjustments) overall mean.
[5] Estimated bias is calculated as the difference in the weighted overall mean before and after the adjustments following the equations discussed in section 6.7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
[6] Student race as defined on the school enrollment lists used for sampling purposes.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-4. Unit nonresponse bias before and after adjustments were applied to the science course enrollee base weights for selected variables

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
School type								
Public	92.8	92.5	93.3	-0.29	-0.31	92.5	-0.29	-0.31
Private	7.2	7.5	6.7	0.29	3.99	7.5	0.29	4.04
Asian 9th-grade enrollment percent								
≤ 2 percent	49.7	52.9	43.8	3.14 *	6.32	50.5	0.77	1.56
> 2 percent	50.3	47.1	56.2	-3.14 *	-6.25	49.5	-0.77	-1.54
Black 9th-grade enrollment percent								
≤ 7 percent	53.5	55.3	50.0	1.85	3.46	54.2	0.74	1.38
> 7 percent	46.5	44.7	50.0	-1.85	-3.97	45.8	-0.74	-1.58
Hispanic 9th-grade enrollment percent								
≤ 5 percent	43.6	47.2	36.8	3.62 *	8.30	44.9	1.28	2.94
> 5 percent	56.4	52.8	63.2	-3.62 *	-6.42	55.1	-1.28	-2.27
Other 9th-grade enrollment percent								
< 80 percent	62.5	57.1	72.7	-5.41 *	-8.66	59.5	-2.96 *	-4.73
≥ 80 percent	37.5	42.9	27.3	5.41 *	14.42	40.5	2.96 *	7.88

See notes at end of table.

Table H-4. Unit nonresponse bias before and after adjustments were applied to the science course enrollee base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
Charter school	1.7	1.5	2.0	-0.17	-9.66	1.5	-0.22	-12.85
Yes	90.3	89.7	91.3	-0.54	-0.60	89.8	-0.43	-0.48
No	8.0	8.7	6.7	0.70	8.79	8.7	0.65	8.11
Private								
Total enrollment	12.8	13.6	11.3	0.80	6.22	12.4	-0.40	-3.15
< 499 students	23.1	25.6	18.4	2.47 *	10.71	24.6	1.54	6.67
500–999 students	21.0	20.2	22.6	-0.82	-3.90	20.4	-0.58	-2.75
1,000–1,499 students	18.7	19.3	17.7	0.56	3.00	19.6	0.88	4.73
1,500–2,000 students	24.4	21.3	30.0	-3.01 *	-12.36	22.9	-1.44	-5.92
> 2,000 students								
9th-grade enrollment	17.3	19.0	14.1	1.72 *	9.93	17.5	0.23	1.34
0–149 9th-grade students	21.9	23.7	18.7	1.72 *	7.82	22.9	0.99	4.53
150–299 9th-grade students	21.1	20.9	21.5	-0.20	-0.94	21.2	0.06	0.29
300–449 9th-grade students	18.7	17.7	20.6	-1.03	-5.48	18.2	-0.48	-2.55
450–600 9th-grade students	21.0	18.8	25.1	-2.21 *	-10.55	20.2	-0.81	-3.86
600+ 9th-grade students								
Number of full-time teachers								
≤ 50	25.8	28.3	21.1	2.46 *	9.56	26.4	0.59	2.30
51–100	39.6	40.3	38.5	0.63	1.58	40.1	0.41	1.03
101–150	24.5	22.4	28.4	-2.10 *	-8.59	23.6	-0.90	-3.68
> 150	10.1	9.1	12.0	-0.99	-9.80	10.0	-0.10	-1.02

See notes at end of table.

Table H-4. Unit nonresponse bias before and after adjustments were applied to the science course enrollee base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]			
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]		Relative bias[4]
Student to teacher ratio									
≤ 10	4.2	4.4	3.7	0.24	5.83	4.7	0.49		11.82
11–15	27.9	30.9	22.1	3.05 *	10.94	30.3	2.46	*	8.82
15–20	47.5	46.9	48.6	-0.60	-1.26	45.9	-1.56		-3.28
20–25	19.7	17.0	24.9	-2.75 *	-13.91	18.2	-1.51		-7.62
> 25	0.7	0.8	0.6	0.05	6.83	0.8	0.11		15.18
Census region									
Northeast	17.3	18.0	15.9	0.73	4.22	18.7	1.42	*	8.21
Midwest	22.2	24.5	17.8	2.34 *	10.56	23.6	1.41		6.36
South	37.6	38.3	36.4	0.67	1.77	37.6	0.00		0.00
West	22.9	19.2	29.9	-3.74 *	-16.34	20.1	-2.83	*	-12.37
School urbanity									
City	31.9	29.9	35.5	-1.92	-6.03	31.9	0.00		0.00
Suburban	33.3	32.5	34.9	-0.84	-2.53	33.8	0.46		1.37
Town	11.7	12.8	9.7	1.09	9.29	11.5	-0.26		-2.22
Rural	23.1	24.8	19.9	1.67 *	7.25	22.9	-0.20		-0.85
Range of grades in school									
High school only	85.8	84.4	88.6	-1.48	-1.73	84.6	-1.25		-1.45
Middle and high school	10.0	11.9	6.6	1.86 *	18.52	11.6	1.54	*	15.35
Elementary to high school	4.1	3.7	4.8	-0.38	-9.24	3.8	-0.29		-7.14

See notes at end of table.

Table H-4. Unit nonresponse bias before and after adjustments were applied to the science course enrollee base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
Religious affiliation								
Yes	6.9	7.2	6.4	0.25	3.67	7.1	0.23	3.27
No	0.3	0.3	0.2	0.03	11.14	0.4	0.07	20.97
Public	92.8	92.5	93.3	-0.29	-0.31	92.5	-0.29	-0.31
School is regular secondary								
Yes	6.6	7.1	5.7	0.46	7.02	7.1	0.49	7.40
No	0.6	0.4	0.9	-0.17	-28.19	0.4	-0.20	-31.64
Public	92.8	92.5	93.3	-0.29	-0.31	92.5	-0.29	-0.31
Student sex								
Male	50.3	50.1	50.8	-0.27	-0.53	50.2	-0.09	-0.18
Female	49.7	49.9	49.2	0.27	0.53	49.8	0.09	0.18
Student race[6]								
Hispanic	4.1	3.8	4.6	-0.28	-7.03	4.1	0.02	0.51
Asian	14.5	13.6	16.1	-0.87	-6.01	14.1	-0.40	-2.74
Black	17.2	15.7	20.1	-1.56 *	-9.04	16.5	-0.67	-3.92
Other	64.3	67.0	59.2	2.71 *	4.22	65.3	1.05	1.64

[1] Estimates were calculated with the science course enrollee contextual base weights excluding questionnaire-incapable student records.
[2] Estimates were calculated with the science course enrollee contextual analytic weights (W1SCITCH) excluding questionnaire-incapable student records.
[3] Estimated bias is calculated as a function of the weighted nonresponse rate times the difference in the weighted respondent and nonrespondent means as shown in equation 6.20. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
[4] The relative bias is calculated as the estimated bias divided by the (before adjustments) overall mean.
[5] Estimated bias is calculated as the difference in the weighted overall mean before and after the adjustments following the equations discussed in section 6.7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
[6] Student race as defined on the school enrollment lists used for sampling purposes.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-5. Unit nonresponse bias before and after adjustments were applied to the mathematics course enrollee base weights for selected variables

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
School type								
Public	92.8	92.2	94.1	-0.54	-0.58	92.6	-0.14	-0.16
Private	7.2	7.8	5.9	0.54	7.43	7.4	0.14	2.00
Asian 9th-grade enrollment percent								
≤ 2 percent	49.7	52.7	42.6	2.94 *	5.91	50.0	0.24	0.48
> 2 percent	50.3	47.3	57.4	-2.94 *	-5.85	50.0	-0.24	-0.48
Black 9th-grade enrollment percent								
≤ 7 percent	53.5	56.4	46.2	2.97 *	5.56	54.8	1.38	2.58
> 7 percent	46.5	43.6	53.8	-2.97 *	-6.39	45.2	-1.38	-2.96
Hispanic 9th-grade enrollment percent								
≤ 5 percent	43.6	46.4	36.9	2.79 *	6.39	43.9	0.27	0.63
> 5 percent	56.4	53.6	63.1	-2.79 *	-4.94	56.1	-0.27	-0.48
Other 9th-grade enrollment percent								
< 80 percent	62.5	58.3	72.7	-4.21 *	-6.74	61.3	-1.19	-1.90
≥ 80 percent	37.5	41.7	27.3	4.21 *	11.23	38.7	1.19	3.16

See notes at end of table.

Table H-5. Unit nonresponse bias before and after adjustments were applied to the mathematics course enrollee base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
Charter school								
Yes	1.7	1.8	1.4	0.11	6.29	1.9	0.14	8.32
No	90.3	89.6	92.0	-0.70	-0.77	89.9	-0.41	-0.45
Private	8.0	8.6	6.6	0.59	7.36	8.3	0.27	3.31
Total enrollment								
< 499 students	12.8	13.9	10.1	1.12	8.72	12.4	-0.44	-3.47
500–999 students	23.1	23.8	21.4	0.71	3.09	22.6	-0.44	-1.91
1,000–1,499 students	21.0	20.7	21.7	-0.29	-1.39	20.9	-0.13	-0.62
1,500–2,000 students	18.7	19.5	16.8	0.78	4.15	20.0	1.30 *	6.96
> 2,000 students	24.4	22.0	30.0	-2.32 *	-9.51	24.1	-0.29	-1.18
9th-grade enrollment								
0–149 9th-grade students	17.3	19.6	11.8	2.25 *	13.02	17.8	0.49	2.81
150–299 9th-grade students	21.9	21.5	22.9	-0.41	-1.85	20.7	-1.21	-5.53
300–449 9th-grade students	21.1	20.7	22.1	-0.40	-1.92	20.6	-0.52	-2.48
450–600 9th-grade students	18.7	18.7	18.7	-0.00	0.00	19.8	1.09	5.81
600+ 9th-grade students	21.0	19.5	24.5	-1.44	-6.88	21.1	0.16	0.78
Number of full-time teachers								
≤ 50	25.8	28.2	19.9	2.42 *	9.38	25.8	-0.02	-0.08
51–100	39.6	39.1	40.9	-0.51	-1.30	39.0	-0.60	-1.51
101–150	24.5	23.6	26.6	-0.89	-3.63	25.2	0.71	2.92
> 150	10.1	9.1	12.6	-1.02	-10.06	10.0	-0.09	-0.93

See notes at end of table.

Table H-5. Unit nonresponse bias before and after adjustments were applied to the mathematics course enrollee base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
Student to teacher ratio								
≤ 10	4.2	4.2	4.1	0.03	0.72	4.3	0.11	2.52
11–15	27.9	28.1	27.3	0.24	0.84	27.9	0.02	0.08
15–20	47.5	48.5	44.9	1.05	2.22	47.2	-0.24	-0.51
20–25	19.7	18.4	23.1	-1.36	-6.91	19.7	-0.01	-0.03
> 25	0.7	0.8	0.6	0.05	6.57	0.8	0.12	16.68
Census region								
Northeast	17.3	15.3	22.1	-1.99	-11.53	17.5	0.18	1.02
Midwest	22.2	24.1	17.6	1.89 *	8.51	22.3	0.09	0.39
South	37.6	38.7	35.1	1.05	2.79	37.1	-0.54	-1.44
West	22.9	22.0	25.2	-0.94	-4.12	23.2	0.28	1.21
School urbanity								
City	31.9	29.4	37.9	-2.47 *	-7.76	32.4	0.58	1.81
Suburban	33.3	32.7	35.0	-0.67	-2.01	33.3	-0.08	-0.24
Town	11.7	13.4	7.5	1.72 *	14.70	11.4	-0.27	-2.34
Rural	23.1	24.5	19.6	1.42	6.15	22.9	-0.22	-0.97
Range of grades in school								
High school only	85.8	85.0	87.8	-0.80	-0.93	85.3	-0.50	-0.58
Middle and high school	10.0	10.9	7.9	0.90	8.98	10.6	0.60	5.97
Elementary to high school	4.1	4.0	4.4	-0.10	-2.48	4.0	-0.10	-2.49

See notes at end of table.

Table H-5. Unit nonresponse bias before and after adjustments were applied to the mathematics course enrollee base weights for selected variables—Continued

Description response	Before adjustments, weighted[1]					After adjustments, weighted[2]		
	Overall mean	Respondent mean	Nonrespondent mean	Estimated bias[3]	Relative bias[4]	Overall mean	Estimated bias[5]	Relative bias[4]
Religious affiliation								
Yes	6.9	7.5	5.4	0.63	9.16	7.1	0.22	3.16
No	0.3	0.2	0.5	-0.10	-30.78	0.2	-0.07	-23.64
Public	92.8	92.2	94.1	-0.54	-0.58	92.6	-0.14	-0.16
School is regular secondary								
Yes	6.6	7.3	5.0	0.67 *	10.14	6.9	0.31	4.70
No	0.6	0.5	0.9	-0.13	-21.36	0.5	-0.17	-26.68
Public	92.8	92.2	94.1	-0.54	-0.58	92.6	-0.14	-0.16
Student sex								
Male	50.3	50.0	51.2	-0.34	-0.68	50.2	-0.13	-0.25
Female	49.7	50.0	48.8	0.34	0.69	49.8	0.13	0.25
Student race[6]								
Hispanic	4.1	3.7	5.0	-0.39	-9.58	4.1	0.01	0.28
Asian	14.5	12.5	19.2	-1.93 *	-13.32	14.2	-0.28	-1.94
Black	17.2	17.2	17.3	-0.04	-0.23	17.3	0.12	0.72
Other	64.3	66.6	58.5	2.36 *	3.67	64.4	0.15	0.23

[1] Estimates were calculated with the mathematics course enrollee contextual base weights excluding questionnaire-incapable student records.
[2] Estimates were calculated with the mathematics course enrollee contextual analytic weights (W1MATHTCH) excluding questionnaire-incapable student records.
[3] Estimated bias is calculated as a function of the weighted nonresponse rate times the difference in the weighted respondent and nonrespondent means as shown in equation 6.20. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
[4] The relative bias is calculated as the estimated bias divided by the (before adjustments) overall mean.
[5] Estimated bias is calculated as the difference in the weighted overall mean before and after the adjustments following the equations discussed in section 6.7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
[6] Student race as defined on the school enrollment lists used for sampling purposes.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

H.2 Item Nonresponse Bias

Item nonresponse bias analysis, like the unit-level bias discussed in the previous section, is used to evaluate bias associated with nonresponse. The difference is that this analysis focuses on non-negligible patterns of item nonresponse among the (unit) respondents. All variable values collected in the five questionnaires were evaluated to identify those with weighted item response rates less than 85 percent for this analysis. Details of the analysis procedure along with the summary of the analysis tables are included in section 7.2. Within the item nonresponse bias analysis tables presented in this section,

- 1,817 bias tests were conducted on a total of 79 administrator questionnaire variables (tables H-6–H-84), where 16.9 percent of the tests showed significant levels of bias[1];
- 290 bias tests were conducted on a total of 10 student variables (tables H-85–H-94), where 23.5 percent of the tests showed significant levels of bias;
- 1,537 bias tests were conducted on a total of 53 parent questionnaire variables (tables H-95–H-147), where 57.5 percent of the tests showed significant levels of bias[2];
- 609 bias tests were conducted on a total of 21 mathematics teacher questionnaire variables (tables H-148–H-168), where 2.9 percent of the tests showed significant levels of bias; and
- 464 bias tests were conducted on a total of 16 science teacher questionnaire variables (tables H-169–H-184), where 1.9 percent of the tests showed significant levels of bias.

[1] All statistical tests were conducted at the 0.05 significance level.
[2] Note that abbreviated questionnaires were used to obtain information from parents who originally refused to participate.

Table H-6. Comparison of item respondents and nonrespondents for A1VANDALISM (Frequency of vandalism at this school) by select sample school characteristics using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.4	79.1	-0.73
Private	23.9	24.6	20.9	0.73
Catholic	5.0	5.4	3.2	0.44
Other private	18.9	19.2	17.7	0.28
Census region				
Northeast	17.4	19.0	10.8	1.59
Midwest	29.4	32.2	18.0	2.78
South	34.0	33.0	37.8	-0.94
West	19.2	15.7	33.4	-3.44
School urbanity				
City	21.2	21.1	21.2	-0.01
Suburban	22.7	22.7	22.6	0.02
Town	16.6	18.0	10.8	1.41
Rural	39.6	38.2	45.4	-1.41

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-7. Comparison of item respondents and nonrespondents for A1MTHSTREQ (How mathematics course(s) required for grad compare with state requirements) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	75.7	76.0	74.7	0.25
Private	24.3	24.0	25.3	-0.25
Catholic	5.1	5.5	3.3	0.43
Other private	19.2	18.5	21.9	-0.68
Census region				
Northeast	16.5	17.9	11.0	1.36
Midwest	27.9	31.0	15.6	3.05
South	35.4	34.0	40.9	-1.37
West	20.2	17.2	32.5	-3.05
School urbanity				
City	21.8	21.7	22.2	-0.11
Suburban	22.3	22.4	22.0	0.08
Town	16.1	17.4	10.5	1.38
Rural	39.8	38.5	45.3	-1.35

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-8. Comparison of item respondents and nonrespondents for A1YRSHSTCHR (Principal's years of secondary teaching experience) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.7	78.0	-0.46
Private	23.9	24.3	22.0	0.46
Catholic	5.0	5.4	3.4	0.40
Other private	18.9	19.0	18.7	0.06
Census region				
Northeast	17.4	18.9	11.1	1.53
Midwest	29.4	32.7	16.1	3.25*
South	34.0	32.8	39.0	-1.23
West	19.2	15.6	33.8	-3.56
School urbanity				
City	21.2	20.5	23.7	-0.62
Suburban	22.7	22.2	24.4	-0.43
Town	16.6	18.8	7.5	2.21*
Rural	39.6	38.4	44.3	-1.16

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-9. Comparison of item respondents and nonrespondents for A1HRSTUDENT (Hours/week spent meeting with students) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.4	79.1	-0.74
Private	23.9	24.6	20.9	0.74
Catholic	5.0	5.4	3.2	0.42
Other private	18.9	19.2	17.6	0.31
Census region				
Northeast	17.4	19.0	10.8	1.62
Midwest	29.4	33.4	13.4	3.92*
South	34.0	31.9	42.5	-2.08
West	19.2	15.7	33.4	-3.46
School urbanity				
City	21.2	19.9	26.2	-1.23
Suburban	22.7	22.4	23.6	-0.23
Town	16.6	18.9	7.1	2.32*
Rural	39.6	38.7	43.1	-0.86

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-10. Comparison of item respondents and nonrespondents for A1HRPARENT (Hours/week spent talking and meeting with parents) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.4	79.1	-0.74
Private	23.9	24.6	20.9	0.74
Catholic	5.0	5.4	3.2	0.42
Other private	18.9	19.2	17.6	0.32
Census region				
Northeast	17.4	19.0	10.8	1.62
Midwest	29.4	33.4	13.4	3.92*
South	34.0	31.9	42.5	-2.08
West	19.2	15.7	33.4	-3.46
School urbanity				
City	21.2	19.9	26.2	-1.23
Suburban	22.7	22.4	23.6	-0.23
Town	16.6	18.9	7.1	2.32*
Rural	39.6	38.7	43.1	-0.86

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-11. Comparison of item respondents and nonrespondents for A1HREXTMGMNT (Hours/week spent on external school management) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.4	79.2	-0.74
Private	23.9	24.6	20.8	0.74
Catholic	5.0	5.4	3.2	0.43
Other private	18.9	19.2	17.6	0.32
Census region				
Northeast	17.4	19.0	10.8	1.62
Midwest	29.4	33.3	13.4	3.91*
South	34.0	31.9	42.5	-2.08
West	19.2	15.7	33.4	-3.46
School urbanity				
City	21.2	19.9	26.3	-1.26
Suburban	22.7	22.5	23.5	-0.21
Town	16.6	18.9	7.1	2.32*
Rural	39.6	38.7	43.1	-0.85

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-12. Comparison of item respondents and nonrespondents for A1HRMONITOR (Hours/week spent monitoring hallways/campus/lunchroom) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	76.1	75.4	79.2	-0.75
Private	23.9	24.6	20.8	0.75
Catholic	5.0	5.4	3.2	0.43
Other private	18.9	19.2	17.6	0.32
Census region				
Northeast	17.4	19.0	10.8	1.63
Midwest	29.4	33.3	13.5	3.90*
South	34.0	31.9	42.4	-2.07
West	19.2	15.7	33.3	-3.46
School urbanity				
City	21.2	19.9	26.3	-1.26
Suburban	22.7	22.5	23.6	-0.22
Town	16.6	18.9	7.1	2.32*
Rural	39.6	38.7	43.0	-0.85

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-13. Comparison of item respondents and nonrespondents for A1BAMAJ2 (Principals major for bachelor's degree 2-digit CIP code) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.9	76.5	78.8	-0.45
Private	23.1	23.5	21.2	0.45
Catholic	5.0	5.4	3.5	0.38
Other private	18.0	18.1	17.7	0.07
Census region				
Northeast	17.3	16.9	18.9	-0.39
Midwest	29.8	33.8	13.3	4.05*
South	33.6	33.2	34.9	-0.32
West	19.4	16.1	33.0	-3.33
School urbanity				
City	21.4	21.3	21.7	-0.07
Suburban	22.9	22.9	22.8	0.03
Town	16.5	19.0	6.5	2.47*
Rural	39.2	36.8	49.1	-2.42

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-14. Comparison of item respondents and nonrespondents for A1HRINTMGMNT (Hours/week spent on internal school management) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.4	79.2	-0.75
Private	23.9	24.6	20.8	0.75
Catholic	5.0	5.4	3.2	0.43
Other private	18.9	19.2	17.6	0.32
Census region				
Northeast	17.4	19.0	10.7	1.63
Midwest	29.4	33.4	13.4	3.93*
South	34.0	31.9	42.5	-2.09
West	19.2	15.7	33.3	-3.47
School urbanity				
City	21.2	19.9	26.2	-1.24
Suburban	22.7	22.4	23.7	-0.25
Town	16.6	18.9	7.1	2.33*
Rural	39.6	38.7	43.0	-0.84

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-15. Comparison of item respondents and nonrespondents for A1HRTEACHERS (Hours/week spent working with teachers on instructional issues) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.5	78.5	-0.59
Private	23.9	24.5	21.5	0.59
Catholic	5.0	5.4	3.2	0.43
Other private	18.9	19.1	18.3	0.16
Census region				
Northeast	17.4	19.1	10.7	1.65
Midwest	29.4	33.2	14.0	3.80*
South	34.0	32.0	42.2	-2.02
West	19.2	15.7	33.1	-3.44
School urbanity				
City	21.2	19.8	26.8	-1.39
Suburban	22.7	22.5	23.4	-0.17
Town	16.6	19.0	7.1	2.35*
Rural	39.6	38.8	42.8	-0.79

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-16. Comparison of item respondents and nonrespondents for A1TRANSFRALT (Percent of 08–09 students transferred out to an alternative program/school) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	76.1	75.7	77.7	-0.39
Private	23.9	24.3	22.3	0.39
Catholic	5.0	5.4	3.2	0.44
Other private	18.9	18.8	19.1	-0.05
Census region				
Northeast	17.4	19.3	9.5	1.94
Midwest	29.4	32.3	18.0	2.83
South	34.0	33.5	36.1	-0.51
West	19.2	14.9	36.5	-4.26
School urbanity				
City	21.2	21.1	21.3	-0.04
Suburban	22.7	22.3	24.4	-0.42
Town	16.6	18.4	9.4	1.78
Rural	39.6	38.2	44.9	-1.32

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-17. Comparison of item respondents and nonrespondents for A1VBLOCKMINS (Length of block-scheduled vocational/technical courses) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	89.6	99.5	65.5	9.84*
Private	10.4	0.5	34.5	-9.84*
Catholic	1.7	0.3	5.2	-1.40*
Other private	8.6	0.2	29.3	-8.43*
Census region				
Northeast	14.8	17.2	8.8	2.42
Midwest	20.8	23.4	14.3	2.63
South	48.5	44.6	58.2	-3.92*
West	15.9	14.8	18.7	-1.14
School urbanity				
City	26.8	27.5	25.2	0.67
Suburban	21.6	19.0	28.0	-2.60
Town	19.2	23.8	8.0	4.58
Rural	32.4	29.8	38.9	-2.64

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-18. Comparison of item respondents and nonrespondents for A1HRDISCIPLN (Hours/week spent on student discipline/attendance) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.3	79.3	-0.79
Private	23.9	24.7	20.7	0.79
Catholic	5.0	5.4	3.2	0.44
Other private	18.9	19.3	17.5	0.36
Census region				
Northeast	17.4	19.1	10.7	1.66
Midwest	29.4	33.4	13.5	3.93*
South	34.0	31.9	42.3	-2.06
West	19.2	15.6	33.5	-3.53
School urbanity				
City	21.2	19.9	26.2	-1.24
Suburban	22.7	22.4	23.9	-0.30
Town	16.6	18.9	7.3	2.31*
Rural	39.6	38.8	42.7	-0.77

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-19. Comparison of item respondents and nonrespondents for A1BULLY (Frequency of student bullying at this school) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	77.4	71.1	1.25
Private	23.9	22.6	28.9	-1.25
Catholic	5.0	5.4	3.2	0.45
Other private	18.9	17.2	25.7	-1.70
Census region				
Northeast	17.4	19.1	10.6	1.69
Midwest	29.4	33.6	12.5	4.20*
South	34.0	33.6	35.7	-0.42
West	19.2	13.7	41.2	-5.47
School urbanity				
City	21.2	21.2	21.1	0.01
Suburban	22.7	22.8	22.0	0.16
Town	16.6	17.0	15.1	0.39
Rural	39.6	39.0	41.8	-0.56

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-20. Comparison of item respondents and nonrespondents for A1CONFLICT (Frequency of physical conflicts among students at this school) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	76.8	73.2	0.73
Private	23.9	23.2	26.8	-0.73
Catholic	5.0	5.4	3.2	0.44
Other private	18.9	17.7	23.6	-1.16
Census region				
Northeast	17.4	17.5	17.1	0.07
Midwest	29.4	33.6	12.8	4.15*
South	34.0	33.1	37.5	-0.87
West	19.2	15.8	32.7	-3.35
School urbanity				
City	21.2	21.2	20.9	0.07
Suburban	22.7	21.2	28.7	-1.51
Town	16.6	18.7	8.3	2.08*
Rural	39.6	38.9	42.1	-0.64

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-21. Comparison of item respondents and nonrespondents for A1HRPAPERWK (Hours/week spent on paperwork required by authorities) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.4	78.8	-0.67
Private	23.9	24.6	21.2	0.67
Catholic	5.0	5.3	3.9	0.28
Other private	18.9	19.3	17.3	0.39
Census region				
Northeast	17.4	19.1	10.6	1.70
Midwest	29.4	33.4	13.7	3.92*
South	34.0	31.9	42.4	-2.11
West	19.2	15.7	33.2	-3.51
School urbanity				
City	21.2	19.7	26.8	-1.41
Suburban	22.7	22.4	23.8	-0.29
Town	16.6	19.0	7.0	2.39*
Rural	39.6	38.9	42.4	-0.70

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-22. Comparison of item respondents and nonrespondents for A1CAPACITY (Percent capacity to which school is filled) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	76.7	74.0	0.54
Private	23.9	23.3	26.0	-0.54
Catholic	5.0	5.3	3.8	0.32
Other private	18.9	18.0	22.2	-0.86
Census region				
Northeast	17.4	19.5	9.3	2.09
Midwest	29.4	31.3	22.1	1.90
South	34.0	32.7	39.1	-1.32
West	19.2	16.5	29.5	-2.67
School urbanity				
City	21.2	20.7	22.8	-0.42
Suburban	22.7	23.4	19.9	0.71
Town	16.6	18.3	9.9	1.72
Rural	39.6	37.6	47.3	-2.01

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-23. Comparison of item respondents and nonrespondents for A1RETURN09 (Percent of 9th-graders enrolled in this school Sept 2008 returned Sept 2009) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	77.5	70.8	1.38
Private	23.9	22.5	29.2	-1.38
Catholic	5.0	5.6	2.8	0.57
Other private	18.9	16.9	26.4	-1.95
Census region				
Northeast	17.4	19.0	11.2	1.62
Midwest	29.4	33.6	13.7	4.12*
South	34.0	33.6	35.6	-0.43
West	19.2	13.9	39.5	-5.31
School urbanity				
City	21.2	22.1	17.5	0.94
Suburban	22.7	22.4	23.6	-0.24
Town	16.6	16.6	16.7	-0.02
Rural	39.6	38.9	42.2	-0.68

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-24. Comparison of item respondents and nonrespondents for A1HSSUBJECT (Main subject principal taught at high school level) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	75.9	75.4	77.8	-0.52
Private	24.1	24.6	22.2	0.52
Catholic	5.0	5.3	4.0	0.26
Other private	19.1	19.3	18.2	0.25
Census region				
Northeast	16.3	17.8	11.0	1.48
Midwest	30.2	34.1	16.2	3.87*
South	33.5	32.0	39.3	-1.58
West	19.9	16.1	33.6	-3.77
School urbanity				
City	20.3	19.2	24.5	-1.15
Suburban	23.7	23.5	24.2	-0.15
Town	15.3	17.6	7.3	2.22
Rural	40.7	39.8	44.0	-0.92

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-25. Comparison of item respondents and nonrespondents for A1ADA (Average daily attendance percentage for students) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	76.3	75.6	0.15
Private	23.9	23.7	24.4	-0.15
Catholic	5.0	5.2	4.1	0.25
Other private	18.9	18.5	20.3	-0.40
Census region				
Northeast	17.4	19.6	9.6	2.23
Midwest	29.4	30.8	24.6	1.38
South	34.0	33.4	35.9	-0.56
West	19.2	16.1	29.8	-3.05
School urbanity				
City	21.2	21.4	20.2	0.27
Suburban	22.7	22.9	21.7	0.27
Town	16.6	19.1	8.1	2.45*
Rural	39.6	36.6	50.0	-3.00

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-26. Comparison of item respondents and nonrespondents for A1NOMTHO (School offers no mathematics course through some other means) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	76.1	75.5	78.3	-0.64
Private	23.9	24.5	21.7	0.64
Catholic	5.0	5.4	3.5	0.43
Other private	18.9	19.1	18.2	0.21
Census region				
Northeast	17.4	19.1	11.6	1.69
Midwest	29.4	31.5	22.5	2.02
South	34.0	33.4	35.8	-0.54
West	19.2	16.0	30.0	-3.16
School urbanity				
City	21.2	20.2	24.5	-0.99
Suburban	22.7	22.8	22.3	0.11
Town	16.6	18.1	11.4	1.51
Rural	39.6	38.9	41.7	-0.64

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-27. Comparison of item respondents and nonrespondents for A1OFFCLCAPIB (School offers calculus IB through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	75.5	74.7	78.0	-0.76
Private	24.5	25.3	22.0	0.76
Catholic	5.0	5.5	3.6	0.44
Other private	19.5	19.8	18.4	0.32
Census region				
Northeast	17.6	19.3	11.8	1.72
Midwest	29.1	31.2	22.2	2.07
South	33.9	33.2	36.2	-0.69
West	19.4	16.3	29.7	-3.10
School urbanity				
City	20.7	19.7	24.1	-1.03
Suburban	22.5	22.5	22.6	-0.02
Town	17.0	18.7	11.6	1.62
Rural	39.7	39.2	41.7	-0.58

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-28. Comparison of item respondents and nonrespondents for A1STARTDEG (Principal's highest degree started but not completed (if any)) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	74.7	74.8	74.4	0.09
Private	25.3	25.2	25.6	-0.09
Catholic	5.1	5.6	3.7	0.45
Other private	20.1	19.6	21.9	-0.54
Census region				
Northeast	16.9	19.1	9.7	2.19
Midwest	31.1	34.7	19.5	3.56*
South	31.7	29.3	39.7	-2.43
West	20.2	16.9	31.1	-3.32
School urbanity				
City	18.8	17.7	22.3	-1.07
Suburban	23.1	22.9	24.0	-0.27
Town	16.7	18.8	9.9	2.09
Rural	41.4	40.6	43.8	-0.75

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-29. Comparison of item respondents and nonrespondents for A1OFFMPSCIA (School offers computer science AP (A) through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.2	75.7	78.0	-0.54
Private	23.8	24.3	22.0	0.54
Catholic	4.5	4.8	3.5	0.31
Other private	19.3	19.5	18.5	0.22
Census region				
Northeast	17.5	19.3	11.7	1.77
Midwest	29.8	31.9	22.8	2.12
South	33.0	32.4	35.0	-0.59
West	19.7	16.4	30.6	-3.30
School urbanity				
City	20.4	19.1	24.8	-1.31
Suburban	21.9	21.7	22.6	-0.20
Town	16.8	18.8	10.2	2.01
Rural	40.8	40.3	42.5	-0.50

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-30. Comparison of item respondents and nonrespondents for A1OFFCMPSCIB (School offers computer science AP (AB) through some other means) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	76.6	76.1	78.3	-0.53
Private	23.4	23.9	21.7	0.53
Catholic	4.8	5.3	3.4	0.42
Other private	18.6	18.7	18.2	0.11
Census region				
Northeast	17.0	18.6	11.5	1.64
Midwest	29.6	31.7	22.5	2.14
South	34.0	33.4	35.9	-0.57
West	19.5	16.3	30.1	-3.20
School urbanity				
City	20.8	19.6	24.5	-1.12
Suburban	21.9	21.8	22.2	-0.09
Town	17.1	18.8	11.5	1.70
Rural	40.2	39.7	41.8	-0.49

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-31. Comparison of item respondents and nonrespondents for A1OFFANGEOM (School offers analytic geometry through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.5	75.8	78.4	-0.65
Private	23.5	24.2	21.6	0.65
Catholic	4.9	5.4	3.3	0.53
Other private	18.7	18.8	18.3	0.12
Census region				
Northeast	15.4	16.7	11.6	1.29
Midwest	28.5	30.8	21.4	2.37
South	36.1	36.0	36.1	-0.03
West	20.0	16.4	30.9	-3.63
School urbanity				
City	19.5	17.7	24.7	-1.76
Suburban	22.6	22.6	22.3	0.08
Town	16.6	18.7	10.2	2.14
Rural	41.4	40.9	42.7	-0.46

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-32. Comparison of item respondents and nonrespondents for A1OFFCLCAPBC (School offers calculus AP (BC) through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.5	77.9	-0.62
Private	23.9	24.5	22.1	0.62
Catholic	4.4	4.7	3.4	0.33
Other private	19.5	19.8	18.7	0.29
Census region				
Northeast	16.1	17.8	11.4	1.63
Midwest	31.2	34.3	21.9	3.17*
South	33.6	33.0	35.6	-0.67
West	19.1	14.9	31.1	-4.13
School urbanity				
City	19.8	18.0	24.9	-1.77
Suburban	19.2	18.3	21.7	-0.88*
Town	17.4	19.8	10.5	2.35
Rural	43.6	43.9	42.8	0.30

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-33. Comparison of item respondents and nonrespondents for A1NOSCIO (School offers no science course through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	76.4	75.2	0.29
Private	23.9	23.6	24.8	-0.29
Catholic	5.0	5.3	3.9	0.35
Other private	18.9	18.3	20.9	-0.64
Census region				
Northeast	17.4	18.2	14.8	0.84
Midwest	29.4	31.7	22.7	2.22
South	34.0	33.8	34.6	-0.20
West	19.2	16.3	27.9	-2.87
School urbanity				
City	21.2	21.5	20.1	0.35
Suburban	22.7	21.1	27.5	-1.58
Town	16.6	17.3	14.6	0.65
Rural	39.6	40.1	37.8	0.58

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-34. Comparison of item respondents and nonrespondents for A1OFFALG3 (School offers algebra III through some other means) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	74.4	72.5	79.9	-1.96
Private	25.6	27.5	20.1	1.96
Catholic	4.3	4.6	3.3	0.35
Other private	21.3	22.9	16.7	1.62
Census region				
Northeast	15.5	16.9	11.7	1.37
Midwest	29.4	32.1	21.8	2.71
South	34.1	33.6	35.3	-0.45
West	21.0	17.4	31.2	-3.63
School urbanity				
City	20.3	18.4	25.6	-1.90
Suburban	21.8	21.2	23.4	-0.56
Town	17.1	20.1	8.8	2.96
Rural	40.8	40.3	42.2	-0.49

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-35. Comparison of item respondents and nonrespondents for A1OFFINTSCI2 (School offers integrated science II or above through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	76.4	75.4	0.26
Private	23.9	23.6	24.6	-0.26
Catholic	4.9	5.4	3.6	0.46
Other private	18.9	18.2	21.1	-0.73
Census region				
Northeast	17.5	18.5	14.8	0.95
Midwest	29.3	31.7	22.4	2.39
South	34.4	34.2	34.9	-0.19
West	18.8	15.6	28.0	-3.15
School urbanity				
City	21.1	21.4	20.2	0.31
Suburban	21.7	19.9	27.0	-1.82
Town	16.9	17.6	14.8	0.73
Rural	40.3	41.1	38.0	0.78

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-36. Comparison of item respondents and nonrespondents for A1OFFSTATSAP (School offers statistics AP through some other means) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	74.1	72.6	78.1	-1.46
Private	25.9	27.4	21.9	1.46
Catholic	5.1	5.7	3.4	0.61
Other private	20.9	21.7	18.5	0.85
Census region				
Northeast	15.2	16.5	11.5	1.34
Midwest	31.9	35.3	22.6	3.36*
South	33.4	32.5	35.8	-0.87
West	19.5	15.7	30.2	-3.83
School urbanity				
City	18.0	16.0	23.6	-2.00*
Suburban	19.4	18.4	21.9	-0.92*
Town	17.4	19.4	11.9	1.97
Rural	45.2	46.2	42.6	0.95*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-37. Comparison of item respondents and nonrespondents for A1OFFENVAP (School offers environmental science AP through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	75.6	75.8	74.9	0.22
Private	24.4	24.2	25.1	-0.22
Catholic	4.9	5.4	3.6	0.46
Other private	19.5	18.8	21.4	-0.68
Census region				
Northeast	17.3	18.2	15.0	0.85
Midwest	31.2	34.3	22.6	3.10*
South	31.8	31.0	33.8	-0.73
West	19.7	16.5	28.6	-3.22
School urbanity				
City	20.2	20.1	20.6	-0.12
Suburban	21.0	18.9	26.7	-2.06
Town	17.4	18.5	14.3	1.11
Rural	41.4	42.5	38.5	1.07

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-38. Comparison of item respondents and nonrespondents for A12YRDEGREE (Percent of 08–09 12th-graders who went on to 2-year institution) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.7	77.4	-0.45
Private	23.9	24.3	22.6	0.45
Catholic	5.0	6.0	2.1	1.01*
Other private	18.9	18.3	20.5	-0.56
Census region				
Northeast	17.4	20.8	7.8	3.42*
Midwest	29.4	31.6	23.4	2.14
South	34.0	33.9	34.2	-0.08
West	19.2	13.7	34.6	-5.48
School urbanity				
City	21.2	22.7	16.8	1.53
Suburban	22.7	23.8	19.4	1.16
Town	16.6	16.4	17.2	-0.22
Rural	39.6	37.1	46.5	-2.47

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-39. Comparison of item respondents and nonrespondents for A1OFFINTSCI1 (School offers integrated science I through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	74.7	74.8	74.5	0.09
Private	25.3	25.2	25.5	-0.09
Catholic	4.9	5.3	3.6	0.46
Other private	20.4	19.8	21.9	-0.55
Census region				
Northeast	18.5	19.6	15.3	1.15
Midwest	28.2	30.5	21.9	2.32
South	34.4	33.9	35.8	-0.49
West	18.9	16.0	27.0	-2.98
School urbanity				
City	21.1	21.3	20.5	0.21
Suburban	22.3	20.2	27.9	-2.07
Town	16.6	18.1	12.3	1.56
Rural	40.1	40.4	39.2	0.30

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-40. Comparison of item respondents and nonrespondents for A14YRDEGREE (Percent of 08–09 12th-graders who went on 4-year degree-granting institution) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	76.1	75.6	77.5	-0.50
Private	23.9	24.4	22.5	0.50
Catholic	5.0	6.0	2.1	1.02*
Other private	18.9	18.4	20.3	-0.52
Census region				
Northeast	17.4	20.9	7.7	3.46*
Midwest	29.4	31.4	23.8	2.00
South	34.0	34.0	34.0	-0.01
West	19.2	13.7	34.4	-5.45
School urbanity				
City	21.2	22.5	17.3	1.37
Suburban	22.7	23.9	19.3	1.21
Town	16.6	16.4	17.1	-0.18
Rural	39.6	37.2	46.3	-2.40

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-41. Comparison of item respondents and nonrespondents for A1OFFOTHPSCI (School offers an other physical science through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	75.1	75.0	75.4	-0.12
Private	24.9	25.0	24.6	0.12
Catholic	4.6	5.0	3.5	0.41
Other private	20.3	20.0	21.1	-0.29
Census region				
Northeast	16.5	17.3	14.4	0.79
Midwest	29.4	32.2	21.9	2.75
South	34.2	33.9	35.2	-0.35
West	19.8	16.6	28.5	-3.19
School urbanity				
City	20.7	20.8	20.6	0.06
Suburban	20.4	18.4	25.8	-2.00*
Town	16.8	17.5	15.0	0.67
Rural	42.1	43.3	38.6	1.27

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-42. Comparison of item respondents and nonrespondents for A1MILITARY (Percent of 08–09 12th-graders who joined military) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.6	77.5	-0.49
Private	23.9	24.4	22.5	0.49
Catholic	5.0	6.0	2.2	1.00*
Other private	18.9	18.4	20.3	-0.51
Census region				
Northeast	17.4	20.8	7.8	3.44*
Midwest	29.4	31.5	23.8	2.02
South	34.0	34.0	34.0	-0.01
West	19.2	13.7	34.4	-5.46
School urbanity				
City	21.2	22.5	17.4	1.36
Suburban	22.7	23.9	19.4	1.19
Town	16.6	16.4	17.1	-0.17
Rural	39.6	37.2	46.2	-2.37

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-43. Comparison of item respondents and nonrespondents for A1OFFINTMTH2 (School offers integrated mathematics II or above through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	74.5	73.1	78.1	-1.36
Private	25.5	26.9	21.9	1.36
Catholic	5.5	6.3	3.5	0.76
Other private	20.0	20.6	18.3	0.60
Census region				
Northeast	13.8	14.6	11.6	0.82
Midwest	27.3	29.1	22.3	1.87
South	37.2	37.6	35.8	0.49
West	21.8	18.6	30.2	-3.19
School urbanity				
City	24.1	24.0	24.3	-0.09
Suburban	22.1	22.0	22.3	-0.07
Town	15.9	17.5	11.5	1.63
Rural	38.0	36.5	41.9	-1.47

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-44. Comparison of item respondents and nonrespondents for A1OFFSTATS (School offers statistics or probability through some other means) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	75.5	75.0	76.8	-0.49
Private	24.5	25.0	23.2	0.49
Catholic	3.4	3.5	3.3	0.06*
Other private	21.0	21.5	19.9	0.43
Census region				
Northeast	15.1	16.9	10.5	1.80
Midwest	27.6	30.3	20.7	2.68
South	35.4	34.8	37.1	-0.65
West	21.9	18.0	31.8	-3.84
School urbanity				
City	22.2	21.2	24.8	-1.00
Suburban	18.8	17.5	22.3	-1.35*
Town	17.1	19.8	10.2	2.69
Rural	41.9	41.5	42.8	-0.34

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-45. Comparison of item respondents and nonrespondents for A1WORK (Percent of 08–09 12th-graders who entered the workforce) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.6	77.6	-0.53
Private	23.9	24.4	22.4	0.53
Catholic	5.0	6.0	2.2	1.01*
Other private	18.9	18.4	20.2	-0.48
Census region				
Northeast	17.4	20.9	7.8	3.48*
Midwest	29.4	31.4	23.9	2.01
South	34.0	34.0	33.9	0.04
West	19.2	13.7	34.5	-5.53
School urbanity				
City	21.2	22.5	17.4	1.34
Suburban	22.7	23.8	19.5	1.15
Town	16.6	16.4	17.1	-0.17
Rural	39.6	37.2	46.0	-2.31

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-46. Comparison of item respondents and nonrespondents for A1OFFTECH (School offers principles of technology through some other means) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	74.2	74.0	75.0	-0.27
Private	25.8	26.0	25.0	0.27
Catholic	4.9	5.3	3.7	0.43
Other private	20.9	20.7	21.3	-0.16
Census region				
Northeast	14.5	14.3	15.2	-0.23
Midwest	30.5	33.5	22.6	2.95
South	34.1	34.2	33.9	0.08
West	20.8	18.0	28.4	-2.79
School urbanity				
City	21.6	22.4	19.6	0.74
Suburban	23.5	21.8	28.0	-1.67
Town	15.6	16.0	14.6	0.36
Rural	39.3	39.9	37.8	0.57

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-47. Comparison of item respondents and nonrespondents for A1OFFINTMTH1 (School offers integrated mathematics I through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	73.8	71.9	78.5	-1.83
Private	26.2	28.1	21.5	1.83
Catholic	5.7	6.5	3.6	0.80*
Other private	20.5	21.6	17.9	1.02
Census region				
Northeast	14.3	15.2	11.8	0.94
Midwest	28.0	29.9	22.8	1.96
South	36.4	36.8	35.4	0.37
West	21.4	18.1	29.9	-3.27
School urbanity				
City	24.1	23.8	25.0	-0.33
Suburban	22.2	22.1	22.5	-0.12
Town	15.4	17.2	10.7	1.79
Rural	38.2	36.9	41.8	-1.34

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-48. Comparison of item respondents and nonrespondents for A1DIDOTHER (Percent of 08–09 12th-graders who did something else) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	75.5	77.7	-0.58
Private	23.9	24.5	22.3	0.58
Catholic	5.0	6.0	2.3	1.00*
Other private	18.9	18.5	20.0	-0.42
Census region				
Northeast	17.4	20.9	7.8	3.52*
Midwest	29.4	31.5	23.8	2.06
South	34.0	33.9	34.2	-0.09
West	19.2	13.7	34.2	-5.48
School urbanity				
City	21.2	22.5	17.3	1.40
Suburban	22.7	23.7	19.9	1.00
Town	16.6	16.5	17.0	-0.12
Rural	39.6	37.3	45.8	-2.28

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-49. Comparison of item respondents and nonrespondents for A1MSSUBJECT (Main subject principal taught at middle school level) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	73.5	71.9	77.4	-1.59
Private	26.5	28.1	22.6	1.59
Catholic	3.8	4.1	3.2	0.27
Other private	22.6	24.0	19.4	1.33
Census region				
Northeast	14.2	15.2	11.8	1.00
Midwest	30.6	37.3	14.5	6.65*
South	36.1	35.1	38.5	-0.99
West	19.0	12.4	35.1	-6.65
School urbanity				
City	18.5	16.5	23.2	-1.96
Suburban	23.8	23.4	24.8	-0.43
Town	17.0	21.2	6.8	4.20
Rural	40.7	38.9	45.1	-1.81

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-50. Comparison of item respondents and nonrespondents for A1OBLOCKMINS (Length of other block-scheduled courses) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	84.5	95.9	67.0	11.44*
Private	15.5	4.1	33.0	-11.44*
Catholic	3.1	1.9	4.9	-1.19*
Other private	12.4	2.2	28.1	-10.25*
Census region				
Northeast	23.6	33.5	8.4	9.90
Midwest	15.5	16.8	13.7	1.21*
South	45.3	38.6	55.6	-6.75
West	15.6	11.2	22.2	-4.36
School urbanity				
City	22.8	22.0	24.1	-0.82
Suburban	28.8	27.3	31.1	-1.48
Town	14.6	19.1	7.6	4.54
Rural	33.8	31.6	37.2	-2.24

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-51. Comparison of item respondents and nonrespondents for A1OFFADVPHYS (School offers advanced physics/phys II/AP/IB through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	75.8	76.2	74.7	0.41
Private	24.2	23.8	25.3	-0.41
Catholic	4.0	4.3	3.3	0.27
Other private	20.2	19.5	21.9	-0.68
Census region				
Northeast	16.1	17.0	13.9	0.89
Midwest	30.9	34.3	22.3	3.40*
South	33.1	32.3	35.0	-0.75
West	19.9	16.3	28.8	-3.54
School urbanity				
City	18.8	18.0	20.6	-0.72
Suburban	18.6	16.1	24.9	-2.51*
Town	18.9	20.4	15.0	1.53*
Rural	43.8	45.5	39.5	1.70

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-52. Comparison of item respondents and nonrespondents for A1OFFOTHESCI (School offers an other Earth or environmental science through some other means) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	74.7	74.8	74.5	0.10
Private	25.3	25.2	25.5	-0.10
Catholic	5.2	5.6	4.0	0.48
Other private	20.1	19.5	21.6	-0.58
Census region				
Northeast	16.1	16.9	14.0	0.83
Midwest	29.1	31.9	22.0	2.82
South	34.5	34.1	35.5	-0.41
West	20.4	17.1	28.5	-3.24
School urbanity				
City	20.7	20.9	20.2	0.21
Suburban	21.5	19.5	26.5	-2.00
Town	16.0	16.4	14.9	0.43
Rural	41.8	43.1	38.4	1.36

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-53. Comparison of item respondents and nonrespondents for A1OFFGENSCI (School offers general science through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.5	77.2	74.7	0.72
Private	23.5	22.8	25.3	-0.72
Catholic	5.1	5.7	3.5	0.64
Other private	18.4	17.1	21.8	-1.37
Census region				
Northeast	17.3	18.2	15.2	0.88
Midwest	27.9	30.6	21.2	2.72
South	34.9	34.3	36.3	-0.58
West	19.8	16.8	27.3	-3.02
School urbanity				
City	21.1	21.1	21.1	0.00
Suburban	23.8	22.0	28.4	-1.83
Town	16.7	19.0	11.0	2.28
Rural	38.4	38.0	39.5	-0.45

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-54. Comparison of item respondents and nonrespondents for A1OFFOTHBIO (School offers an other biological science through some other means) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	74.4	74.8	73.4	0.41
Private	25.6	25.2	26.6	-0.41
Catholic	4.3	4.4	4.0	0.11
Other private	21.3	20.8	22.6	-0.52
Census region				
Northeast	16.8	17.1	15.9	0.37
Midwest	29.3	33.5	19.2	4.13
South	34.5	33.4	36.9	-1.01
West	19.5	16.0	28.0	-3.48
School urbanity				
City	21.2	21.3	21.0	0.07
Suburban	20.8	17.7	28.3	-3.07*
Town	15.9	17.8	11.2	1.92
Rural	42.1	43.2	39.4	1.08

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-55. Comparison of item respondents and nonrespondents for A1OFFLSCI (School offers life science through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	77.6	79.5	72.9	1.92
Private	22.4	20.5	27.1	-1.92
Catholic	5.3	5.8	4.2	0.48
Other private	17.1	14.7	22.9	-2.40
Census region				
Northeast	17.7	18.5	15.9	0.77
Midwest	26.0	28.9	19.0	2.91
South	38.7	39.4	37.0	0.69
West	17.6	13.2	28.1	-4.37
School urbanity				
City	21.0	20.6	22.1	-0.45
Suburban	25.4	23.9	29.1	-1.51
Town	14.0	16.0	9.2	2.01
Rural	39.5	39.5	39.7	-0.06

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-56. Comparison of item respondents and nonrespondents for A1OFFCMPSCI (School offers computer science through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.7	75.3	80.2	-1.45
Private	23.3	24.7	19.8	1.45
Catholic	3.1	3.0	3.3	-0.09*
Other private	20.2	21.7	16.6	1.54
Census region				
Northeast	18.5	21.2	12.1	2.72
Midwest	29.3	32.5	21.8	3.18
South	29.8	27.3	35.8	-2.55*
West	22.4	19.0	30.3	-3.35
School urbanity				
City	18.5	15.8	24.9	-2.71*
Suburban	21.0	20.0	23.4	-1.00
Town	15.8	18.5	9.5	2.67
Rural	44.6	45.7	42.2	1.04

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-57. Comparison of item respondents and nonrespondents for A1OFFALGP1P2 (School offers algebra I part 1 and part 2 through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	70.8	68.1	76.6	-2.71*
Private	29.2	31.9	23.4	2.71*
Catholic	4.6	4.7	4.3	0.15
Other private	24.6	27.2	19.1	2.55*
Census region				
Northeast	14.9	16.5	11.3	1.64
Midwest	24.9	29.0	15.9	4.13
South	37.6	37.3	38.1	-0.22
West	22.7	17.2	34.7	-5.54
School urbanity				
City	20.6	19.7	22.5	-0.89
Suburban	22.6	21.4	25.2	-1.21
Town	14.7	18.7	6.2	3.93
Rural	42.1	40.3	46.1	-1.83

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-58. Comparison of item respondents and nonrespondents for A1CHOICEOTHR (School participates in another public school choice program) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	97.5	100.0	93.1	2.45*
Private	2.5	0.0	6.9	-2.45*
Catholic	0.1	0.0	0.4	-0.15*
Other private	2.3	0.0	6.5	-2.31*
Census region				
Northeast	14.3	15.9	11.3	1.62
Midwest	32.8	42.8	14.6	10.02*
South	27.8	23.8	35.3	-4.08*
West	25.1	17.5	38.8	-7.56
School urbanity				
City	25.0	28.8	18.0	3.85
Suburban	16.9	17.9	15.0	1.05
Town	15.5	19.6	8.1	4.08
Rural	42.6	33.6	58.9	-8.98

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-59. Comparison of item respondents and nonrespondents for A1CHOICEIN (Students can enroll in school or another school within district) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	97.5	100.0	93.1	2.45*
Private	2.5	0.0	6.9	-2.45*
Catholic	0.1	0.0	0.4	-0.15*
Other private	2.3	0.0	6.5	-2.31*
Census region				
Northeast	14.3	15.9	11.3	1.62
Midwest	32.8	42.8	14.6	10.02*
South	27.8	23.8	35.3	-4.08*
West	25.1	17.5	38.8	-7.56
School urbanity				
City	25.0	28.8	18.0	3.85
Suburban	16.9	17.9	15.0	1.05
Town	15.5	19.6	8.1	4.08
Rural	42.6	33.6	58.9	-8.98

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-60. Comparison of item respondents and nonrespondents for A1CHOICEOUT (Students can enroll in public school in another district at no tuition cost) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	97.5	100.0	93.1	2.45*
Private	2.5	0.0	6.9	-2.45*
Catholic	0.1	0.0	0.4	-0.15*
Other private	2.3	0.0	6.5	-2.31*
Census region				
Northeast	14.3	15.9	11.3	1.62
Midwest	32.8	42.8	14.6	10.02*
South	27.8	23.8	35.3	-4.08*
West	25.1	17.5	38.8	-7.56
School urbanity				
City	25.0	28.8	18.0	3.85
Suburban	16.9	17.9	15.0	1.05
Town	15.5	19.6	8.1	4.08
Rural	42.6	33.6	58.9	-8.98

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-61. Comparison of item respondents and nonrespondents for A1CHOICEPRIV (Students can enroll in a private school using state/district funds) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	97.5	100.0	93.1	2.45*
Private	2.5	0.0	6.9	-2.45*
Catholic	0.1	0.0	0.4	-0.15*
Other private	2.3	0.0	6.5	-2.31*
Census region				
Northeast	14.3	15.9	11.3	1.62
Midwest	32.8	42.8	14.6	10.02*
South	27.8	23.8	35.3	-4.08*
West	25.1	17.5	38.8	-7.56
School urbanity				
City	25.0	28.8	18.0	3.85
Suburban	16.9	17.9	15.0	1.05
Town	15.5	19.6	8.1	4.08
Rural	42.6	33.6	58.9	-8.98

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-62. Comparison of item respondents and nonrespondents for A1CHOICESCH (Students from other districts can enroll in school at no tuition cost) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	97.5	100.0	93.1	2.45*
Private	2.5	0.0	6.9	-2.45*
Catholic	0.1	0.0	0.4	-0.15*
Other private	2.3	0.0	6.5	-2.31*
Census region				
Northeast	14.3	15.9	11.3	1.62
Midwest	32.8	42.8	14.6	10.02*
South	27.8	23.8	35.3	-4.08*
West	25.1	17.5	38.8	-7.56
School urbanity				
City	25.0	28.8	18.0	3.85
Suburban	16.9	17.9	15.0	1.05
Town	15.5	19.6	8.1	4.08
Rural	42.6	33.6	58.9	-8.98

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-63. Comparison of item respondents and nonrespondents for A1OFFRMTH (School offers review or remedial mathematics through some other means) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	70.0	66.0	78.7	-3.98*
Private	30.0	34.0	21.3	3.98*
Catholic	6.7	8.1	3.9	1.31*
Other private	23.3	25.9	17.4	2.68
Census region				
Northeast	17.6	20.5	11.4	2.85
Midwest	24.8	28.2	17.4	3.37
South	35.4	34.0	38.3	-1.33
West	22.2	17.3	32.9	-4.89
School urbanity				
City	25.4	27.2	21.4	1.82*
Suburban	22.2	21.5	23.7	-0.69
Town	14.2	15.7	10.8	1.54
Rural	38.3	35.6	44.1	-2.67

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-64. Comparison of item respondents and nonrespondents for A1FILLMTH (Ease of filling high school mathematics teaching vacancies) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	85.4	90.3	75.8	4.90*
Private	14.6	9.7	24.2	-4.90*
Catholic	4.0	4.4	3.2	0.38
Other private	10.6	5.3	20.9	-5.28*
Census region				
Northeast	13.6	15.6	9.6	2.03
Midwest	19.6	22.2	14.6	2.56
South	42.5	44.0	39.5	1.52*
West	24.3	18.2	36.3	-6.11
School urbanity				
City	19.3	18.7	20.6	-0.64
Suburban	24.3	24.3	24.2	0.04
Town	16.3	20.9	7.4	4.54
Rural	40.1	36.1	47.8	-3.94

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-65. Comparison of item respondents and nonrespondents for A1OFFADVCHEM (School offers advanced chemistry/chem II/AP/IB thru some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	73.0	72.3	74.4	-0.65
Private	27.0	27.7	25.6	0.65
Catholic	4.1	4.5	3.2	0.40
Other private	23.0	23.2	22.4	0.25
Census region				
Northeast	14.4	14.5	14.0	0.17
Midwest	32.1	36.7	21.9	4.67*
South	32.9	32.2	34.5	-0.72
West	20.7	16.6	29.7	-4.12
School urbanity				
City	17.6	15.9	21.1	-1.64*
Suburban	19.3	16.6	25.3	-2.74*
Town	18.2	19.9	14.4	1.73
Rural	44.9	47.5	39.1	2.65*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-66. Comparison of item respondents and nonrespondents for A1OFFADVBIO (School offers advanced biology/bio II/AP/IB through some other means) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	73.7	74.1	73.0	0.33
Private	26.3	25.9	27.0	-0.33
Catholic	3.2	3.0	3.6	-0.16*
Other private	23.1	22.9	23.4	-0.17
Census region				
Northeast	13.3	12.6	14.7	-0.66
Midwest	33.6	40.5	19.1	6.92*
South	32.1	30.2	36.1	-1.92
West	21.0	16.7	30.1	-4.34
School urbanity				
City	17.0	14.8	21.4	-2.14*
Suburban	18.8	15.2	26.4	-3.61*
Town	15.7	17.1	12.7	1.43
Rural	48.5	52.8	39.5	4.31*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-67. Comparison of item respondents and nonrespondents for A1OFFERTHSCI (School offers Earth science through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.7	77.7	74.8	0.97
Private	23.3	22.3	25.2	-0.97
Catholic	5.8	6.5	4.5	0.70
Other private	17.5	15.8	20.7	-1.67
Census region				
Northeast	13.1	14.7	9.9	1.65
Midwest	25.3	30.9	14.3	5.68
South	40.3	39.5	41.7	-0.76
West	21.4	14.8	34.1	-6.58
School urbanity				
City	21.6	22.6	19.9	0.92
Suburban	20.7	18.0	25.8	-2.67
Town	12.8	15.0	8.5	2.20
Rural	44.9	44.5	45.8	-0.45

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-68. Comparison of item respondents and nonrespondents for A1HROTH (Hours/week spent on other activities) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	76.1	74.7	79.3	-1.45
Private	23.9	25.3	20.7	1.45
Catholic	5.0	5.3	4.3	0.33
Other private	18.9	20.0	16.5	1.12
Census region				
Northeast	17.4	19.7	12.5	2.25
Midwest	29.4	33.5	20.6	4.04
South	34.0	32.7	36.8	-1.28
West	19.2	14.2	30.2	-5.02
School urbanity				
City	21.2	19.6	24.6	-1.59
Suburban	22.7	22.2	23.7	-0.47
Town	16.6	19.4	10.6	2.75
Rural	39.6	38.9	41.1	-0.69

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-69. Comparison of item respondents and nonrespondents for A1OFFENVSCI (School offers environmental science through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	71.1	68.5	76.1	-2.62
Private	28.9	31.5	23.9	2.62
Catholic	4.5	4.8	3.9	0.31
Other private	24.4	26.7	20.0	2.31
Census region				
Northeast	8.0	6.7	10.3	-1.25*
Midwest	28.1	33.9	17.2	5.76
South	35.3	33.7	38.4	-1.64
West	28.6	25.7	34.0	-2.88
School urbanity				
City	21.9	23.3	19.2	1.42
Suburban	18.2	14.7	24.8	-3.48*
Town	14.9	17.9	9.3	2.98
Rural	45.0	44.1	46.7	-0.93

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-70. Comparison of item respondents and nonrespondents for A1OFFCLCAPAB (School offers calculus AP (AB) through some other means) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	71.7	68.9	76.9	-2.74
Private	28.3	31.1	23.1	2.74
Catholic	3.0	2.9	3.2	-0.10*
Other private	25.4	28.2	19.9	2.84*
Census region				
Northeast	15.4	17.7	11.2	2.23
Midwest	31.5	36.5	22.1	4.93
South	31.3	29.2	35.2	-2.04
West	21.8	16.6	31.5	-5.12
School urbanity				
City	18.1	14.4	25.2	-3.69*
Suburban	18.2	15.8	22.7	-2.36*
Town	14.4	17.1	9.1	2.75
Rural	49.4	52.7	43.0	3.30*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-71. Comparison of item respondents and nonrespondents for A1FILLSCI (Ease of filling high school science teaching vacancies) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	80.6	83.0	76.2	2.45*
Private	19.4	17.0	23.8	-2.45*
Catholic	6.2	7.8	3.2	1.68*
Other private	13.3	9.1	20.6	-4.12*
Census region				
Northeast	12.4	14.0	9.5	1.65
Midwest	22.5	26.7	15.1	4.19
South	38.7	38.6	38.8	-0.07
West	26.4	20.6	36.6	-5.76
School urbanity				
City	23.4	25.2	20.2	1.82
Suburban	24.5	25.1	23.6	0.52
Town	15.0	18.2	9.2	3.23
Rural	37.1	31.5	47.0	-5.57

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-72. Comparison of item respondents and nonrespondents for A1OFFPREALG (School offers pre-algebra through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	83.9	87.0	78.6	3.09*
Private	16.1	13.0	21.4	-3.09*
Catholic	5.1	5.8	3.9	0.69
Other private	11.0	7.2	17.5	-3.79*
Census region				
Northeast	15.0	17.2	11.3	2.16
Midwest	22.0	24.7	17.1	2.79
South	39.4	39.8	38.6	0.45
West	23.7	18.3	33.0	-5.41
School urbanity				
City	20.9	20.5	21.4	-0.33
Suburban	22.3	21.8	23.2	-0.50
Town	14.3	16.3	11.0	1.95
Rural	42.5	41.4	44.4	-1.11

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-73. Comparison of item respondents and nonrespondents for A1OFFTRIG (School offers trigonometry through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	72.5	69.6	77.0	-2.85
Private	27.5	30.4	23.0	2.85
Catholic	2.7	2.4	3.3	-0.36*
Other private	24.8	28.0	19.7	3.21
Census region				
Northeast	10.7	11.2	9.8	0.55
Midwest	27.4	31.9	20.3	4.50
South	40.4	42.4	37.3	1.97
West	21.5	14.4	32.6	-7.02
School urbanity				
City	23.0	20.9	26.4	-2.14
Suburban	23.3	24.3	21.8	0.97
Town	14.6	18.7	8.1	4.09
Rural	39.0	36.1	43.7	-2.92

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-74. Comparison of item respondents and nonrespondents for A1AYPYR (Year of AYP improvement as of 09-10 school year) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	97.0	100.0	93.1	2.99*
Private	3.0	0.0	6.9	-2.99*
Catholic	0.2	0.0	0.4	-0.18*
Other private	2.8	0.0	6.5	-2.82*
Census region				
Northeast	15.5	20.1	9.6	4.53
Midwest	29.8	38.9	17.9	9.10
South	29.5	24.4	36.3	-5.15*
West	25.1	16.6	36.2	-8.48
School urbanity				
City	30.7	40.2	18.3	9.49*
Suburban	20.1	23.5	15.5	3.46
Town	14.4	19.4	7.9	5.01
Rural	34.8	16.8	58.3	-17.96*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-75. Comparison of item respondents and nonrespondents for A1OFFANATOMY (School offers anatomy or physiology through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	66.8	62.1	73.3	-4.69*
Private	33.2	37.9	26.7	4.69*
Catholic	4.7	5.6	3.5	0.90
Other private	28.5	32.3	23.2	3.79*
Census region				
Northeast	20.4	23.3	16.3	2.92
Midwest	26.0	31.2	18.6	5.25
South	26.9	21.6	34.3	-5.32*
West	26.8	23.9	30.7	-2.85
School urbanity				
City	19.8	17.9	22.5	-1.93
Suburban	25.6	23.6	28.2	-1.93
Town	15.5	21.3	7.4	5.81
Rural	39.2	37.2	41.9	-1.95

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-76. Comparison of item respondents and nonrespondents for A1OFFCLC (School offers calculus through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	75.0	74.4	75.8	-0.60
Private	25.0	25.6	24.2	0.60
Catholic	2.7	2.2	3.3	-0.45*
Other private	22.4	23.4	20.9	1.05
Census region				
Northeast	10.0	10.3	9.4	0.39*
Midwest	25.3	28.1	21.5	2.81
South	37.7	38.7	36.4	1.00
West	27.0	22.8	32.6	-4.20
School urbanity				
City	20.1	16.7	24.7	-3.40
Suburban	17.9	15.3	21.3	-2.56*
Town	14.8	20.6	7.0	5.78
Rural	47.2	47.3	46.9	0.18

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-77. Comparison of item respondents and nonrespondents for A1OFFPHYSCI (School offers physical science through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	77.1	81.1	72.1	4.07
Private	22.9	18.9	27.9	-4.07
Catholic	5.4	6.6	4.0	1.16
Other private	17.5	12.3	23.9	-5.24
Census region				
Northeast	23.1	28.0	17.1	4.91*
Midwest	14.6	13.9	15.5	-0.73*
South	37.2	39.0	34.9	1.86
West	25.1	19.1	32.5	-6.04
School urbanity				
City	24.1	28.0	19.3	3.94
Suburban	25.9	22.2	30.4	-3.72
Town	8.8	10.9	6.2	2.11
Rural	41.3	39.0	44.1	-2.32

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-78. Comparison of item respondents and nonrespondents for A1OFFPHYS1 (School offers physics I through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	66.5	49.7	77.5	-16.77*
Private	33.5	50.3	22.5	16.77*
Catholic	2.1	0.1	3.4	-1.99*
Other private	31.4	50.1	19.1	18.76*
Census region				
Northeast	8.2	5.7	9.9	-2.51*
Midwest	18.5	18.7	18.4	0.13
South	40.0	43.8	37.5	3.79
West	33.2	31.8	34.1	-1.42
School urbanity				
City	22.2	18.6	24.6	-3.67
Suburban	23.9	25.9	22.6	1.98
Town	12.6	21.9	6.5	9.33
Rural	41.3	33.6	46.3	-7.64

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-79. Comparison of item respondents and nonrespondents for A1HRTEACHING (Hours/week spent on principal's own teaching assignments) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	53.6	20.2	74.7	-33.36*
Private	46.4	79.8	25.3	33.36*
Catholic	7.1	12.7	3.5	5.63
Other private	39.4	67.1	21.8	27.73*
Census region				
Northeast	11.8	12.2	11.5	0.39
Midwest	23.8	40.3	13.4	16.49
South	35.5	28.8	39.7	-6.65
West	28.9	18.7	35.4	-10.23
School urbanity				
City	18.3	12.4	22.1	-5.90
Suburban	23.9	19.6	26.6	-4.30
Town	15.4	28.7	7.0	13.24
Rural	42.4	39.3	44.3	-3.04

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-80. Comparison of item respondents and nonrespondents for A1OFFALG2 (School offers algebra II through some other means) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	73.2	65.2	75.7	-7.97
Private	26.8	34.8	24.3	7.97
Catholic	4.8	8.3	3.7	3.54
Other private	22.0	26.5	20.6	4.43
Census region				
Northeast	21.3	57.8	9.9	36.46*
Midwest	13.1	10.2	14.0	-2.95*
South	37.6	31.8	39.5	-5.84
West	27.9	0.2	36.6	-27.68*
School urbanity				
City	19.1	11.6	21.5	-7.55
Suburban	21.1	12.5	23.7	-8.55
Town	10.7	22.8	6.9	12.11
Rural	49.1	53.1	47.9	3.99

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-81. Comparison of item respondents and nonrespondents for A1OFFALG1 (School offers algebra I through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	74.7	65.4	77.5	-9.24
Private	25.3	34.6	22.5	9.24
Catholic	3.1	2.1	3.4	-1.01
Other private	22.3	32.5	19.1	10.25
Census region				
Northeast	9.8	11.3	9.3	1.53
Midwest	18.4	18.1	18.5	-0.27
South	41.6	52.0	38.3	10.42
West	30.2	18.5	33.9	-11.68
School urbanity				
City	25.5	25.9	25.3	0.44
Suburban	22.7	24.2	22.2	1.54
Town	9.1	12.4	8.1	3.24
Rural	42.7	37.5	44.3	-5.22

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-82. Comparison of item respondents and nonrespondents for A1OFFGEOM (School offers geometry through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	73.6	65.1	75.3	-8.51
Private	26.4	34.9	24.7	8.51
Catholic	3.2	0.8	3.7	-2.44*
Other private	23.2	34.1	21.0	10.95
Census region				
Northeast	10.3	12.6	9.9	2.27
Midwest	20.0	48.8	14.5	28.83
South	38.6	35.8	39.1	-2.77
West	31.1	2.7	36.5	-28.33*
School urbanity				
City	18.6	3.5	21.4	-15.03*
Suburban	22.2	14.3	23.7	-7.92
Town	9.6	21.7	7.3	12.07
Rural	49.6	60.5	47.5	10.88

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-83. Comparison of item respondents and nonrespondents for A1OFFCHEM1 (School offers chemistry I through some other means) by select sample school characteristics, using W1SCHOOL weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	73.2	57.6	75.6	-15.54
Private	26.8	42.4	24.4	15.54
Catholic	3.3	0.5	3.7	-2.74*
Other private	23.6	41.9	20.7	18.28
Census region				
Northeast	10.9	14.1	10.4	3.21
Midwest	16.8	33.9	14.1	17.09
South	38.3	29.9	39.6	-8.37
West	34.0	22.1	35.9	-11.92
School urbanity				
City	19.1	8.1	20.8	-10.97*
Suburban	29.3	62.0	24.2	32.69
Town	6.0	0.0	6.9	-5.98*
Rural	45.6	29.9	48.1	-15.74

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-84. Comparison of item respondents and nonrespondents for A1OFFBIO1 (School offers biology I through some other means) by select sample school characteristics, using W1SCHOOL weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	72.0	42.8	75.7	-29.14
Private	28.0	57.2	24.3	29.14
Catholic	3.8	5.1	3.7	1.29
Other private	24.2	52.0	20.7	27.85
Census region				
Northeast	12.0	24.8	10.4	12.81
Midwest	12.9	3.4	14.1	-9.43*
South	41.3	54.3	39.7	12.94
West	33.8	17.5	35.8	-16.32
School urbanity				
City	19.9	13.5	20.7	-6.45
Suburban	24.1	22.0	24.4	-2.09
Town	7.3	10.2	6.9	2.95
Rural	48.7	54.3	48.0	5.59

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-85. Comparison of item respondents and nonrespondents for S1ESTIN (Estimated cost of 1-year tuition/fees at public 4-year college in students state) by select sample school characteristics, using W1STUDENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.7	92.7	92.8	-0.04
Private	7.3	7.3	7.2	0.04
Catholic	3.8	3.9	3.5	0.10
Other private	3.5	3.5	3.7	-0.06
Census region	17.5	17.4	17.7	-0.06
Northeast	22.2	22.8	20.6	0.58*
Midwest	37.3	37.3	37.6	-0.08
South	23.0	22.5	24.2	-0.45
West	17.5	17.4	17.7	-0.06
School urbanity	31.9	31.6	32.8	-0.33
City	33.3	33.5	32.6	0.24
Suburban	11.7	11.7	11.5	0.06
Town	23.1	23.2	23.0	0.03
Rural	31.9	31.6	32.8	-0.33
Race/ethnicity				
Hispanic	22.3	21.5	24.8	-0.88
Asian	3.5	3.3	3.9	-0.18
Black	13.5	14.1	12.0	0.56
Other	60.7	61.2	59.3	0.50
Sex				
Male	50.3	51.5	47.0	1.18*
Female	49.7	48.5	53.0	-1.18*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-86. Comparison of item respondents and nonrespondents for S1ESTCONF (How confident student is in estimate given cost of public 4-year in-state college) by select sample school characteristics, using W1STUDENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.7	92.7	92.9	-0.05
Private	7.3	7.3	7.1	0.05
Catholic	3.8	3.9	3.5	0.11
Other private	3.5	3.5	3.7	-0.06
Census region				
Northeast	17.5	17.6	17.3	0.06
Midwest	22.2	22.7	20.8	0.51
South	37.3	37.3	37.6	-0.09
West	23.0	22.5	24.2	-0.47
School urbanity				
City	31.9	31.6	32.7	-0.30
Suburban	33.3	33.4	32.9	0.13
Town	11.7	11.8	11.3	0.14
Rural	23.1	23.2	23.0	0.03
Race/ethnicity	22.3	21.5	24.5	-0.81
Hispanic	3.5	3.3	4.0	-0.20
Asian	13.5	13.9	12.4	0.43
Black	60.7	61.3	59.2	0.58
Other	22.3	21.5	24.5	-0.81
Sex				
Male	50.3	51.3	47.5	1.05*
Female	49.7	48.7	52.5	-1.05*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-87. Comparison of item respondents and nonrespondents for S1ESTFEE (Estimated tuition/fees given for public 4-year in-state college includes room/board) by select sample school characteristics, using W1STUDENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.7	92.7	92.9	-0.06
Private	7.3	7.3	7.1	0.06
Catholic	3.8	3.9	3.5	0.12*
Other private	3.5	3.5	3.7	-0.06
Census region				
Northeast	17.5	17.5	17.5	0.01
Midwest	22.2	22.7	20.9	0.52
South	37.3	37.4	37.1	0.10
West	23.0	22.3	24.5	-0.63
School urbanity				
City	31.9	31.7	32.6	-0.26
Suburban	33.3	33.6	32.5	0.31
Town	11.7	11.8	11.5	0.08
Rural	23.1	23.0	23.5	-0.13
Race/ethnicity	22.3	21.4	24.6	-0.90
Hispanic	3.5	3.3	3.9	-0.16
Asian	13.5	14.0	12.4	0.45
Black	60.7	61.3	59.2	0.61
Other	22.3	21.4	24.6	-0.90
Sex				
Male	50.3	51.1	48.2	0.82
Female	49.7	48.9	51.8	-0.82

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-88. Comparison of item respondents and nonrespondents for S1ASIANOR (Student's Asian sub-group) by select sample school characteristics, using W1STUDENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	94.0	91.5	97.8	-2.51
Private	6.0	8.5	2.2	2.51
Catholic	2.9	3.9	1.5	0.94
Other private	3.1	4.7	0.7	1.57
Census region				
Northeast	14.9	16.0	13.1	1.14
Midwest	13.1	13.3	12.9	0.15*
South	24.4	26.1	21.7	1.74*
West	47.6	44.6	52.2	-3.02*
School urbanity				
City	49.3	45.3	55.5	-4.04*
Suburban	32.2	35.6	27.0	3.39
Town	5.1	5.0	5.1	-0.03*
Rural	13.4	14.1	12.3	0.69*
Race/ethnicity				
Hispanic	41.1	10.3	88.6	-30.81*
Asian	39.0	62.4	3.0	23.41*
Black	0.6	0.0	1.6	-0.61*
Other	19.2	27.2	6.9	8.02*
Sex				
Male	52.5	49.5	57.1	-3.00
Female	47.5	50.5	42.9	3.00

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-89. Comparison of item respondents and nonrespondents for S1COSTIN (Cost of 1 year's tuition/fees at specific 4-year in-state college) by select sample school characteristics, using W1STUDENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	94.2	95.0	93.6	0.89*
Private	5.8	5.0	6.4	-0.89*
Catholic	2.5	2.6	2.4	0.10
Other private	3.4	2.4	4.0	-0.99
Census region				
Northeast	13.7	11.4	15.2	-2.35
Midwest	21.2	22.7	20.2	1.52
South	43.5	44.3	42.9	0.85
West	21.6	21.5	21.6	-0.03
School urbanity				
City	31.7	27.5	34.4	-4.16
Suburban	32.5	38.8	28.4	6.34
Town	11.8	11.5	12.1	-0.36
Rural	24.0	22.2	25.2	-1.83
Race/ethnicity				
Hispanic	20.6	14.4	24.7	-6.20*
Asian	4.4	4.4	4.4	0.02
Black	17.0	15.2	18.2	-1.81
Other	58.0	66.0	52.8	7.99
Sex				
Male	56.8	54.6	58.1	-2.10
Female	43.2	45.4	41.9	2.10

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-90. Comparison of item respondents and nonrespondents for S1COSTPRV (Cost of 1 year's tuition/fees at specific private college) by select sample school characteristics, using W1STUDENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	87.5	82.3	90.9	-5.20*
Private	12.5	17.7	9.1	5.20*
Catholic	6.0	9.6	3.6	3.61*
Other private	6.5	8.1	5.5	1.60*
Census region				
Northeast	19.0	19.2	18.8	0.26
Midwest	18.6	16.5	19.9	-2.05*
South	38.6	38.5	38.6	-0.07
West	23.9	25.7	22.7	1.85
School urbanity				
City	36.1	38.0	34.9	1.88
Suburban	35.4	40.6	32.0	5.21*
Town	8.0	5.6	9.6	-2.42*
Rural	20.4	15.8	23.5	-4.67*
Race/ethnicity				
Hispanic	20.4	14.9	24.0	-5.52*
Asian	6.1	6.9	5.5	0.85*
Black	16.7	12.8	19.2	-3.87
Other	56.9	65.4	51.3	8.55
Sex				
Male	53.1	46.4	57.4	-6.64
Female	46.9	53.6	42.6	6.64

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-91. Comparison of item respondents and nonrespondents for S1FEEPRV (Cost of tuition/fees given for private college includes room and board) by select sample school characteristics, using W1STUDENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	87.5	82.7	90.6	-4.80*
Private	12.5	17.3	9.4	4.80*
Catholic	6.0	9.7	3.6	3.74*
Other private	6.5	7.6	5.9	1.06*
Census region	19.0	19.0	18.9	0.04
Northeast	18.6	16.8	19.7	-1.82*
Midwest	38.6	38.3	38.7	-0.23
South	23.9	25.9	22.6	2.01
West	19.0	19.0	18.9	0.04
School urbanity				
City	36.1	38.0	34.9	1.94
Suburban	35.4	41.1	31.8	5.69*
Town	8.0	5.7	9.5	-2.34*
Rural	20.4	15.2	23.8	-5.29*
Race/ethnicity				
Hispanic	20.4	15.1	23.8	-5.32*
Asian	6.1	7.0	5.5	0.95*
Black	16.7	12.7	19.2	-3.99
Other	56.9	65.2	51.6	8.36
Sex				
Male	53.1	46.7	57.2	-6.40
Female	46.9	53.3	42.8	6.40

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-92. Comparison of item respondents and nonrespondents for S1FEEIN (Cost of tuition/fees given for 4-year in-state college includes room/board) by select sample school characteristics, using W1STUDENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	94.2	95.4	93.4	1.21*
Private	5.8	4.6	6.6	-1.21*
Catholic	2.5	2.6	2.4	0.16
Other private	3.4	2.0	4.2	-1.37*
Census region				
Northeast	13.7	11.6	15.0	-2.14
Midwest	21.2	23.3	19.9	2.07
South	43.5	43.3	43.6	-0.24
West	21.6	21.9	21.4	0.30
School urbanity				
City	31.7	28.2	33.9	-3.49
Suburban	32.5	39.3	28.3	6.75
Town	11.8	10.8	12.5	-1.00
Rural	24.0	21.7	25.4	-2.27
Race/ethnicity				
Hispanic	20.6	14.8	24.3	-5.85*
Asian	4.4	4.5	4.3	0.13
Black	17.0	14.9	18.3	-2.10
Other	58.0	65.8	53.1	7.82
Sex				
Male	56.8	54.7	58.0	-2.03
Female	43.2	45.3	42.0	2.03

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-93. Comparison of item respondents and nonrespondents for S1COSTOUT (Cost of 1 year's tuition/fees at specific 4-year out-of-state college) by select sample school characteristics, using W1STUDENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	93.1	92.6	93.4	-0.52
Private	6.9	7.4	6.6	0.52
Catholic	2.7	2.9	2.5	0.25
Other private	4.2	4.5	4.1	0.28
Census region	17.3	15.8	18.2	-1.55
Northeast	22.3	24.8	21.0	2.48
Midwest	40.6	45.0	38.2	4.36
South	19.8	14.5	22.7	-5.28*
West	17.3	15.8	18.2	-1.55
School urbanity				
City	34.0	36.3	32.7	2.31
Suburban	29.2	27.9	30.0	-1.35
Town	11.3	10.9	11.5	-0.37
Rural	25.5	24.9	25.8	-0.59
Race/ethnicity				
Hispanic	19.0	13.5	22.0	-5.44*
Asian	4.3	2.0	5.5	-2.25
Black	24.4	29.5	21.7	5.06*
Other	52.3	55.0	50.9	2.63
Sex				
Male	57.4	53.8	59.3	-3.59
Female	42.6	46.2	40.7	3.59

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-94. Comparison of item respondents and nonrespondents for S1FEEOUT (Cost tuition/fee given for 4-year out-of-state college includes room/board) by select sample school characteristics, using W1STUDENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	93.1	93.0	93.2	-0.15
Private	6.9	7.0	6.8	0.15
Catholic	2.7	2.5	2.7	-0.15*
Other private	4.2	4.5	4.1	0.30
Census region				
Northeast	17.3	15.8	18.1	-1.46
Midwest	22.3	24.9	20.9	2.62
South	40.6	44.7	38.4	4.13
West	19.8	14.5	22.6	-5.29*
School urbanity				
City	34.0	36.4	32.7	2.43
Suburban	29.2	27.7	30.0	-1.51
Town	11.3	10.8	11.6	-0.47
Rural	25.5	25.0	25.7	-0.44
Race/ethnicity				
Hispanic	19.0	13.6	21.9	-5.37*
Asian	4.3	2.0	5.5	-2.24
Black	24.4	29.6	21.7	5.14*
Other	52.3	54.8	51.0	2.46
Sex				
Male	57.4	53.8	59.3	-3.53
Female	42.6	46.2	40.7	3.53

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-95. Comparison of item respondents and nonrespondents for P1HHPARREL1 (First resident parents relationship to 9th-grader) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	98.1	98.1	97.8	0.06*
Private	1.9	1.9	2.2	-0.06*
Catholic	0.9	1.0	0.3	0.10*
Other private	1.1	0.9	1.9	-0.16*
Census region				
Northeast	7.5	6.2	14.3	-1.32*
Midwest	17.3	18.2	12.9	0.86
South	43.9	41.9	54.3	-2.01
West	31.3	33.7	18.5	2.47
School urbanity				
City	40.2	42.9	26.2	2.72
Suburban	28.3	27.9	30.7	-0.46
Town	11.1	10.6	14.2	-0.58
Rural	20.3	18.6	29.0	-1.68
Race/ethnicity				
Hispanic	35.0	39.8	10.6	4.74*
Asian	7.5	9.0	0.3	1.40
Black	27.3	29.0	18.7	1.67*
Other	30.2	22.3	70.5	-7.81*
Sex				
Male	63.9	63.6	65.3	-0.27*
Female	36.1	36.4	34.7	0.27*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-96. Comparison of item respondents and nonrespondents for P1PUBPRV (Type of postsecondary institution respondent thinks 9th-grader will attend) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	88.8	87.6	94.9	-1.28*
Private	11.2	12.4	5.1	1.28*
Catholic	6.0	6.8	2.3	0.78*
Other private	5.2	5.7	2.8	0.50*
Census region				
Northeast	18.5	18.6	17.7	0.16
Midwest	22.7	23.2	20.0	0.56
South	40.1	39.6	42.6	-0.53*
West	18.7	18.6	19.6	-0.18*
School urbanity				
City	31.5	30.8	34.8	-0.70
Suburban	36.0	37.0	30.8	1.09*
Town	9.6	8.9	12.9	-0.70*
Rural	23.0	23.3	21.5	0.31
Race/ethnicity				
Hispanic	14.7	12.6	24.4	-2.05*
Asian	4.7	4.9	3.4	0.27*
Black	14.5	12.9	21.9	-1.57
Other	66.1	69.5	50.3	3.35*
Sex				
Male	47.7	46.6	52.6	-1.04*
Female	52.3	53.4	47.4	1.04*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-97. Comparison of item respondents and nonrespondents for P1ACCTPAY (Family opened account(s) to save for 9th-graders college education) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	90.6	89.7	95.1	-0.99*
Private	9.4	10.3	4.9	0.99*
Catholic	4.8	5.4	2.3	0.57*
Other private	4.5	5.0	2.6	0.43*
Census region				
Northeast	16.8	16.4	18.3	-0.33
Midwest	22.7	23.1	20.5	0.49
South	38.8	38.2	41.9	-0.68
West	21.7	22.3	19.4	0.53
School urbanity				
City	31.1	30.4	34.2	-0.71
Suburban	35.0	36.1	30.3	1.07*
Town	10.8	10.3	12.9	-0.47*
Rural	23.1	23.2	22.6	0.12
Race/ethnicity				
Hispanic	16.1	14.8	22.1	-1.34*
Asian	3.4	3.4	3.5	-0.00
Black	13.0	10.8	22.9	-2.22*
Other	67.4	71.0	51.6	3.56*
Sex				
Male	50.0	49.6	51.9	-0.42
Female	50.0	50.4	48.1	0.42

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-98. Comparison of item respondents and nonrespondents for P1ENGLISH (English is regularly spoken in home) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	95.1	96.3	-0.24*
Private	4.7	4.9	3.7	0.24*
Catholic	2.5	2.7	1.8	0.17*
Other private	2.2	2.2	1.9	0.07*
Census region				
Northeast	16.6	16.3	17.6	-0.24
Midwest	12.4	10.5	20.5	-1.89*
South	35.0	32.8	44.9	-2.28*
West	36.0	40.4	17.0	4.40*
School urbanity				
City	44.4	46.4	35.4	2.06*
Suburban	33.9	34.5	31.1	0.64
Town	7.0	5.7	12.7	-1.32*
Rural	14.8	13.4	20.8	-1.39*
Race/ethnicity				
Hispanic	57.7	65.8	22.5	8.14*
Asian	10.0	11.7	2.8	1.68*
Black	7.0	4.1	19.4	-2.87*
Other	25.3	18.3	55.4	-6.95*
Sex				
Male	52.4	52.1	53.9	-0.34
Female	47.6	47.9	46.1	0.34

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-99. Comparison of item respondents and nonrespondents for P1COUNTRY2 (Country in which second resident parent was born) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	94.4	94.1	95.7	-0.32*
Private	5.6	5.9	4.3	0.32*
Catholic	2.8	2.9	2.1	0.16*
Other private	2.8	3.0	2.2	0.16
Census region				
Northeast	17.6	16.8	20.9	-0.80
Midwest	11.9	10.5	17.5	-1.38*
South	34.3	32.9	40.2	-1.43*
West	36.2	39.8	21.5	3.61*
School urbanity				
City	43.7	45.5	36.4	1.80*
Suburban	35.9	37.1	30.8	1.24
Town	5.9	4.4	11.8	-1.46*
Rural	14.5	12.9	21.0	-1.58*
Race/ethnicity				
Hispanic	50.8	57.2	24.6	6.42*
Asian	13.2	15.3	4.4	2.15*
Black	8.3	5.8	18.1	-2.42*
Other	27.8	21.7	52.9	-6.16*
Sex				
Male	52.1	52.5	50.2	0.45
Female	47.9	47.5	49.8	-0.45

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-100. Comparison of item respondents and nonrespondents for P1COUNTRY1 (Country in which first resident parent was born) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.1	94.8	96.0	-0.27*
Private	4.9	5.2	4.0	0.27*
Catholic	2.6	2.9	1.9	0.22
Other private	2.3	2.3	2.1	0.05*
Census region				
Northeast	16.6	16.3	17.6	-0.29
Midwest	12.1	9.9	19.9	-2.19*
South	35.6	33.3	44.0	-2.33*
West	35.6	40.4	18.5	4.81*
School urbanity				
City	44.1	46.7	34.9	2.58*
Suburban	35.3	36.1	32.2	0.85
Town	5.8	3.9	12.4	-1.86*
Rural	14.8	13.2	20.4	-1.58*
Race/ethnicity				
Hispanic	51.9	59.6	24.3	7.74*
Asian	12.0	14.3	3.5	2.37*
Black	9.3	6.8	18.3	-2.52*
Other	26.8	19.2	53.9	-7.60*
Sex				
Male	51.5	50.5	54.8	-0.93
Female	48.5	49.5	45.2	0.93

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-101. Comparison of item respondents and nonrespondents for P1CHINESE (Chinese language regularly spoken in home) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	95.1	95.9	-0.17*
Private	4.7	4.9	4.1	0.17*
Catholic	2.5	2.7	2.0	0.15*
Other private	2.2	2.2	2.1	0.02*
Census region				
Northeast	16.6	16.3	17.6	-0.29
Midwest	12.4	10.1	20.5	-2.27*
South	35.0	33.3	41.2	-1.72*
West	36.0	40.3	20.8	4.27*
School urbanity				
City	44.4	47.2	34.2	2.84*
Suburban	33.9	33.9	33.9	-0.01
Town	7.0	5.6	12.0	-1.42*
Rural	14.8	13.4	19.8	-1.42*
Race/ethnicity				
Hispanic	57.7	67.4	23.0	9.74*
Asian	10.0	12.0	2.9	2.01*
Black	7.0	4.0	17.6	-2.98*
Other	25.3	16.5	56.5	-8.77*
Sex				
Male	52.4	51.6	55.2	-0.78
Female	47.6	48.4	44.8	0.78

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-102. Comparison of item respondents and nonrespondents for P1EUROLANG (Other European language regularly spoken in home) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	95.1	95.9	-0.17*
Private	4.7	4.9	4.1	0.17*
Catholic	2.5	2.7	2.0	0.15*
Other private	2.2	2.2	2.1	0.02*
Census region				
Northeast	16.6	16.3	17.6	-0.29
Midwest	12.4	10.1	20.5	-2.27*
South	35.0	33.3	41.2	-1.72*
West	36.0	40.3	20.8	4.27*
School urbanity				
City	44.4	47.2	34.2	2.84*
Suburban	33.9	33.9	33.9	-0.01
Town	7.0	5.6	12.0	-1.42*
Rural	14.8	13.4	19.8	-1.42*
Race/ethnicity				
Hispanic	57.7	67.4	23.0	9.74*
Asian	10.0	12.0	2.9	2.01*
Black	7.0	4.0	17.6	-2.98*
Other	25.3	16.5	56.5	-8.77*
Sex				
Male	52.4	51.6	55.2	-0.78
Female	47.6	48.4	44.8	0.78

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-103. Comparison of item respondents and nonrespondents for P1FILIPINO (Filipino language regularly spoken in home) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	95.1	95.9	-0.17*
Private	4.7	4.9	4.1	0.17*
Catholic	2.5	2.7	2.0	0.15*
Other private	2.2	2.2	2.1	0.02*
Census region				
Northeast	16.6	16.3	17.6	-0.29
Midwest	12.4	10.1	20.5	-2.27*
South	35.0	33.3	41.2	-1.72*
West	36.0	40.3	20.8	4.27*
School urbanity				
City	44.4	47.2	34.2	2.84*
Suburban	33.9	33.9	33.9	-0.01
Town	7.0	5.6	12.0	-1.42*
Rural	14.8	13.4	19.8	-1.42*
Race/ethnicity				
Hispanic	57.7	67.4	23.0	9.74*
Asian	10.0	12.0	2.9	2.01*
Black	7.0	4.0	17.6	-2.98*
Other	25.3	16.5	56.5	-8.77*
Sex				
Male	52.4	51.6	55.2	-0.78
Female	47.6	48.4	44.8	0.78

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-104. Comparison of item respondents and nonrespondents for P1MIDEAST (Middle Eastern language regularly spoken in home) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	95.1	95.9	-0.17*
Private	4.7	4.9	4.1	0.17*
Catholic	2.5	2.7	2.0	0.15*
Other private	2.2	2.2	2.1	0.02*
Census region				
Northeast	16.6	16.3	17.6	-0.29
Midwest	12.4	10.1	20.5	-2.27*
South	35.0	33.3	41.2	-1.72*
West	36.0	40.3	20.8	4.27*
School urbanity				
City	44.4	47.2	34.2	2.84*
Suburban	33.9	33.9	33.9	-0.01
Town	7.0	5.6	12.0	-1.42*
Rural	14.8	13.4	19.8	-1.42*
Race/ethnicity				
Hispanic	57.7	67.4	23.0	9.74*
Asian	10.0	12.0	2.9	2.01*
Black	7.0	4.0	17.6	-2.98*
Other	25.3	16.5	56.5	-8.77*
Sex				
Male	52.4	51.6	55.2	-0.78
Female	47.6	48.4	44.8	0.78

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-105. Comparison of item respondents and nonrespondents for P1OTHRASIAN (Other Asian language regularly spoken in home) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	95.1	95.9	-0.17*
Private	4.7	4.9	4.1	0.17*
Catholic	2.5	2.7	2.0	0.15*
Other private	2.2	2.2	2.1	0.02*
Census region				
Northeast	16.6	16.3	17.6	-0.29
Midwest	12.4	10.1	20.5	-2.27*
South	35.0	33.3	41.2	-1.72*
West	36.0	40.3	20.8	4.27*
School urbanity				
City	44.4	47.2	34.2	2.84*
Suburban	33.9	33.9	33.9	-0.01
Town	7.0	5.6	12.0	-1.42*
Rural	14.8	13.4	19.8	-1.42*
Race/ethnicity				
Hispanic	57.7	67.4	23.0	9.74*
Asian	10.0	12.0	2.9	2.01*
Black	7.0	4.0	17.6	-2.98*
Other	25.3	16.5	56.5	-8.77*
Sex				
Male	52.4	51.6	55.2	-0.78
Female	47.6	48.4	44.8	0.78

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-106. Comparison of item respondents and nonrespondents for P1SASIAN (South Asian language regularly spoken in home) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	95.1	95.9	-0.17*
Private	4.7	4.9	4.1	0.17*
Catholic	2.5	2.7	2.0	0.15*
Other private	2.2	2.2	2.1	0.02*
Census region				
Northeast	16.6	16.3	17.6	-0.29
Midwest	12.4	10.1	20.5	-2.27*
South	35.0	33.3	41.2	-1.72*
West	36.0	40.3	20.8	4.27*
School urbanity				
City	44.4	47.2	34.2	2.84*
Suburban	33.9	33.9	33.9	-0.01
Town	7.0	5.6	12.0	-1.42*
Rural	14.8	13.4	19.8	-1.42*
Race/ethnicity				
Hispanic	57.7	67.4	23.0	9.74*
Asian	10.0	12.0	2.9	2.01*
Black	7.0	4.0	17.6	-2.98*
Other	25.3	16.5	56.5	-8.77*
Sex				
Male	52.4	51.6	55.2	-0.78
Female	47.6	48.4	44.8	0.78

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-107. Comparison of item respondents and nonrespondents for P1SEASIAN (Southeast Asian language regularly spoken in home) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	95.1	95.9	-0.17*
Private	4.7	4.9	4.1	0.17*
Catholic	2.5	2.7	2.0	0.15*
Other private	2.2	2.2	2.1	0.02*
Census region				
Northeast	16.6	16.3	17.6	-0.29
Midwest	12.4	10.1	20.5	-2.27*
South	35.0	33.3	41.2	-1.72*
West	36.0	40.3	20.8	4.27*
School urbanity				
City	44.4	47.2	34.2	2.84*
Suburban	33.9	33.9	33.9	-0.01
Town	7.0	5.6	12.0	-1.42*
Rural	14.8	13.4	19.8	-1.42*
Race/ethnicity				
Hispanic	57.7	67.4	23.0	9.74*
Asian	10.0	12.0	2.9	2.01*
Black	7.0	4.0	17.6	-2.98*
Other	25.3	16.5	56.5	-8.77*
Sex				
Male	52.4	51.6	55.2	-0.78
Female	47.6	48.4	44.8	0.78

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-108. Comparison of item respondents and nonrespondents for P1SPANISH (Spanish is regularly spoken in home) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	95.1	95.9	-0.17*
Private	4.7	4.9	4.1	0.17*
Catholic	2.5	2.7	2.0	0.15*
Other private	2.2	2.2	2.1	0.02*
Census region				
Northeast	16.6	16.3	17.6	-0.29
Midwest	12.4	10.1	20.5	-2.27*
South	35.0	33.3	41.2	-1.72*
West	36.0	40.3	20.8	4.27*
School urbanity				
City	44.4	47.2	34.2	2.84*
Suburban	33.9	33.9	33.9	-0.01
Town	7.0	5.6	12.0	-1.42*
Rural	14.8	13.4	19.8	-1.42*
Race/ethnicity				
Hispanic	57.7	67.4	23.0	9.74*
Asian	10.0	12.0	2.9	2.01*
Black	7.0	4.0	17.6	-2.98*
Other	25.3	16.5	56.5	-8.77*
Sex				
Male	52.4	51.6	55.2	-0.78
Female	47.6	48.4	44.8	0.78

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-109. Comparison of item respondents and nonrespondents for P1OTHRLANG (Other language regularly spoken in home) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	95.1	95.9	-0.17*
Private	4.7	4.9	4.1	0.17*
Catholic	2.5	2.7	2.0	0.15*
Other private	2.2	2.2	2.1	0.02*
Census region				
Northeast	16.6	16.3	17.6	-0.29
Midwest	12.4	10.1	20.5	-2.27*
South	35.0	33.3	41.2	-1.72*
West	36.0	40.3	20.8	4.27*
School urbanity				
City	44.4	47.2	34.2	2.84*
Suburban	33.9	33.9	33.9	-0.01
Town	7.0	5.6	12.0	-1.42*
Rural	14.8	13.4	19.8	-1.42*
Race/ethnicity				
Hispanic	57.7	67.4	23.0	9.74*
Asian	10.0	12.0	2.9	2.01*
Black	7.0	4.0	17.6	-2.98*
Other	25.3	16.5	56.5	-8.77*
Sex				
Male	52.4	51.6	55.2	-0.78
Female	47.6	48.4	44.8	0.78

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-110. Comparison of item respondents and nonrespondents for P1LANG9 (Language 9th-grader usually speaks to respondent in home) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	95.2	95.7	-0.12*
Private	4.7	4.8	4.3	0.12*
Catholic	2.5	2.6	2.2	0.09*
Other private	2.2	2.2	2.1	0.03*
Census region				
Northeast	16.6	16.3	17.6	-0.30
Midwest	12.4	10.1	20.4	-2.28*
South	35.0	33.4	41.0	-1.68*
West	36.0	40.3	21.0	4.26*
School urbanity				
City	44.4	47.2	34.2	2.88*
Suburban	33.9	33.9	33.9	-0.02
Town	7.0	5.6	12.0	-1.42*
Rural	14.8	13.3	19.9	-1.44*
Race/ethnicity				
Hispanic	57.7	67.5	23.2	9.80*
Asian	10.0	12.0	3.1	1.97*
Black	7.0	4.0	17.6	-3.00*
Other	25.3	16.5	56.2	-8.76*
Sex				
Male	52.4	51.6	55.2	-0.78
Female	47.6	48.4	44.8	0.78

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-111. Comparison of item respondents and nonrespondents for P1HISPOR2 (Spouse/partner/second resident parent is Mexican or other Hispanic/Latino) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.9	95.9	95.7	0.04*
Private	4.1	4.1	4.3	-0.04*
Catholic	2.5	2.7	2.1	0.13*
Other private	1.6	1.4	2.2	-0.17*
Census region				
Northeast	12.4	11.2	16.9	-1.26*
Midwest	10.9	8.7	18.6	-2.18*
South	37.0	36.0	40.7	-1.04
West	39.6	44.1	23.8	4.48*
School urbanity				
City	43.8	46.9	33.0	3.07*
Suburban	34.2	34.7	32.2	0.55
Town	6.2	4.7	11.4	-1.50*
Rural	15.9	13.8	23.4	-2.12*
Race/ethnicity				
Hispanic	79.0	94.0	26.2	14.94*
Asian	1.0	0.2	4.0	-0.85*
Black	3.1	0.3	12.9	-2.80*
Other	16.9	5.6	56.8	-11.30*
Sex				
Male	52.0	52.3	51.1	0.26
Female	48.0	47.7	48.9	-0.26

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-112. Comparison of item respondents and nonrespondents for P1RSPLANG (Language respondent usually speaks to 9th-grader in home) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	95.1	96.0	-0.19*
Private	4.7	4.9	4.0	0.19*
Catholic	2.5	2.7	2.0	0.16*
Other private	2.2	2.2	2.1	0.03*
Census region				
Northeast	16.6	16.3	17.4	-0.24
Midwest	12.4	10.1	20.3	-2.27*
South	35.0	33.3	41.0	-1.71*
West	36.0	40.2	21.2	4.22*
School urbanity				
City	44.4	47.3	34.0	2.95*
Suburban	33.9	33.8	34.2	-0.09
Town	7.0	5.6	11.9	-1.39*
Rural	14.8	13.3	19.9	-1.46*
Race/ethnicity				
Hispanic	57.7	67.6	23.2	9.86*
Asian	10.0	12.0	3.2	1.96*
Black	7.0	4.0	17.5	-3.00*
Other	25.3	16.5	56.2	-8.83*
Sex				
Male	52.4	51.7	54.8	-0.68
Female	47.6	48.3	45.2	0.68

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-113. Comparison of item respondents and nonrespondents for P1USYR1 (Year respondent/first resident parent came to United States to stay) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.2	94.9	95.9	-0.22*
Private	4.8	5.1	4.1	0.22*
Catholic	2.6	2.8	2.0	0.18*
Other private	2.2	2.3	2.1	0.05*
Census region				
Northeast	18.1	18.5	16.7	0.40
Midwest	11.8	9.5	19.4	-2.21*
South	35.5	32.8	44.9	-2.69*
West	34.6	39.1	19.0	4.50*
School urbanity				
City	44.4	47.0	35.5	2.57*
Suburban	35.3	36.3	31.8	1.01
Town	5.7	3.7	12.5	-1.96*
Rural	14.6	13.0	20.2	-1.61*
Race/ethnicity				
Hispanic	53.0	60.2	27.8	7.25*
Asian	11.5	13.7	3.8	2.22*
Black	9.1	6.8	17.1	-2.32*
Other	26.4	19.3	51.2	-7.15*
Sex				
Male	52.3	51.5	55.2	-0.82
Female	47.7	48.5	44.8	0.82

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-114. Comparison of item respondents and nonrespondents for P1SAVEDPAY (Amount currently set aside for 9th-graders future educational needs) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	90.6	89.8	93.7	-0.86*
Private	9.4	10.2	6.3	0.86*
Catholic	4.8	5.3	3.1	0.50*
Other private	4.5	4.9	3.3	0.36*
Census region				
Northeast	16.8	16.5	17.9	-0.31
Midwest	22.7	23.1	20.9	0.49
South	38.8	37.7	42.9	-1.16
West	21.7	22.7	18.3	0.98
School urbanity				
City	31.1	30.7	32.4	-0.38
Suburban	35.0	36.0	31.5	1.00*
Town	10.8	10.1	13.2	-0.68*
Rural	23.1	23.2	22.9	0.06
Race/ethnicity				
Hispanic	16.1	15.1	19.6	-1.01*
Asian	3.4	3.6	3.0	0.14
Black	13.0	10.7	20.8	-2.25*
Other	67.4	70.5	56.6	3.12*
Sex				
Male	50.0	49.7	51.1	-0.32
Female	50.0	50.3	48.9	0.32

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-115. Comparison of item respondents and nonrespondents for P1HISPOR1 (Respondent/first resident parent is Mexican or other Hispanic) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	96.3	96.3	96.2	0.03*
Private	3.7	3.7	3.8	-0.03*
Catholic	2.3	2.5	1.7	0.18*
Other private	1.5	1.3	2.2	-0.21*
Census region				
Northeast	13.0	11.9	16.8	-1.14*
Midwest	10.8	7.9	20.3	-2.87*
South	37.7	35.7	44.2	-1.99
West	38.5	44.5	18.7	6.01*
School urbanity				
City	44.8	47.8	34.9	3.00*
Suburban	33.0	33.3	31.9	0.33
Town	7.0	5.4	12.1	-1.55*
Rural	15.2	13.5	21.1	-1.78*
Race/ethnicity				
Hispanic	77.9	93.9	24.9	16.06*
Asian	0.7	0.1	2.7	-0.60*
Black	5.2	1.1	18.7	-4.09*
Other	16.2	4.8	53.7	-11.37*
Sex				
Male	51.7	51.1	53.7	-0.60
Female	48.3	48.9	46.3	0.60

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-116. Comparison of item respondents and nonrespondents for P1INCOME (Household income in 2007–continuous form) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.8	92.5	93.7	-0.27*
Private	7.2	7.5	6.3	0.27*
Catholic	3.7	4.0	3.0	0.23*
Other private	3.5	3.5	3.4	0.04
Census region				
Northeast	17.4	16.8	19.2	-0.55
Midwest	22.2	22.4	21.5	0.23
South	37.6	37.1	39.4	-0.53
West	22.7	23.6	19.9	0.86*
School urbanity				
City	31.8	31.0	34.5	-0.83*
Suburban	33.4	33.5	32.7	0.19
Town	11.8	11.6	12.2	-0.12
Rural	23.1	23.8	20.6	0.76*
Race/ethnicity				
Hispanic	21.8	21.0	24.4	-0.79*
Asian	3.4	3.5	3.1	0.11
Black	13.2	11.3	19.3	-1.88*
Other	61.6	64.2	53.2	2.56*
Sex				
Male	50.4	50.7	49.5	0.30
Female	49.6	49.3	50.5	-0.30

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-117. Comparison of item respondents and nonrespondents for P1TUITION (Respondent has info on cost of tuition/fees at specific public in-state institution) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	89.7	88.0	94.9	-1.70*
Private	10.3	12.0	5.1	1.70*
Catholic	5.2	6.2	2.3	0.96*
Other private	5.1	5.9	2.8	0.75*
Census region				
Northeast	15.7	15.2	17.4	-0.53*
Midwest	22.7	23.6	20.1	0.85
South	42.4	42.4	42.3	0.02*
West	19.2	18.8	20.2	-0.34*
School urbanity				
City	32.2	31.4	34.8	-0.83
Suburban	34.0	35.0	30.8	1.02
Town	10.2	9.2	13.1	-0.95*
Rural	23.7	24.4	21.3	0.76
Race/ethnicity				
Hispanic	15.1	12.0	24.5	-3.07*
Asian	3.8	4.0	3.5	0.13*
Black	14.8	12.6	21.6	-2.21
Other	66.3	71.5	50.5	5.15*
Sex				
Male	47.2	45.4	52.9	-1.84*
Female	52.8	54.6	47.1	1.84*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-118. Comparison of item respondents and nonrespondents for P1DIFSCHLNG (Difficulty joining in 9th-graders school events because speaks non-English) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	95.0	96.3	-0.34*
Private	4.7	5.0	3.7	0.34*
Catholic	2.5	2.7	2.0	0.18*
Other private	2.2	2.3	1.7	0.15*
Census region				
Northeast	16.6	16.5	16.6	-0.02
Midwest	12.4	9.9	19.6	-2.44*
South	35.0	32.3	43.3	-2.78*
West	36.0	41.2	20.5	5.24*
School urbanity				
City	44.4	47.3	35.7	2.92*
Suburban	33.9	33.6	34.7	-0.29
Town	7.0	5.6	11.1	-1.39*
Rural	14.8	13.5	18.5	-1.25*
Race/ethnicity				
Hispanic	57.7	66.1	32.8	8.40*
Asian	10.0	12.0	4.0	2.02*
Black	7.0	4.1	15.5	-2.86*
Other	25.3	17.7	47.7	-7.56*
Sex				
Male	52.4	52.0	53.6	-0.38
Female	47.6	48.0	46.4	0.38

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-119. Comparison of item respondents and nonrespondents for P1USYR2 (Year spouse/partner/second resident parent came to United States to stay) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	94.5	93.9	96.1	-0.56
Private	5.5	6.1	3.9	0.56
Catholic	2.8	3.0	2.0	0.27*
Other private	2.8	3.0	1.9	0.29
Census region				
Northeast	18.5	17.6	21.2	-0.94
Midwest	11.8	10.4	15.8	-1.38*
South	34.4	33.7	36.5	-0.72
West	35.3	38.3	26.5	3.05*
School urbanity				
City	43.8	45.3	39.6	1.47*
Suburban	35.9	37.3	31.8	1.42
Town	5.8	4.5	9.8	-1.37*
Rural	14.5	12.9	18.8	-1.52*
Race/ethnicity				
Hispanic	51.2	55.4	39.1	4.20*
Asian	12.8	15.6	4.7	2.81*
Black	8.2	6.1	14.0	-2.05*
Other	27.8	22.8	42.1	-4.97*
Sex				
Male	52.5	52.6	52.0	0.15
Female	47.5	47.4	48.0	-0.15

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-120. Comparison of item respondents and nonrespondents for P1INOUTST (Whether respondent thinks 9th-grader will attend in-state or out-of-state public institution) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	93.5	93.0	94.9	-0.54
Private	6.5	7.0	5.1	0.54
Catholic	3.3	3.7	2.3	0.40
Other private	3.2	3.3	2.8	0.14
Census region				
Northeast	13.2	11.6	17.4	-1.61*
Midwest	23.3	24.5	20.1	1.22*
South	44.3	45.0	42.3	0.75*
West	19.2	18.8	20.1	-0.36*
School urbanity				
City	31.3	30.0	34.8	-1.34
Suburban	32.7	33.5	30.7	0.76
Town	11.2	10.5	13.1	-0.73
Rural	24.8	26.1	21.3	1.31*
Race/ethnicity				
Hispanic	15.6	12.1	24.5	-3.46*
Asian	3.4	3.4	3.4	0.02
Black	16.0	13.8	21.6	-2.17
Other	65.1	70.7	50.5	5.61*
Sex				
Male	49.0	47.5	52.8	-1.49*
Female	51.0	52.5	47.2	1.49*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-121. Comparison of item respondents and nonrespondents for P1ESTIN (Estimate of cost of 1 years tuition/fees at public 4-year in-state institution) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.9	91.4	96.2	-1.50*
Private	7.1	8.6	3.8	1.50*
Catholic	3.7	4.6	1.6	0.92*
Other private	3.5	4.0	2.2	0.58*
Census region				
Northeast	18.2	19.3	15.9	1.05*
Midwest	22.1	23.6	18.8	1.50*
South	36.5	35.1	39.6	-1.38*
West	23.1	22.0	25.8	-1.18
School urbanity				
City	32.0	30.0	36.4	-2.00*
Suburban	33.5	34.9	30.2	1.45*
Town	11.9	11.6	12.5	-0.26
Rural	22.7	23.5	20.9	0.81
Race/ethnicity				
Hispanic	22.8	17.4	34.9	-5.43*
Asian	3.4	3.5	3.2	0.10
Black	13.5	12.4	15.8	-1.06*
Other	60.3	66.7	46.0	6.40*
Sex				
Male	50.6	50.2	51.5	-0.42
Female	49.4	49.8	48.5	0.42

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-122. Comparison of item respondents and nonrespondents for P1ESTCONF (Confidence in estimate of 1 year's cost for public 4-year in-state institution) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.9	91.4	96.2	-1.50*
Private	7.1	8.6	3.8	1.50*
Catholic	3.7	4.6	1.6	0.91*
Other private	3.5	4.1	2.2	0.59*
Census region				
Northeast	18.2	19.3	15.9	1.05*
Midwest	22.1	23.6	18.9	1.49*
South	36.5	35.1	39.5	-1.37*
West	23.1	22.0	25.7	-1.16
School urbanity				
City	32.0	30.0	36.3	-1.96*
Suburban	33.5	34.8	30.4	1.38*
Town	11.9	11.7	12.4	-0.23
Rural	22.7	23.5	20.9	0.81
Race/ethnicity				
Hispanic	22.8	17.4	34.9	-5.44*
Asian	3.4	3.5	3.2	0.09
Black	13.5	12.4	15.8	-1.05
Other	60.3	66.7	46.1	6.41*
Sex				
Male	50.6	50.2	51.5	-0.39
Female	49.4	49.8	48.5	0.39

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-123. Comparison of item respondents and nonrespondents for P1ESTFEE (Estimate of cost at public 4-year in-state institution includes room/board) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.9	91.4	96.1	-1.51*
Private	7.1	8.6	3.9	1.51*
Catholic	3.7	4.6	1.6	0.94*
Other private	3.5	4.0	2.2	0.57*
Census region				
Northeast	18.2	19.2	16.0	1.01*
Midwest	22.1	23.6	18.9	1.51*
South	36.5	35.1	39.4	-1.37*
West	23.1	22.0	25.6	-1.15
School urbanity				
City	32.0	30.0	36.3	-2.01*
Suburban	33.5	35.0	30.2	1.50*
Town	11.9	11.6	12.5	-0.26
Rural	22.7	23.4	21.0	0.77
Race/ethnicity				
Hispanic	22.8	17.3	34.7	-5.52*
Asian	3.4	3.5	3.2	0.09
Black	13.5	12.5	15.6	-0.99
Other	60.3	66.7	46.5	6.42*
Sex				
Male	50.6	50.2	51.5	-0.42
Female	49.4	49.8	48.5	0.42

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-124. Comparison of item respondents and nonrespondents for P1HHPARREL2 (Second resident parents relationship to 9th-grader) by select sample school characteristics, using W1PARENT weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	97.3	97.0	97.8	-0.28*
Private	2.7	3.0	2.2	0.28*
Catholic	1.5	2.1	0.3	0.63
Other private	1.3	0.9	1.9	-0.34*
Census region				
Northeast	8.5	5.4	14.3	-3.12*
Midwest	11.4	10.5	12.9	-0.82*
South	40.4	32.9	54.3	-7.50
West	39.7	51.2	18.5	11.45*
School urbanity				
City	46.4	57.3	26.2	10.92*
Suburban	21.2	16.0	30.7	-5.16*
Town	12.2	11.2	14.2	-1.04
Rural	20.2	15.5	29.0	-4.72
Race/ethnicity				
Hispanic	40.4	56.6	10.6	16.13*
Asian	15.6	23.9	0.3	8.28*
Black	8.8	3.5	18.7	-5.31*
Other	35.1	16.0	70.5	-19.10*
Sex				
Male	71.9	75.4	65.3	3.56*
Female	28.1	24.6	34.7	-3.56*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-125. Comparison of item respondents and nonrespondents for P1REPEATGK (9th-grader repeated kindergarten) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	96.7	97.1	96.0	0.41*
Private	3.3	2.9	4.0	-0.41*
Catholic	1.3	1.1	1.7	-0.21*
Other private	2.0	1.8	2.4	-0.21*
Census region				
Northeast	17.6	17.0	18.7	-0.63
Midwest	17.3	15.7	20.1	-1.55*
South	48.5	51.5	43.1	3.03*
West	16.6	15.8	18.1	-0.84*
School urbanity				
City	33.6	32.9	35.0	-0.76
Suburban	29.9	29.1	31.3	-0.81*
Town	13.5	13.7	13.2	0.18
Rural	23.0	24.4	20.6	1.39
Race/ethnicity				
Hispanic	24.7	26.3	21.7	1.67*
Asian	1.8	0.9	3.5	-0.95*
Black	24.0	24.4	23.1	0.47*
Other	49.5	48.4	51.6	-1.18*
Sex				
Male	57.4	60.2	52.5	2.76*
Female	42.6	39.8	47.5	-2.76*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-126. Comparison of item respondents and nonrespondents for P1REPEATG1 (9th-grader repeated 1st grade) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	96.7	97.1	96.0	0.41*
Private	3.3	2.9	4.0	-0.41*
Catholic	1.3	1.1	1.7	-0.21*
Other private	2.0	1.8	2.4	-0.21*
Census region				
Northeast	17.6	17.0	18.7	-0.63
Midwest	17.3	15.7	20.1	-1.55*
South	48.5	51.5	43.1	3.03*
West	16.6	15.8	18.1	-0.84*
School urbanity				
City	33.6	32.9	35.0	-0.76
Suburban	29.9	29.1	31.3	-0.81*
Town	13.5	13.7	13.2	0.18
Rural	23.0	24.4	20.6	1.39
Race/ethnicity				
Hispanic	24.7	26.3	21.7	1.67*
Asian	1.8	0.9	3.5	-0.95*
Black	24.0	24.4	23.1	0.47*
Other	49.5	48.4	51.6	-1.18*
Sex				
Male	57.4	60.2	52.5	2.76*
Female	42.6	39.8	47.5	-2.76*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-127. Comparison of item respondents and nonrespondents for P1REPEATG9 (9th-grader repeated 9th grade) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	96.7	97.1	96.0	0.41*
Private	3.3	2.9	4.0	-0.41*
Catholic	1.3	1.1	1.7	-0.21*
Other private	2.0	1.8	2.4	-0.21*
Census region				
Northeast	17.6	17.0	18.7	-0.63
Midwest	17.3	15.7	20.1	-1.55*
South	48.5	51.5	43.1	3.03*
West	16.6	15.8	18.1	-0.84*
School urbanity				
City	33.6	32.9	35.0	-0.76
Suburban	29.9	29.1	31.3	-0.81*
Town	13.5	13.7	13.2	0.18
Rural	23.0	24.4	20.6	1.39
Race/ethnicity				
Hispanic	24.7	26.3	21.7	1.67*
Asian	1.8	0.9	3.5	-0.95*
Black	24.0	24.4	23.1	0.47*
Other	49.5	48.4	51.6	-1.18*
Sex				
Male	57.4	60.2	52.5	2.76*
Female	42.6	39.8	47.5	-2.76*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-128. Comparison of item respondents and nonrespondents for P1USYR9 (Year 9th-grader came to the United States to stay) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.9	95.6	96.4	-0.37*
Private	4.1	4.4	3.6	0.37*
Catholic	1.8	1.9	1.7	0.07*
Other private	2.3	2.6	1.9	0.30*
Census region				
Northeast	20.7	23.0	17.5	2.37
Midwest	15.1	11.3	20.2	-3.82*
South	42.3	39.9	45.4	-2.37
West	21.9	25.7	16.8	3.82
School urbanity				
City	41.2	45.6	35.4	4.34*
Suburban	35.1	38.1	31.2	2.97
Town	7.4	3.5	12.6	-3.91*
Rural	16.2	12.9	20.8	-3.40*
Race/ethnicity				
Hispanic	41.0	54.4	23.1	13.36*
Asian	9.9	15.0	3.0	5.18*
Black	14.6	11.3	19.1	-3.33
Other	34.5	19.3	54.8	-15.21*
Sex				
Male	50.2	47.4	53.9	-2.82
Female	49.8	52.6	46.1	2.82

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-129. Comparison of item respondents and nonrespondents for P1USGRADE (Grade level 9th-grader was placed in when started school in United States) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.9	95.8	96.1	-0.16*
Private	4.1	4.2	3.9	0.16*
Catholic	1.8	1.8	1.9	-0.06*
Other private	2.3	2.5	2.0	0.22*
Census region				
Northeast	20.7	22.9	17.7	2.26
Midwest	15.1	11.4	20.0	-3.72*
South	42.3	39.8	45.4	-2.42
West	21.9	25.8	16.8	3.89
School urbanity				
City	41.2	45.6	35.5	4.37*
Suburban	35.1	38.0	31.3	2.90
Town	7.4	3.5	12.5	-3.91*
Rural	16.2	12.9	20.6	-3.36*
Race/ethnicity				
Hispanic	41.0	54.6	23.2	13.61*
Asian	9.9	15.0	3.2	5.10*
Black	14.6	11.2	19.2	-3.48
Other	34.5	19.3	54.4	-15.24*
Sex				
Male	50.2	47.3	54.0	-2.91
Female	49.8	52.7	46.0	2.91

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-130. Comparison of item respondents and nonrespondents for P1ELLNOW (Whether 9th-grader currently in English language learners program) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	96.4	97.1	95.4	0.71*
Private	3.6	2.9	4.6	-0.71*
Catholic	1.5	1.0	2.1	-0.47*
Other private	2.1	1.9	2.4	-0.24*
Census region				
Northeast	16.4	14.2	19.4	-2.26*
Midwest	18.1	16.3	20.5	-1.81*
South	38.6	35.5	42.6	-3.03
West	26.9	34.0	17.4	7.09*
School urbanity				
City	40.6	44.9	34.8	4.34*
Suburban	32.9	34.3	31.1	1.40
Town	9.3	6.8	12.7	-2.54*
Rural	17.1	13.9	21.4	-3.21*
Race/ethnicity				
Hispanic	45.8	63.6	22.0	17.80*
Asian	6.2	8.7	2.8	2.49*
Black	13.1	7.9	20.0	-5.19*
Other	34.9	19.8	55.1	-15.11*
Sex				
Male	51.1	50.7	51.5	-0.33
Female	48.9	49.3	48.5	0.33
Public schools in other states	42.0	37.3	48.4	-4.69*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-131. Comparison of item respondents and nonrespondents for P1COUNTRY9 (Country in which 9th-grader was born) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.8	95.4	96.4	-0.42*
Private	4.2	4.6	3.6	0.42*
Catholic	1.9	2.0	1.8	0.07*
Other private	2.3	2.6	1.9	0.35
Census region				
Northeast	20.1	22.1	17.6	1.99
Midwest	15.6	12.0	20.2	-3.63*
South	41.9	39.3	45.2	-2.58
West	22.4	26.6	17.0	4.23
School urbanity				
City	41.5	46.4	35.4	4.86*
Suburban	34.9	38.0	31.1	3.03
Town	7.5	3.5	12.6	-4.05*
Rural	16.0	12.2	20.8	-3.84*
Race/ethnicity				
Hispanic	39.7	53.2	22.8	13.42*
Asian	10.2	15.8	3.2	5.59*
Black	15.1	11.8	19.3	-3.33
Other	35.0	19.3	54.7	-15.68*
Sex				
Male	49.8	46.3	54.1	-3.46
Female	50.2	53.7	45.9	3.46

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-132. Comparison of item respondents and nonrespondents for P1HHOTHR (Where 9th-grader lives when not living with respondent) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	94.0	92.7	95.4	-1.29
Private	6.0	7.3	4.6	1.29
Catholic	2.5	3.0	2.0	0.47
Other private	3.5	4.3	2.6	0.82
Census region				
Northeast	16.3	15.3	17.4	-1.01
Midwest	23.0	24.5	21.4	1.45
South	40.1	37.3	43.3	-2.85
West	20.6	23.0	17.9	2.41
School urbanity				
City	29.8	27.3	32.6	-2.54
Suburban	33.8	35.5	31.9	1.72
Town	13.0	12.9	13.2	-0.14
Rural	23.3	24.3	22.3	0.96
Race/ethnicity				
Hispanic	16.9	12.4	22.0	-4.58*
Asian	2.2	1.6	2.8	-0.56*
Black	15.1	13.1	17.3	-2.02
Other	65.8	73.0	57.9	7.15*
Sex				
Male	52.0	51.1	53.0	-0.92
Female	48.0	48.9	47.0	0.92

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-133. Comparison of item respondents and nonrespondents for P1COSTIN (Cost of tuition/fees at public 4-year in-state institution) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	93.4	91.6	94.8	-1.72
Private	6.6	8.4	5.2	1.72
Catholic	3.3	4.4	2.4	1.11
Other private	3.4	4.0	2.8	0.61
Census region				
Northeast	13.1	9.1	16.4	-3.99*
Midwest	21.5	22.5	20.7	0.99
South	45.9	49.3	43.1	3.41*
West	19.4	19.0	19.8	-0.41
School urbanity				
City	32.5	30.5	34.2	-2.00
Suburban	31.6	32.7	30.6	1.13
Town	11.7	10.0	13.1	-1.75
Rural	24.2	26.8	22.1	2.62*
Race/ethnicity				
Hispanic	17.7	10.7	23.6	-7.10*
Asian	3.3	3.5	3.2	0.13
Black	15.9	10.0	20.9	-5.95*
Other	63.0	75.9	52.3	12.92*
Sex				
Male	50.9	49.1	52.3	-1.80
Female	49.1	50.9	47.7	1.80

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-134. Comparison of item respondents and nonrespondents for P1FEEIN (Cost of tuition/fees at public 4-year in-state institution includes room/board) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	93.4	91.6	94.8	-1.79
Private	6.6	8.4	5.2	1.79
Catholic	3.3	4.4	2.4	1.15
Other private	3.4	4.0	2.8	0.64
Census region				
Northeast	13.1	9.0	16.5	-4.17*
Midwest	21.5	22.4	20.9	0.83
South	45.9	49.7	42.9	3.74*
West	19.4	19.0	19.7	-0.40
School urbanity				
City	32.5	30.7	33.9	-1.77
Suburban	31.6	32.4	30.9	0.80
Town	11.7	9.9	13.2	-1.84
Rural	24.2	27.0	22.0	2.81*
Race/ethnicity				
Hispanic	17.7	10.4	23.7	-7.37*
Asian	3.3	3.5	3.2	0.18
Black	15.9	10.0	20.7	-5.92*
Other	63.0	76.1	52.4	13.11*
Sex				
Male	50.9	48.8	52.5	-2.08
Female	49.1	51.2	47.5	2.08

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-135. Comparison of item respondents and nonrespondents for P1QHELP1 (9th-grader helped respondent complete questionnaire) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	94.4	92.2	95.5	-2.21
Private	5.6	7.8	4.5	2.21
Catholic	2.6	4.1	2.0	1.41
Other private	2.9	3.7	2.5	0.80
Census region				
Northeast	18.5	21.6	17.0	3.14*
Midwest	21.7	24.1	20.5	2.42
South	39.3	31.7	42.8	-7.62*
West	20.6	22.6	19.6	2.07
School urbanity				
City	34.1	31.9	35.2	-2.24
Suburban	31.0	32.3	30.4	1.26
Town	12.9	14.5	12.2	1.61
Rural	22.0	21.3	22.2	-0.63
Race/ethnicity				
Hispanic	22.3	19.1	23.8	-3.16
Asian	4.9	8.6	3.2	3.74*
Black	16.6	6.0	21.5	-10.51*
Other	56.2	66.2	51.6	9.93
Sex				
Male	50.9	49.5	51.5	-1.39
Female	49.1	50.5	48.5	1.39

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-136. Comparison of item respondents and nonrespondents for P1QHELP2 (Other family member helped respondent complete questionnaire) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	94.4	92.2	95.5	-2.21
Private	5.6	7.8	4.5	2.21
Catholic	2.6	4.1	2.0	1.41
Other private	2.9	3.7	2.5	0.80
Census region				
Northeast	18.5	21.6	17.0	3.14*
Midwest	21.7	24.1	20.5	2.42
South	39.3	31.7	42.8	-7.62*
West	20.6	22.6	19.6	2.07
School urbanity				
City	34.1	31.9	35.2	-2.24
Suburban	31.0	32.3	30.4	1.26
Town	12.9	14.5	12.2	1.61
Rural	22.0	21.3	22.2	-0.63
Race/ethnicity				
Hispanic	22.3	19.1	23.8	-3.16
Asian	4.9	8.6	3.2	3.74*
Black	16.6	6.0	21.5	-10.51*
Other	56.2	66.2	51.6	9.93
Sex				
Male	50.9	49.5	51.5	-1.39
Female	49.1	50.5	48.5	1.39

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-137. Comparison of item respondents and nonrespondents for P1QHELP3 (Respondent's friend helped respondent complete questionnaire) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	94.4	92.2	95.5	-2.21
Private	5.6	7.8	4.5	2.21
Catholic	2.6	4.1	2.0	1.41
Other private	2.9	3.7	2.5	0.80
Census region				
Northeast	18.5	21.6	17.0	3.14*
Midwest	21.7	24.1	20.5	2.42
South	39.3	31.7	42.8	-7.62*
West	20.6	22.6	19.6	2.07
School urbanity				
City	34.1	31.9	35.2	-2.24
Suburban	31.0	32.3	30.4	1.26
Town	12.9	14.5	12.2	1.61
Rural	22.0	21.3	22.2	-0.63
Race/ethnicity				
Hispanic	22.3	19.1	23.8	-3.16
Asian	4.9	8.6	3.2	3.74*
Black	16.6	6.0	21.5	-10.51*
Other	56.2	66.2	51.6	9.93
Sex				
Male	50.9	49.5	51.5	-1.39
Female	49.1	50.5	48.5	1.39

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-138. Comparison of item respondents and nonrespondents for P1QHELP4 (Person helped respondent complete questionnaire—other) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	94.4	92.2	95.5	-2.21
Private	5.6	7.8	4.5	2.21
Catholic	2.6	4.1	2.0	1.41
Other private	2.9	3.7	2.5	0.80
Census region				
Northeast	18.5	21.6	17.0	3.14*
Midwest	21.7	24.1	20.5	2.42
South	39.3	31.7	42.8	-7.62*
West	20.6	22.6	19.6	2.07
School urbanity				
City	34.1	31.9	35.2	-2.24
Suburban	31.0	32.3	30.4	1.26
Town	12.9	14.5	12.2	1.61
Rural	22.0	21.3	22.2	-0.63
Race/ethnicity				
Hispanic	22.3	19.1	23.8	-3.16
Asian	4.9	8.6	3.2	3.74*
Black	16.6	6.0	21.5	-10.51*
Other	56.2	66.2	51.6	9.93
Sex				
Male	50.9	49.5	51.5	-1.39
Female	49.1	50.5	48.5	1.39

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-139. Comparison of item respondents and nonrespondents for P1ASIANOR2 (Asian origin of spouse/partner/ second resident parent) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.3	91.6	97.0	-3.74
Private	4.7	8.4	3.0	3.74
Catholic	2.3	3.8	1.7	1.45
Other private	2.4	4.7	1.3	2.30
Census region				
Northeast	15.3	18.7	13.7	3.49
Midwest	12.6	11.1	13.2	-1.48*
South	31.4	23.7	34.8	-7.67*
West	40.8	46.5	38.3	5.66*
School urbanity				
City	44.9	48.1	43.4	3.21*
Suburban	32.0	36.1	30.1	4.12
Town	6.9	3.0	8.6	-3.87*
Rural	16.3	12.8	17.8	-3.46*
Race/ethnicity				
Hispanic	44.2	3.5	62.5	-40.78*
Asian	23.3	70.3	2.3	47.04*
Black	4.4	0.5	6.1	-3.83*
Other	28.1	25.6	29.2	-2.44*
Sex				
Male	51.3	52.2	50.9	0.92
Female	48.7	47.8	49.1	-0.92

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-140. Comparison of item respondents and nonrespondents for P1COSTPRV (Cost of tuition/fees at private 4-year in-state institution) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	88.0	72.0	94.4	-15.98*
Private	12.0	28.0	5.6	15.98*
Catholic	5.7	13.5	2.5	7.77*
Other private	6.4	14.6	3.0	8.21*
Census region				
Northeast	19.6	22.6	18.4	2.95*
Midwest	21.3	25.0	19.8	3.69
South	39.1	32.2	42.0	-6.97*
West	20.0	20.3	19.8	0.33
School urbanity				
City	34.7	35.3	34.4	0.62
Suburban	33.5	38.4	31.4	4.94
Town	11.0	7.1	12.5	-3.83*
Rural	20.9	19.2	21.6	-1.73
Race/ethnicity				
Hispanic	20.3	10.8	24.2	-9.55*
Asian	3.9	5.4	3.3	1.46*
Black	18.0	9.6	21.4	-8.42*
Other	57.8	74.3	51.1	16.50*
Sex				
Male	48.8	40.4	52.2	-8.41*
Female	51.2	59.6	47.8	8.41*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-141. Comparison of item respondents and nonrespondents for P1FEEPRV (Cost of tuition/fees at private 4-year in-state institution includes room/board) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	88.0	71.9	94.3	-16.11*
Private	12.0	28.1	5.7	16.11*
Catholic	5.7	13.5	2.6	7.79*
Other private	6.4	14.7	3.1	8.31*
Census region				
Northeast	19.6	22.7	18.4	3.11*
Midwest	21.3	24.9	19.9	3.62
South	39.1	32.0	41.9	-7.09*
West	20.0	20.3	19.8	0.36
School urbanity				
City	34.7	35.5	34.3	0.88
Suburban	33.5	38.5	31.5	5.05
Town	11.0	6.9	12.6	-4.10*
Rural	20.9	19.1	21.6	-1.83
Race/ethnicity				
Hispanic	20.3	11.0	24.0	-9.37*
Asian	3.9	5.5	3.3	1.56*
Black	18.0	9.5	21.4	-8.46*
Other	57.8	74.0	51.3	16.26*
Sex				
Male	48.8	40.6	52.0	-8.19*
Female	51.2	59.4	48.0	8.19*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-142. Comparison of item respondents and nonrespondents for P1ASIANOR1 (Asian origin of respondent/first resident parent) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.5	92.2	96.7	-3.29
Private	4.5	7.8	3.3	3.29
Catholic	2.2	3.5	1.8	1.23
Other private	2.3	4.3	1.5	2.06
Census region				
Northeast	15.1	18.2	13.9	3.14
Midwest	12.9	11.2	13.6	-1.73*
South	32.2	24.0	35.3	-8.22*
West	39.8	46.6	37.2	6.82*
School urbanity				
City	44.3	47.1	43.3	2.71*
Suburban	32.2	37.0	30.5	4.77
Town	7.4	3.1	9.0	-4.24*
Rural	16.0	12.8	17.2	-3.24*
Race/ethnicity				
Hispanic	47.0	6.2	62.3	-40.77*
Asian	19.4	67.0	1.6	47.55*
Black	6.8	0.5	9.1	-6.28*
Other	26.8	26.3	27.0	-0.49*
Sex				
Male	51.2	51.7	51.1	0.48
Female	48.8	48.3	48.9	-0.48

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-143. Comparison of item respondents and nonrespondents for P1SKIPGK 9th-grader skipped kindergarten) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.4	92.8	95.9	-2.66
Private	4.6	7.2	4.1	2.66
Catholic	1.7	1.9	1.6	0.22*
Other private	2.9	5.4	2.5	2.44
Census region				
Northeast	16.6	7.6	18.2	-8.98*
Midwest	20.6	23.3	20.1	2.69
South	41.6	37.3	42.4	-4.31
West	21.2	31.8	19.3	10.60
School urbanity				
City	38.3	48.3	36.5	10.00*
Suburban	29.7	28.6	29.9	-1.09
Town	12.1	9.3	12.6	-2.74
Rural	19.9	13.8	21.0	-6.17*
Race/ethnicity				
Hispanic	25.1	30.3	24.2	5.24
Asian	3.3	3.1	3.3	-0.19
Black	21.3	16.7	22.2	-4.68
Other	50.3	49.9	50.4	-0.37*
Sex				
Male	51.9	52.9	51.7	0.99
Female	48.1	47.1	48.3	-0.99

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-144. Comparison of item respondents and nonrespondents for P1SKIPG1 (9th-grader skipped 1st grade:) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.4	92.8	95.9	-2.66
Private	4.6	7.2	4.1	2.66
Catholic	1.7	1.9	1.6	0.22*
Other private	2.9	5.4	2.5	2.44
Census region				
Northeast	16.6	7.6	18.2	-8.98*
Midwest	20.6	23.3	20.1	2.69
South	41.6	37.3	42.4	-4.31
West	21.2	31.8	19.3	10.60
School urbanity				
City	38.3	48.3	36.5	10.00*
Suburban	29.7	28.6	29.9	-1.09
Town	12.1	9.3	12.6	-2.74
Rural	19.9	13.8	21.0	-6.17*
Race/ethnicity				
Hispanic	25.1	30.3	24.2	5.24
Asian	3.3	3.1	3.3	-0.19
Black	21.3	16.7	22.2	-4.68
Other	50.3	49.9	50.4	-0.37*
Sex				
Male	51.9	52.9	51.7	0.99
Female	48.1	47.1	48.3	-0.99

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-145. Comparison of item respondents and nonrespondents for P1SKIPG8 (9th-grader skipped 8th grade) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	95.4	92.8	95.9	-2.66
Private	4.6	7.2	4.1	2.66
Catholic	1.7	1.9	1.6	0.22*
Other private	2.9	5.4	2.5	2.44
Census region				
Northeast	16.6	7.6	18.2	-8.98*
Midwest	20.6	23.3	20.1	2.69
South	41.6	37.3	42.4	-4.31
West	21.2	31.8	19.3	10.60
School urbanity				
City	38.3	48.3	36.5	10.00*
Suburban	29.7	28.6	29.9	-1.09
Town	12.1	9.3	12.6	-2.74
Rural	19.9	13.8	21.0	-6.17*
Race/ethnicity				
Hispanic	25.1	30.3	24.2	5.24
Asian	3.3	3.1	3.3	-0.19
Black	21.3	16.7	22.2	-4.68
Other	50.3	49.9	50.4	-0.37*
Sex				
Male	51.9	52.9	51.7	0.99
Female	48.1	47.1	48.3	-0.99

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-146. Comparison of item respondents and nonrespondents for P1COSTOUT (Cost of tuition/fees at private 4-year out-of-state institution) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	94.5	91.9	94.9	-2.61
Private	5.5	8.1	5.1	2.61
Catholic	2.5	3.8	2.3	1.29
Other private	3.0	4.4	2.8	1.33
Census region				
Northeast	16.8	13.8	17.3	-2.97
Midwest	19.3	16.7	19.8	-2.62
South	43.1	47.5	42.4	4.40*
West	20.8	21.9	20.6	1.19
School urbanity				
City	34.7	34.0	34.9	-0.77
Suburban	31.6	37.4	30.6	5.80
Town	12.0	5.5	13.2	-6.54*
Rural	21.7	23.2	21.4	1.51
Race/ethnicity				
Hispanic	22.8	13.7	24.4	-9.10*
Asian	2.9	0.6	3.3	-2.34*
Black	21.9	24.1	21.6	2.16*
Other	52.3	61.6	50.7	9.29
Sex				
Male	52.5	51.3	52.7	-1.25
Female	47.5	48.7	47.3	1.25

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-147. Comparison of item respondents and nonrespondents for P1FEEOUT (Cost tuition/fees at private 4-year out-of-state institution includes room/board) by select sample school characteristics, using W1PARENT weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	94.5	91.7	94.9	-2.73
Private	5.5	8.3	5.1	2.73
Catholic	2.5	3.8	2.3	1.34
Other private	3.0	4.4	2.8	1.39
Census region				
Northeast	16.8	14.0	17.2	-2.77
Midwest	19.3	16.9	19.7	-2.39
South	43.1	47.8	42.4	4.68*
West	20.8	21.3	20.7	0.49
School urbanity				
City	34.7	34.0	34.8	-0.69
Suburban	31.6	37.7	30.5	6.16
Town	12.0	4.7	13.3	-7.31*
Rural	21.7	23.5	21.4	1.83
Race/ethnicity				
Hispanic	22.8	13.9	24.3	-8.91*
Asian	2.9	0.6	3.3	-2.34*
Black	21.9	24.4	21.5	2.49*
Other	52.3	61.1	50.8	8.76
Sex				
Male	52.5	51.8	52.6	-0.70
Female	47.5	48.2	47.4	0.70

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-148. Comparison of item respondents and nonrespondents for N1COURSE (Students fall 2009 science course-categorized) by select sample school characteristics, using W1SCITCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.5	92.3	93.1	-0.15
Private	7.5	7.7	6.9	0.15
Catholic	3.9	3.7	4.3	-0.11
Other private	3.7	3.9	2.7	0.26
Census region				
Northeast	18.7	18.2	20.4	-0.46
Midwest	23.6	24.7	19.4	1.13*
South	37.6	37.1	39.7	-0.55
West	20.1	20.0	20.5	-0.12
School urbanity				
City	31.9	31.8	32.1	-0.07
Suburban	33.8	33.1	36.4	-0.69
Town	11.5	12.3	8.3	0.86
Rural	22.9	22.8	23.3	-0.11
Race/ethnicity				
Hispanic	20.3	20.0	21.3	-0.27
Asian	3.4	3.2	4.3	-0.24
Black	12.9	12.8	13.2	-0.10
Other	63.5	64.1	61.2	0.61
Sex				
Male	50.2	50.5	49.3	0.25
Female	49.8	49.5	50.7	-0.25

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-149. Comparison of item respondents and nonrespondents for N1GROUP (Science teacher has students work in small groups) by select sample school characteristics, using W1SCITCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.5	92.3	93.1	-0.16
Private	7.5	7.7	6.9	0.16
Catholic	3.9	3.7	4.3	-0.12
Other private	3.7	3.9	2.6	0.28
Census region				
Northeast	18.7	18.2	20.7	-0.54
Midwest	23.6	24.8	19.4	1.15*
South	37.6	37.1	39.4	-0.50
West	20.1	20.0	20.5	-0.11
School urbanity				
City	31.9	31.8	32.0	-0.03
Suburban	33.8	33.0	36.6	-0.78
Town	11.5	12.3	8.3	0.86
Rural	22.9	22.8	23.1	-0.05
Race/ethnicity				
Hispanic	20.3	20.0	21.2	-0.25
Asian	3.4	3.2	4.3	-0.24
Black	12.9	12.8	13.2	-0.09
Other	63.5	64.1	61.3	0.59
Sex				
Male	50.2	50.5	49.4	0.23
Female	49.8	49.5	50.6	-0.23

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-150. Comparison of item respondents and nonrespondents for N1EVIDENCE (Science teachers emphasis on evaluating arguments based on evidence) by select sample school characteristics, using W1SCITCH weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	92.5	92.3	93.0	-0.15
Private	7.5	7.7	7.0	0.15
Catholic	3.9	3.7	4.3	-0.11
Other private	3.7	3.9	2.7	0.26
Census region				
Northeast	18.7	18.3	20.2	-0.42
Midwest	23.6	24.8	19.4	1.16*
South	37.6	37.0	39.9	-0.64
West	20.1	20.0	20.4	-0.10
School urbanity				
City	31.9	31.7	32.4	-0.14
Suburban	33.8	33.2	36.1	-0.63
Town	11.5	12.3	8.6	0.79
Rural	22.9	22.9	23.0	-0.02
Race/ethnicity				
Hispanic	20.3	20.0	21.4	-0.30
Asian	3.4	3.2	4.3	-0.24
Black	12.9	12.7	13.3	-0.12
Other	63.5	64.1	61.0	0.67
Sex				
Male	50.2	50.6	48.9	0.37
Female	49.8	49.4	51.1	-0.37

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-151. Comparison of item respondents and nonrespondents for N1ACHIEVE (Achievement of students in science course compared with average ninth-grader) by select sample school characteristics, using W1SCITCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.5	92.3	93.0	-0.15
Private	7.5	7.7	7.0	0.15
Catholic	3.9	3.7	4.3	-0.13
Other private	3.7	3.9	2.6	0.28
Census region				
Northeast	18.7	18.2	20.4	-0.46
Midwest	23.6	24.8	19.2	1.20*
South	37.6	36.9	40.1	-0.68
West	20.1	20.0	20.3	-0.06
School urbanity				
City	31.9	31.9	31.8	0.02
Suburban	33.8	33.0	36.5	-0.75
Town	11.5	12.3	8.6	0.80
Rural	22.9	22.8	23.1	-0.06
Race/ethnicity				
Hispanic	20.3	20.0	21.2	-0.26
Asian	3.4	3.1	4.3	-0.25
Black	12.9	12.8	13.2	-0.10
Other	63.5	64.1	61.2	0.62
Sex				
Male	50.2	50.5	49.3	0.26
Female	49.8	49.5	50.7	-0.26

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-152. Comparison of item respondents and nonrespondents for N1INTEREST (Science teachers emphasis on increasing students interest in science) by select sample school characteristics, using W1SCITCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.5	92.3	93.1	-0.18
Private	7.5	7.7	6.9	0.18
Catholic	3.9	3.7	4.2	-0.11
Other private	3.7	3.9	2.6	0.28
Census region				
Northeast	18.7	18.3	20.2	-0.40
Midwest	23.6	24.8	19.3	1.18*
South	37.6	37.0	39.7	-0.58
West	20.1	19.9	20.8	-0.20
School urbanity				
City	31.9	31.6	32.7	-0.23
Suburban	33.8	33.2	36.0	-0.59
Town	11.5	12.3	8.5	0.83
Rural	22.9	22.9	22.9	-0.01
Race/ethnicity				
Hispanic	20.3	19.8	21.8	-0.43
Asian	3.4	3.2	4.3	-0.24
Black	12.9	12.8	13.1	-0.06
Other	63.5	64.2	60.8	0.73
Sex				
Male	50.2	50.5	49.3	0.25
Female	49.8	49.5	50.7	-0.25

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-153. Comparison of item respondents and nonrespondents for N1TERMS (Science teachers emphasis on important science terms/facts) by select sample school characteristics, using W1SCITCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.5	92.3	93.1	-0.16
Private	7.5	7.7	6.9	0.16
Catholic	3.9	3.7	4.3	-0.12
Other private	3.7	3.9	2.6	0.29
Census region				
Northeast	18.7	18.2	20.4	-0.47
Midwest	23.6	24.8	19.5	1.14
South	37.6	37.1	39.4	-0.51
West	20.1	19.9	20.7	-0.16
School urbanity				
City	31.9	31.8	32.1	-0.08
Suburban	33.8	33.1	36.4	-0.73
Town	11.5	12.3	8.5	0.83
Rural	22.9	22.9	23.0	-0.02
Race/ethnicity				
Hispanic	20.3	20.0	21.3	-0.27
Asian	3.4	3.2	4.3	-0.24
Black	12.9	12.8	13.3	-0.11
Other	63.5	64.1	61.2	0.62
Sex				
Male	50.2	50.5	49.2	0.30
Female	49.8	49.5	50.8	-0.30

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-154. Comparison of item respondents and nonrespondents for N1SKILLS (Science teachers emphasis on science process/inquiry skills) by select sample school characteristics, using W1SCITCH weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	92.5	92.4	93.0	-0.13
Private	7.5	7.6	7.0	0.13
Catholic	3.9	3.7	4.3	-0.13
Other private	3.7	3.9	2.7	0.26
Census region				
Northeast	18.7	18.3	20.4	-0.45
Midwest	23.6	24.8	19.4	1.17*
South	37.6	36.9	40.0	-0.66
West	20.1	20.0	20.3	-0.06
School urbanity				
City	31.9	31.7	32.3	-0.12
Suburban	33.8	33.1	36.1	-0.65
Town	11.5	12.3	8.3	0.87
Rural	22.9	22.8	23.2	-0.10
Race/ethnicity				
Hispanic	20.3	20.0	21.2	-0.25
Asian	3.4	3.2	4.3	-0.24
Black	12.9	12.8	13.2	-0.10
Other	63.5	64.1	61.3	0.60
Sex				
Male	50.2	50.5	49.3	0.27
Female	49.8	49.5	50.7	-0.27

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-155. Comparison of item respondents and nonrespondents for N1PREPARE (Science teachers emphasis on preparation for further science study) by select sample school characteristics, using W1SCITCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.5	92.3	93.2	-0.20
Private	7.5	7.7	6.8	0.20
Catholic	3.9	3.8	4.2	-0.10
Other private	3.7	3.9	2.6	0.29
Census region				
Northeast	18.7	18.2	20.6	-0.51
Midwest	23.6	24.8	19.3	1.19*
South	37.6	37.0	39.9	-0.65
West	20.1	20.0	20.2	-0.03
School urbanity				
City	31.9	31.8	32.0	-0.04
Suburban	33.8	33.1	36.1	-0.65
Town	11.5	12.3	8.4	0.85
Rural	22.9	22.7	23.4	-0.16
Race/ethnicity				
Hispanic	20.3	20.0	21.1	-0.24
Asian	3.4	3.1	4.4	-0.27
Black	12.9	12.8	13.0	-0.04
Other	63.5	64.0	61.5	0.54
Sex				
Male	50.2	50.6	48.9	0.37
Female	49.8	49.4	51.1	-0.37

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-156. Comparison of item respondents and nonrespondents for N1CONCEPTS (Science teachers emphasis on teaching basic science concepts) by select sample school characteristics, using W1SCITCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.5	92.3	93.2	-0.19
Private	7.5	7.7	6.8	0.19
Catholic	3.9	3.7	4.2	-0.10
Other private	3.7	4.0	2.6	0.29
Census region				
Northeast	18.7	18.3	20.2	-0.41
Midwest	23.6	24.7	19.7	1.10
South	37.6	37.0	39.8	-0.62
West	20.1	20.0	20.3	-0.06
School urbanity				
City	31.9	31.8	32.1	-0.06
Suburban	33.8	33.2	36.0	-0.62
Town	11.5	12.2	8.8	0.75
Rural	22.9	22.8	23.1	-0.07
Race/ethnicity				
Hispanic	20.3	20.0	21.1	-0.22
Asian	3.4	3.2	4.3	-0.24
Black	12.9	12.8	13.1	-0.07
Other	63.5	64.0	61.6	0.53
Sex				
Male	50.2	50.5	49.2	0.28
Female	49.8	49.5	50.8	-0.28

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-157. Comparison of item respondents and nonrespondents for N1UNPREPPCT (Percentage of students in science course that are unprepared) by select sample school characteristics, using W1SCITCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.5	92.3	93.2	-0.19
Private	7.5	7.7	6.8	0.19
Catholic	3.9	3.7	4.2	-0.11
Other private	3.7	4.0	2.6	0.30
Census region				
Northeast	18.7	18.2	20.4	-0.47
Midwest	23.6	24.7	19.8	1.09
South	37.6	37.1	39.6	-0.56
West	20.1	20.0	20.3	-0.06
School urbanity				
City	31.9	31.9	31.9	-0.00
Suburban	33.8	32.9	36.8	-0.85
Town	11.5	12.4	8.2	0.92
Rural	22.9	22.8	23.1	-0.06
Race/ethnicity				
Hispanic	20.3	20.0	21.4	-0.31
Asian	3.4	3.2	4.2	-0.22
Black	12.9	12.8	13.1	-0.07
Other	63.5	64.1	61.3	0.60
Sex				
Male	50.2	50.5	49.5	0.21
Female	49.8	49.5	50.5	-0.21

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-158. Comparison of item respondents and nonrespondents for N1TEST (Science teachers emphasis on standardized test preparation) by select sample school characteristics, using W1SCITCH weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	92.5	92.3	93.2	-0.20
Private	7.5	7.7	6.8	0.20
Catholic	3.9	3.8	4.2	-0.10
Other private	3.7	4.0	2.6	0.30
Census region				
Northeast	18.7	18.3	20.1	-0.41
Midwest	23.6	24.7	19.9	1.08
South	37.6	37.0	39.9	-0.65
West	20.1	20.0	20.2	-0.02
School urbanity				
City	31.9	31.9	31.8	0.03
Suburban	33.8	33.2	36.0	-0.63
Town	11.5	12.1	9.1	0.68
Rural	22.9	22.8	23.2	-0.08
Race/ethnicity				
Hispanic	20.3	20.0	21.0	-0.22
Asian	3.4	3.2	4.2	-0.24
Black	12.9	12.8	12.9	-0.02
Other	63.5	64.0	61.8	0.49
Sex				
Male	50.2	50.5	49.4	0.23
Female	49.8	49.5	50.6	-0.23

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-159. Comparison of item respondents and nonrespondents for N1HISTORY (Science teachers emphasis on history/nature of science) by select sample school characteristics, using W1SCITCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.5	92.4	92.9	-0.12
Private	7.5	7.6	7.1	0.12
Catholic	3.9	3.8	4.2	-0.09
Other private	3.7	3.9	2.9	0.21
Census region				
Northeast	18.7	18.3	20.2	-0.42
Midwest	23.6	24.7	19.8	1.09
South	37.6	36.9	39.9	-0.66
West	20.1	20.1	20.1	-0.01
School urbanity				
City	31.9	31.8	32.1	-0.05
Suburban	33.8	33.2	36.0	-0.64
Town	11.5	12.2	8.8	0.77
Rural	22.9	22.8	23.1	-0.07
Race/ethnicity				
Hispanic	20.3	20.0	21.1	-0.23
Asian	3.4	3.2	4.2	-0.24
Black	12.9	12.9	12.9	0.00
Other	63.5	63.9	61.9	0.46
Sex				
Male	50.2	50.4	49.6	0.19
Female	49.8	49.6	50.4	-0.19

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-160. Comparison of item respondents and nonrespondents for N1IDEAS (Science teachers emphasis on effectively communicating science ideas) by select sample school characteristics, using W1SCITCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.5	92.3	93.1	-0.17
Private	7.5	7.7	6.9	0.17
Catholic	3.9	3.7	4.3	-0.12
Other private	3.7	4.0	2.6	0.30
Census region				
Northeast	18.7	18.3	20.3	-0.45
Midwest	23.6	24.7	19.9	1.07
South	37.6	37.1	39.4	-0.51
West	20.1	20.0	20.4	-0.11
School urbanity				
City	31.9	31.8	32.2	-0.09
Suburban	33.8	33.2	35.9	-0.60
Town	11.5	12.2	8.8	0.77
Rural	22.9	22.8	23.1	-0.08
Race/ethnicity				
Hispanic	20.3	19.9	21.4	-0.32
Asian	3.4	3.1	4.4	-0.28
Black	12.9	12.9	12.7	0.04
Other	63.5	64.0	61.6	0.55
Sex				
Male	50.2	50.5	49.5	0.22
Female	49.8	49.5	50.5	-0.22

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-161. Comparison of item respondents and nonrespondents for N1BUSINESS (Science teachers emphasis on business/industry applications of science) by select sample school characteristics, using W1SCITCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.5	92.3	93.2	-0.21
Private	7.5	7.7	6.8	0.21
Catholic	3.9	3.8	4.2	-0.09
Other private	3.7	4.0	2.6	0.30
Census region				
Northeast	18.7	18.2	20.4	-0.50
Midwest	23.6	24.7	19.8	1.09
South	37.6	37.0	39.7	-0.60
West	20.1	20.1	20.0	0.01
School urbanity				
City	31.9	31.9	31.8	0.01
Suburban	33.8	33.2	35.9	-0.61
Town	11.5	12.2	8.9	0.75
Rural	22.9	22.7	23.4	-0.15
Race/ethnicity				
Hispanic	20.3	20.0	21.2	-0.27
Asian	3.4	3.2	4.2	-0.24
Black	12.9	12.9	12.7	0.05
Other	63.5	63.9	61.9	0.47
Sex				
Male	50.2	50.4	49.6	0.18
Female	49.8	49.6	50.4	-0.18

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-162. Comparison of item respondents and nonrespondents for N1SOCIETY (Science teachers emphasis on relationship between science and tech and society) by select sample school characteristics, using W1SCITCH weight

Characteristic	Percent estimated[1]			Estimated bias[2]
	Total	Respondent	Nonrespondent	
School type				
Public	92.5	92.3	93.0	-0.16
Private	7.5	7.7	7.0	0.16
Catholic	3.9	3.8	4.2	-0.10
Other private	3.7	3.9	2.8	0.26
Census region				
Northeast	18.7	18.2	20.3	-0.47
Midwest	23.6	24.7	19.7	1.13*
South	37.6	37.0	39.8	-0.64
West	20.1	20.0	20.1	-0.02
School urbanity				
City	31.9	31.8	32.0	-0.03
Suburban	33.8	33.2	35.9	-0.60
Town	11.5	12.2	8.9	0.73
Rural	22.9	22.8	23.2	-0.10
Race/ethnicity				
Hispanic	20.3	20.0	21.1	-0.25
Asian	3.4	3.2	4.2	-0.24
Black	12.9	12.9	12.7	0.04
Other	63.5	63.9	61.9	0.45
Sex				
Male	50.2	50.5	49.5	0.22
Female	49.8	49.5	50.5	-0.22

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-163. Comparison of item respondents and nonrespondents for N1ASSIGN (How science teacher assigns students to small groups) by select sample school characteristics, using W1SCITCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.4	93.2	-0.19
Private	7.4	7.6	6.8	0.19
Catholic	3.8	3.7	4.2	-0.11
Other private	3.6	3.9	2.6	0.30
Census region				
Northeast	18.6	18.1	20.4	-0.52
Midwest	23.7	24.9	19.4	1.23*
South	37.7	37.0	40.0	-0.67
West	20.1	20.0	20.2	-0.04
School urbanity				
City	32.0	32.0	31.8	0.05
Suburban	33.9	33.1	36.4	-0.74
Town	11.3	12.0	8.9	0.70
Rural	22.8	22.8	22.9	-0.01
Race/ethnicity				
Hispanic	20.2	20.0	21.0	-0.23
Asian	3.4	3.2	4.2	-0.23
Black	12.9	12.6	13.9	-0.27
Other	63.4	64.2	60.9	0.73
Sex				
Male	50.2	50.4	49.3	0.24
Female	49.8	49.6	50.7	-0.24

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-164. Comparison of item respondents and nonrespondents for M1ENGCOMP (How teacher compares boys and girls English or language arts abilities) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	93.1	90.4	0.43
Private	7.4	6.9	9.6	-0.43
Catholic	3.8	3.6	4.9	-0.20
Other private	3.6	3.3	4.7	-0.22
Census region				
Northeast	17.5	18.2	13.6	0.73
Midwest	22.3	22.8	19.6	0.52
South	37.1	36.0	42.8	-1.09
West	23.2	23.0	24.0	-0.16
School urbanity				
City	32.4	32.9	30.0	0.47
Suburban	33.3	32.7	36.3	-0.59
Town	11.4	11.3	12.2	-0.15
Rural	22.9	23.1	21.5	0.26
Race/ethnicity				
Hispanic	21.7	21.8	21.5	0.03
Asian	3.4	3.2	4.7	-0.25
Black	12.8	12.5	14.4	-0.31
Other	62.0	62.6	59.3	0.52
Sex				
Male	50.2	50.1	50.6	-0.07
Female	49.8	49.9	49.4	0.07

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-165. Comparison of item respondents and nonrespondents for M1SCICOMP (How teacher compares boys and girls science abilities) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	93.0	91.1	0.31
Private	7.4	7.0	8.9	-0.31
Catholic	3.8	3.7	4.5	-0.14
Other private	3.6	3.4	4.4	-0.18
Census region				
Northeast	17.5	18.3	13.3	0.83*
Midwest	22.3	22.6	20.9	0.27
South	37.1	36.2	41.4	-0.86
West	23.2	22.9	24.4	-0.24
School urbanity				
City	32.4	33.0	29.4	0.61
Suburban	33.3	32.9	35.0	-0.34
Town	11.4	11.1	13.0	-0.31
Rural	22.9	22.9	22.6	0.04
Race/ethnicity				
Hispanic	21.7	21.9	20.9	0.17
Asian	3.4	3.2	4.8	-0.27
Black	12.8	12.6	14.0	-0.23
Other	62.0	62.4	60.4	0.33
Sex				
Male	50.2	50.2	50.3	-0.02
Female	49.8	49.8	49.7	0.02

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-166. Comparison of item respondents and nonrespondents for M1COURSE (Students fall 2009 mathematics course-categorized) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.5	93.2	-0.15
Private	7.4	7.5	6.8	0.15
Catholic	3.8	3.9	3.4	0.11
Other private	3.6	3.6	3.4	0.04
Census region				
Northeast	17.5	18.6	13.3	1.14*
Midwest	22.3	22.5	21.4	0.25
South	37.1	36.1	40.5	-0.92
West	23.2	22.7	24.9	-0.47
School urbanity				
City	32.4	34.4	25.1	1.98*
Suburban	33.3	32.1	37.6	-1.19
Town	11.4	11.2	12.4	-0.27
Rural	22.9	22.3	24.8	-0.53
Race/ethnicity				
Hispanic	21.7	21.7	21.8	-0.01
Asian	3.4	3.3	3.9	-0.12
Black	12.8	12.6	13.5	-0.20
Other	62.0	62.4	60.8	0.33
Sex				
Male	50.2	49.9	51.2	-0.28
Female	49.8	50.1	48.8	0.28

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-167. Comparison of item respondents and nonrespondents for M1ACHIEVE (Achievement of students in mathematics course compared with average ninth-grader) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.7	92.4	0.07
Private	7.4	7.3	7.6	-0.07
Catholic	3.8	3.9	3.4	0.11
Other private	3.6	3.4	4.2	-0.18
Census region				
Northeast	17.5	18.4	13.9	0.98*
Midwest	22.3	22.6	21.1	0.33
South	37.1	36.2	40.3	-0.90
West	23.2	22.8	24.6	-0.40
School urbanity				
City	32.4	34.5	25.0	2.06*
Suburban	33.3	31.9	38.0	-1.31
Town	11.4	11.2	12.3	-0.23
Rural	22.9	22.3	24.8	-0.52
Race/ethnicity				
Hispanic	21.7	21.7	21.9	-0.04
Asian	3.4	3.3	4.0	-0.14
Black	12.8	12.6	13.5	-0.20
Other	62.0	62.4	60.7	0.38
Sex				
Male	50.2	49.9	51.2	-0.27
Female	49.8	50.1	48.8	0.27

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-168. Comparison of item respondents and nonrespondents for M1GROUP (Mathematics teacher has students work in small groups) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.7	92.3	0.09
Private	7.4	7.3	7.7	-0.09
Catholic	3.8	3.9	3.4	0.12
Other private	3.6	3.3	4.3	-0.21
Census region				
Northeast	17.5	18.4	14.0	0.98*
Midwest	22.3	22.6	21.0	0.36
South	37.1	36.1	40.4	-0.92
West	23.2	22.8	24.7	-0.42
School urbanity				
City	32.4	34.5	25.0	2.07*
Suburban	33.3	31.9	38.3	-1.41
Town	11.4	11.2	12.2	-0.21
Rural	22.9	22.4	24.5	-0.45
Race/ethnicity				
Hispanic	21.7	21.7	21.9	-0.05
Asian	3.4	3.3	3.9	-0.14
Black	12.8	12.6	13.3	-0.15
Other	62.0	62.4	60.8	0.35
Sex				
Male	50.2	49.9	51.3	-0.30
Female	49.8	50.1	48.7	0.30

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-169. Comparison of item respondents and nonrespondents for M1UNPREPPCT (Percentage of students in mathematics course that are unprepared) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.5	93.1	-0.12
Private	7.4	7.5	6.9	0.12
Catholic	3.8	3.9	3.5	0.08
Other private	3.6	3.6	3.4	0.04
Census region				
Northeast	17.5	18.6	13.4	1.14*
Midwest	22.3	22.6	21.3	0.27
South	37.1	36.2	40.3	-0.90
West	23.2	22.7	25.0	-0.51
School urbanity				
City	32.4	34.5	25.1	2.07*
Suburban	33.3	32.1	37.5	-1.20
Town	11.4	11.1	12.7	-0.34
Rural	22.9	22.3	24.7	-0.52
Race/ethnicity				
Hispanic	21.7	21.8	21.5	0.07
Asian	3.4	3.3	3.8	-0.11
Black	12.8	12.6	13.4	-0.16
Other	62.0	62.2	61.3	0.20
Sex				
Male	50.2	50.0	51.1	-0.24
Female	49.8	50.0	48.9	0.24

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-170. Comparison of item respondents and nonrespondents for M1COMPUTE (Mathematics teachers emphasis on speedy/accurate computations) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.5	93.2	-0.15
Private	7.4	7.5	6.8	0.15
Catholic	3.8	3.9	3.4	0.11
Other private	3.6	3.6	3.4	0.04
Census region				
Northeast	17.5	18.6	13.5	1.12*
Midwest	22.3	22.6	21.1	0.33
South	37.1	36.1	40.5	-0.96
West	23.2	22.7	24.9	-0.48
School urbanity				
City	32.4	34.5	25.2	2.03*
Suburban	33.3	32.0	37.9	-1.29
Town	11.4	11.1	12.5	-0.30
Rural	22.9	22.4	24.4	-0.44
Race/ethnicity				
Hispanic	21.7	21.8	21.5	0.07
Asian	3.4	3.3	3.8	-0.12
Black	12.8	12.6	13.5	-0.19
Other	62.0	62.3	61.2	0.23
Sex				
Male	50.2	49.9	51.1	-0.26
Female	49.8	50.1	48.9	0.26

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-171. Comparison of item respondents and nonrespondents for M1PREPARE (Mathematics teachers emphasis on preparation for further mathematics study) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.4	93.4	-0.20
Private	7.4	7.6	6.6	0.20
Catholic	3.8	3.9	3.3	0.14
Other private	3.6	3.6	3.3	0.06
Census region				
Northeast	17.5	18.6	13.4	1.14*
Midwest	22.3	22.6	21.0	0.36
South	37.1	36.0	40.8	-1.03
West	23.2	22.7	24.8	-0.47
School urbanity				
City	32.4	34.5	25.2	2.02*
Suburban	33.3	32.0	37.6	-1.22
Town	11.4	11.1	12.6	-0.31
Rural	22.9	22.4	24.6	-0.49
Race/ethnicity				
Hispanic	21.7	21.8	21.4	0.10
Asian	3.4	3.3	3.8	-0.11
Black	12.8	12.5	13.7	-0.25
Other	62.0	62.3	61.1	0.27
Sex				
Male	50.2	49.9	51.1	-0.26
Female	49.8	50.1	48.9	0.26

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-172. Comparison of item respondents and nonrespondents for M1IDEAS (Mathematics teachers emphasis on connecting mathematics ideas) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.7	92.6	0.01
Private	7.4	7.3	7.4	-0.01
Catholic	3.8	3.9	3.3	0.14
Other private	3.6	3.4	4.1	-0.15
Census region				
Northeast	17.5	18.5	13.8	1.03*
Midwest	22.3	22.6	21.1	0.34
South	37.1	36.1	40.5	-0.95
West	23.2	22.8	24.7	-0.42
School urbanity				
City	32.4	34.5	25.0	2.08*
Suburban	33.3	31.9	38.1	-1.35
Town	11.4	11.2	12.3	-0.24
Rural	22.9	22.4	24.6	-0.49
Race/ethnicity				
Hispanic	21.7	21.6	22.0	-0.09
Asian	3.4	3.3	3.9	-0.14
Black	12.8	12.6	13.5	-0.18
Other	62.0	62.4	60.6	0.41
Sex				
Male	50.2	50.0	50.9	-0.19
Female	49.8	50.0	49.1	0.19

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-173. Comparison of item respondents and nonrespondents for M1REASON (Mathematics teachers emphasis on reasoning mathematically) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.7	92.5	0.04
Private	7.4	7.3	7.5	-0.04
Catholic	3.8	3.9	3.4	0.11
Other private	3.6	3.4	4.1	-0.14
Census region				
Northeast	17.5	18.5	13.8	1.04*
Midwest	22.3	22.5	21.4	0.24
South	37.1	36.1	40.4	-0.94
West	23.2	22.8	24.4	-0.33
School urbanity				
City	32.4	34.4	25.6	1.92*
Suburban	33.3	32.0	37.8	-1.29
Town	11.4	11.2	12.3	-0.24
Rural	22.9	22.5	24.3	-0.40
Race/ethnicity				
Hispanic	21.7	21.7	21.7	0.00
Asian	3.4	3.3	3.9	-0.14
Black	12.8	12.5	13.7	-0.26
Other	62.0	62.4	60.6	0.39
Sex				
Male	50.2	50.0	50.9	-0.19
Female	49.8	50.0	49.1	0.19

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-174. Comparison of item respondents and nonrespondents for M1BUSINESS (Mathematics teachers emphasis on business/industry applications of mathematics) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.5	93.3	-0.18
Private	7.4	7.5	6.7	0.18
Catholic	3.8	3.9	3.3	0.14
Other private	3.6	3.6	3.4	0.05
Census region				
Northeast	17.5	18.6	13.4	1.13*
Midwest	22.3	22.6	21.2	0.31
South	37.1	36.1	40.5	-0.96
West	23.2	22.7	24.9	-0.48
School urbanity				
City	32.4	34.4	25.3	2.00*
Suburban	33.3	32.0	37.6	-1.23
Town	11.4	11.1	12.7	-0.34
Rural	22.9	22.4	24.4	-0.43
Race/ethnicity				
Hispanic	21.7	21.8	21.6	0.05
Asian	3.4	3.3	3.9	-0.12
Black	12.8	12.6	13.5	-0.19
Other	62.0	62.3	61.1	0.27
Sex				
Male	50.2	49.9	51.1	-0.26
Female	49.8	50.1	48.9	0.26

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-175. Comparison of item respondents and nonrespondents for M1INTEREST (Mathematics teachers emphasis on increasing students interest in mathematics) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.6	92.6	0.00
Private	7.4	7.4	7.4	-0.00
Catholic	3.8	3.9	3.3	0.14
Other private	3.6	3.4	4.1	-0.14
Census region				
Northeast	17.5	18.3	14.4	0.85
Midwest	22.3	22.6	21.1	0.32
South	37.1	36.2	40.0	-0.83
West	23.2	22.8	24.4	-0.34
School urbanity				
City	32.4	34.5	24.9	2.10*
Suburban	33.3	31.9	37.9	-1.31
Town	11.4	11.2	12.2	-0.21
Rural	22.9	22.3	24.9	-0.58
Race/ethnicity				
Hispanic	21.7	21.8	21.5	0.07
Asian	3.4	3.3	3.9	-0.13
Black	12.8	12.6	13.4	-0.16
Other	62.0	62.3	61.2	0.22
Sex				
Male	50.2	49.9	51.2	-0.28
Female	49.8	50.1	48.8	0.28

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-176. Comparison of item respondents and nonrespondents for M1ALGORITHM (Mathematics teachers emphasis on teaching mathematics algorithms/ procedures) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.6	92.7	-0.00
Private	7.4	7.4	7.3	0.00
Catholic	3.8	3.9	3.3	0.14
Other private	3.6	3.4	4.1	-0.14
Census region				
Northeast	17.5	18.5	13.9	0.99*
Midwest	22.3	22.7	20.9	0.38
South	37.1	36.0	40.7	-1.02
West	23.2	22.8	24.4	-0.36
School urbanity				
City	32.4	34.5	25.2	2.03*
Suburban	33.3	31.9	38.0	-1.34
Town	11.4	11.2	12.2	-0.22
Rural	22.9	22.4	24.6	-0.48
Race/ethnicity				
Hispanic	21.7	21.8	21.6	0.04
Asian	3.4	3.3	3.9	-0.14
Black	12.8	12.5	13.7	-0.26
Other	62.0	62.4	60.7	0.37
Sex				
Male	50.2	49.9	51.1	-0.26
Female	49.8	50.1	48.9	0.26

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-177. Comparison of item respondents and nonrespondents for M1COMPSKILLS (Mathematics teachers emphasis on developing computational skills) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.6	92.7	-0.01
Private	7.4	7.4	7.3	0.01
Catholic	3.8	3.9	3.3	0.14
Other private	3.6	3.4	4.0	-0.14
Census region				
Northeast	17.5	18.5	13.7	1.06*
Midwest	22.3	22.6	21.0	0.36
South	37.1	36.1	40.6	-1.00
West	23.2	22.8	24.7	-0.42
School urbanity				
City	32.4	34.4	25.6	1.93*
Suburban	33.3	32.0	37.9	-1.30
Town	11.4	11.2	12.2	-0.22
Rural	22.9	22.4	24.3	-0.41
Race/ethnicity				
Hispanic	21.7	21.7	21.7	0.02
Asian	3.4	3.3	3.9	-0.13
Black	12.8	12.5	13.7	-0.26
Other	62.0	62.4	60.7	0.38
Sex				
Male	50.2	50.1	50.7	-0.14
Female	49.8	49.9	49.3	0.14

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-178. Comparison of item respondents and nonrespondents for M1PROBLEM (Mathematics teachers emphasis on developing problem solving skills) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.6	92.7	-0.01
Private	7.4	7.4	7.3	0.01
Catholic	3.8	3.9	3.3	0.14
Other private	3.6	3.4	4.0	-0.14
Census region				
Northeast	17.5	18.5	13.7	1.05*
Midwest	22.3	22.6	21.3	0.27
South	37.1	36.1	40.5	-0.96
West	23.2	22.8	24.4	-0.36
School urbanity				
City	32.4	34.4	25.4	1.98*
Suburban	33.3	32.0	37.9	-1.29
Town	11.4	11.3	12.1	-0.20
Rural	22.9	22.4	24.6	-0.49
Race/ethnicity				
Hispanic	21.7	21.7	21.8	-0.03
Asian	3.4	3.3	3.9	-0.13
Black	12.8	12.6	13.6	-0.22
Other	62.0	62.4	60.7	0.38
Sex				
Male	50.2	49.9	51.2	-0.27
Female	49.8	50.1	48.8	0.27

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-179. Comparison of item respondents and nonrespondents for M1TEST (Mathematics teachers emphasis on standardized test preparation) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.4	93.4	-0.21
Private	7.4	7.6	6.6	0.21
Catholic	3.8	3.9	3.3	0.14
Other private	3.6	3.6	3.3	0.07
Census region				
Northeast	17.5	18.5	13.8	1.04*
Midwest	22.3	22.7	20.9	0.38
South	37.1	36.1	40.6	-0.99
West	23.2	22.7	24.7	-0.43
School urbanity				
City	32.4	34.6	24.9	2.12*
Suburban	33.3	32.0	37.6	-1.22
Town	11.4	11.1	12.6	-0.34
Rural	22.9	22.3	24.9	-0.57
Race/ethnicity				
Hispanic	21.7	21.8	21.3	0.11
Asian	3.4	3.3	3.8	-0.11
Black	12.8	12.6	13.5	-0.21
Other	62.0	62.2	61.3	0.21
Sex				
Male	50.2	49.9	51.4	-0.33
Female	49.8	50.1	48.6	0.33

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-180. Comparison of item respondents and nonrespondents for M1EXPLAIN (Mathematics teachers emphasis on effectively explaining mathematics ideas) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.4	93.3	-0.19
Private	7.4	7.6	6.7	0.19
Catholic	3.8	3.9	3.3	0.13
Other private	3.6	3.6	3.3	0.06
Census region				
Northeast	17.5	18.6	13.4	1.13*
Midwest	22.3	22.6	21.0	0.36
South	37.1	36.0	40.7	-1.02
West	23.2	22.7	24.8	-0.47
School urbanity				
City	32.4	34.5	25.2	2.02*
Suburban	33.3	32.0	37.8	-1.26
Town	11.4	11.2	12.5	-0.30
Rural	22.9	22.4	24.5	-0.46
Race/ethnicity				
Hispanic	21.7	21.7	21.7	0.02
Asian	3.4	3.3	3.8	-0.11
Black	12.8	12.6	13.5	-0.19
Other	62.0	62.3	61.0	0.29
Sex				
Male	50.2	50.0	51.1	-0.24
Female	49.8	50.0	48.9	0.24

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-181. Comparison of item respondents and nonrespondents for M1HISTORY (Mathematics teachers emphasis on history and nature of mathematics) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.5	93.2	-0.17
Private	7.4	7.5	6.8	0.17
Catholic	3.8	3.9	3.3	0.13
Other private	3.6	3.6	3.4	0.04
Census region				
Northeast	17.5	18.5	13.7	1.06*
Midwest	22.3	22.7	21.0	0.37
South	37.1	36.1	40.4	-0.94
West	23.2	22.7	24.9	-0.49
School urbanity				
City	32.4	34.5	25.3	2.03*
Suburban	33.3	32.1	37.4	-1.18
Town	11.4	11.1	12.6	-0.33
Rural	22.9	22.3	24.7	-0.52
Race/ethnicity				
Hispanic	21.7	21.8	21.6	0.04
Asian	3.4	3.3	3.8	-0.11
Black	12.8	12.6	13.4	-0.18
Other	62.0	62.3	61.2	0.25
Sex				
Male	50.2	49.9	51.4	-0.34
Female	49.8	50.1	48.6	0.34

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-182. Comparison of item respondents and nonrespondents for M1LOGIC (Mathematics teachers emphasis on logical structure of mathematics) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.5	93.1	-0.14
Private	7.4	7.5	6.9	0.14
Catholic	3.8	3.9	3.5	0.09
Other private	3.6	3.6	3.4	0.04
Census region				
Northeast	17.5	18.5	13.9	1.02*
Midwest	22.3	22.7	21.0	0.37
South	37.1	36.2	40.2	-0.91
West	23.2	22.7	24.8	-0.48
School urbanity				
City	32.4	34.3	26.0	1.85*
Suburban	33.3	32.1	37.4	-1.18
Town	11.4	11.1	12.6	-0.32
Rural	22.9	22.5	24.1	-0.35
Race/ethnicity				
Hispanic	21.7	21.8	21.6	0.03
Asian	3.4	3.3	3.8	-0.11
Black	12.8	12.6	13.5	-0.20
Other	62.0	62.3	61.1	0.27
Sex				
Male	50.2	50.0	51.0	-0.22
Female	49.8	50.0	49.0	0.22

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-183. Comparison of item respondents and nonrespondents for M1CONCEPTS (Mathematics teachers emphasis on teaching mathematics concepts) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	92.6	92.6	92.7	-0.02
Private	7.4	7.4	7.3	0.02
Catholic	3.8	3.9	3.3	0.14
Other private	3.6	3.4	4.0	-0.12
Census region				
Northeast	17.5	18.1	15.1	0.67
Midwest	22.3	22.6	21.4	0.27
South	37.1	36.4	39.5	-0.70
West	23.2	22.9	24.0	-0.24
School urbanity				
City	32.4	34.1	26.7	1.65*
Suburban	33.3	32.2	37.0	-1.09
Town	11.4	11.2	12.3	-0.24
Rural	22.9	22.5	24.0	-0.33
Race/ethnicity				
Hispanic	21.7	21.8	21.3	0.11
Asian	3.4	3.2	4.1	-0.21
Black	12.8	12.7	13.3	-0.14
Other	62.0	62.3	61.2	0.23
Sex				
Male	50.2	50.2	50.3	-0.04
Female	49.8	49.8	49.7	0.04

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Table H-184. Comparison of item respondents and nonrespondents for M1ASSIGN (How mathematics teacher assigns students to small groups) by select sample school characteristics, using W1MATHTCH weight

	Percent estimated[1]			
Characteristic	Total	Respondent	Nonrespondent	Estimated bias[2]
School type				
Public	93.0	93.2	92.3	0.21
Private	7.0	6.8	7.7	-0.21
Catholic	3.6	3.6	3.3	0.07
Other private	3.5	3.2	4.4	-0.28
Census region				
Northeast	18.1	19.5	14.0	1.35*
Midwest	21.8	22.0	21.1	0.21
South	37.4	36.5	40.2	-0.90
West	22.7	22.0	24.7	-0.67
School urbanity				
City	32.0	34.2	25.2	2.20*
Suburban	34.4	33.1	38.3	-1.25
Town	11.6	11.4	12.1	-0.16
Rural	22.0	21.2	24.4	-0.78
Race/ethnicity				
Hispanic	21.5	21.4	21.9	-0.12
Asian	3.5	3.3	4.0	-0.18
Black	13.2	13.1	13.5	-0.10
Other	61.8	62.2	60.6	0.40
Sex				
Male	49.8	49.3	51.3	-0.49*
Female	50.2	50.7	48.7	0.49*

[1] Estimates were calculated with the school analytic weight (W1SCHOOL).
[2] Estimated bias is defined by equation 7.1. A value marked with an asterisk (*) identifies a bias that is significantly different from zero with statistical significance ≤ 0.05. Bias estimates without an asterisk are labeled as negligible.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Restricted-use File.

Appendix I.
Imputation Details

I.1 Single-Value Imputation

Item response rates were relatively high in the HSLS:09 base-year data. However, a set of key analytic variables was identified as being critical for complete-case analysis and subjected to imputation procedures. A single value was assigned in place of the missing response for 18 categorical variables from the student and parent questionnaires using a weighted sequential hot-deck imputation procedure (WSHD). An associated indicator "flag" variable was generated to distinguish the imputed values from those responses collected during the base-year study (see chapter 8). Details on the single-value imputation, including variables used to create the imputation classes, are included in table I-1. Tests for differences in the distribution of these variables both before and after imputation are summarized in table I-2.

Table I-1. Details of imputation procedures for variables requiring imputation

Study questionnaire	Variable[1]	Method of imputation	Imputation class variables	Sort variables within class
Student	Student's sex (X1SEX)	Logical	—	—
	Student is Hispanic (X1HISPANIC)	Logical, Statistical – WSHD[3]	SCH_ID	X1CONTROL X1SEX
	Student's race (X1RACE)	Derived[2]	—	—
	How far student expects to get in school (X1STUEDEXPCT)	Statistical – WSHD	X1RACE X1SEX	X1CONTROL
Parent	Parent 1 relationship to 9th-grader (X1P1RELATION)	Statistical – WSHD	X1RACE	X1SEX X1CONTROL
	Parent 2 relationship to 9th-grader (X1P2RELATION)	Statistical – WSHD	X1RACE	X1SEX X1CONTROL
	Parent 1 and 2 relationship pattern (X1PARPATTERN)	Derived	—	—
	Parent 1 highest level of education (X1PAR1EDU)	Statistical – WSHD	X1RACE	X1SEX X1CONTROL
	Parent 2 highest level of education (X1PAR2EDU)	Statistical – CART[4]	X1RACE X1STUEDEXPCT X1P1RELATION X1P2RELATION X1CONTROL	X1SEX X1CONTROL
	Highest level of education for Parents (X1PAREDU)	Derived	—	—

See notes at end of table.

Table I-1. Details of imputation procedures for variables requiring imputation—Continued

Study questionnaire	Variable[1]	Method of imputation	Imputation class variables	Sort variables within class
Parent—continued	Parent 1 employment status (X1PAR1EMP)	Statistical – CART	X1FAMINCOME X1PAR1EDU X1PAR2EDU X1P1RELATION X1P2RELATION X1PARPATTERN X1STUEDEXPCT X1RACE	X1SEX X1CONTROL
	Parent 2 employment status (X1PAR2EMP)	Statistical – CART	X1FAMINCOME X1P1RELATION X1P2RELATION X1PAREDU X1PAR1EMP X1PAR1OCC2	X1SEX X1CONTROL
	Parent 1 current/most recent occupation: 2-digit O*NET code (X1PAR1OCC2)	Statistical – WSHD	X1PAR1EMP X1RACE	X1SEX X1CONTROL
	Parent 2: current/most recent occupation: 2-digit O*NET code (X1PAR2OCC2)	Statistical – WSHD	X1PAR2EMP X1RACE	X1SEX X1CONTROL
	Total family income from all sources in 2008 (X1FAMINCOME)	Statistical – CART	X1PAR1EDU X1PAR2EDU X1PAREDU X1RACE X1P1RELATION X1P2RELATION X1CONTROL X1STUEDEXPCT	X1SEX X1CONTROL
	Number of 2009 household members (X1HHNUMBER)	Derived	—	—

See notes at end of table.

Table I-1. Details of imputation procedures for variables requiring imputation—Continued

Study questionnaire	Variable[1]	Method of imputation	Imputation class variables	Sort variables within class
Parent—continued	How far in school parent thinks 9th-grader will get (P1PAREDEXPCT)	Statistical – CART	X1STUEDEXPCT X1PAR1EDU X1PAR2EDU X1PAREDU X1FAMINCOME X1RACE X1SEX X1PAR1OCC2 X1PAR2OCC2 X1P1RELATION X1P2RELATION X1PARPATTERN	X1SEX X1CONTROL

— Not applicable.
[1] The variables are listed in the order in which the missing values were imputed.
[2] The variable was derived from another (source) variable containing imputed values. The imputation flag corresponds with the flag for the source variable.
[3] Identifies a statistical imputation performed with a pre-determined group of classification variables.
[4] Identifies a statistical imputation performed with the assistance of a nonparametric classification and regression tree (CART) procedure for classification. CART isolates the variables and combination of variable values most associated with the imputation variable via a nonparametric classification and regression tree algorithm.
NOTE: WSHD = weighted sequential hot-deck (statistical) imputation procedure.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Table I-2. Weighted distribution of imputed variables before and after imputation

		Before imputation		After imputation		
Imputation variable	Variable category	Sample size[1]	Weighted percent	Sample size[2]	Weighted percent	Significant difference[3]
X1RACE	Non-Hispanic American Indian/Alaska Native	163	0.73	163	0.73	
	Non-Hispanic Asian	1,672	3.46	1,672	3.46	
	Non-Hispanic Black/African American	2,214	13.51	2,218	13.52	
	Hispanic, no race specified	204	1.70	204	1.69	
	Hispanic, race specified	3,311	20.53	3,311	20.51	
	Non-Hispanic, More than One Race	1,912	7.74	1,912	7.74	
	Non-Hispanic, Native Hawaiian/Pacific Islander	110	0.50	110	0.50	
	Non-Hispanic White	11,837	51.83	11,854	51.85	
X1HISPANIC	Not Hispanic	17,914	77.78	17,929	77.79	Yes
	Hispanic	3,515	22.22	3,515	22.21	Yes
X1STUEDEXPCT	Less than high school	92	0.50	93	0.50	
	High school diploma or GED	2,572	14.18	2,619	14.24	
	Start an associate's degree	139	0.74	140	0.74	
	Complete an associate's degree	1,174	6.09	1,195	6.07	
	Start a bachelor's degree	113	0.49	115	0.50	
	Complete a bachelor's degree	3,469	16.17	3,505	16.08	
	Start a master's degree	226	1.06	231	1.08	
	Complete a master's degree	4,214	19.19	4,278	19.21	
	Start Ph.D/M.D/law/other prof degree	172	0.82	176	0.82	
	Complete Ph.D/M.D/law/other prof degree	4,396	19.04	4,461	19.08	
	Don't know	4,569	21.71	4,631	21.69	

See notes at end of table.

Table I-2. Weighted distribution of imputed variables before and after imputation—Continued

Imputation variable	Variable category	Before imputation		After imputation		Significant difference[3]
		Sample size[1]	Weighted percent	Sample size[2]	Weighted percent	
X1P1RELATION	Biological mother	11,714	72.90	11,721	72.88	
	Biological father	3,392	19.50	3,397	19.53	
	Adoptive mother	305	1.56	305	1.56	
	Adoptive father	116	0.51	116	0.51	
	Stepmother	160	0.87	160	0.87	
	Stepfather	151	0.83	151	0.82	
	Other female guardian or relative	476	3.25	476	3.25	
	Other male guardian or relative	103	0.59	103	0.58	
X1P2RELATION	Biological mother	2,714	20.17	2,722	20.17	
	Biological father	7,214	54.87	7,225	54.87	
	Adoptive mother	89	0.51	89	0.51	
	Adoptive father	325	2.23	325	2.22	
	Stepmother	322	2.62	322	2.62	
	Stepfather	1,582	14.19	1,586	14.19	
	Other female guardian or relative	114	0.93	115	0.93	
	Other male guardian or relative	503	4.49	505	4.49	
X1PARPATTERN	Two bio/adoptive parents	9,455	57.56	9,956	56.76	Yes
	Bio/adoptive mother and guardian	1,905	13.82	2,059	13.99	
	Bio/adoptive father and guardian	455	2.82	488	2.85	
	Two other guardians	247	1.82	269	1.82	
	Bio/adoptive mother only	2,511	18.41	2,733	18.89	Yes
	Bio/adoptive father only	420	2.92	470	2.98	
	Other female guardian only	169	1.17	184	1.18	
	Other male guardian only	30	0.14	32	0.14	
	Student lives with P1/P2 less than half the time	226	1.35	238	1.39	

See notes at end of table.

Table I-2. Weighted distribution of imputed variables before and after imputation—Continued

Imputation variable	Variable category	Before imputation		After imputation		Significant difference[3]
		Sample size[1]	Weighted percent	Sample size[2]	Weighted percent	
X1PAR1EDU	Less than high school	1,280	10.42	1,294	10.47	
	High school diploma or GED	6,565	43.02	6,640	43.07	
	Associate's degree	2,494	16.01	2,522	15.99	
	Bachelor's degree	3,791	20.44	3,829	20.35	
	Master's degree	1,560	7.84	1,580	7.85	
	Ph.D./M.D./law/other high-level professional degree	555	2.27	564	2.27	
X1PAR2EDU	Less than high school	1,255	12.00	1,295	12.09	
	High school diploma or GED	5,405	46.32	5,536	46.60	
	Associate's degree	1,538	12.10	1,564	12.06	
	Bachelor's degree	2,757	19.24	2,793	19.04	Yes
	Master's degree	997	6.74	1,011	6.66	
	Ph.D./M.D./law/other high-level professional degree	682	3.60	690	3.55	Yes
X1PAREDU	Less than high school	949	8.13	974	8.11	
	High school diploma or GED	5.619	38.29	5,770	38.48	
	Associate's degree	2,446	15.99	2,507	16.08	
	Bachelor's degree	3,945	22.27	4,031	22.12	
	Master's degree	2,029	10.92	2,073	10.87	
	Ph.D./M.D./law/other high-level professional degree	1,059	4.40	1,074	4.34	
X1PAR1EMP	P1 has never worked for pay	526	3.60	528	3.38	Yes
	P1 not currently working for pay, but has worked for pay in the past	3,769	25.00	4,061	25.48	Yes
	P1 currently working PT (<35 hrs/wk)	2,164	14.76	2,320	14.81	
	P1 currently working FT (>=35 hrs/wk)	8,949	56.63	9,520	56.33	
X1PAR2EMP	P2 has never worked for pay	397	3.45	401	3.21	Yes
	P2 not currently working for pay, but has worked for pay in the past	1,992	17.60	2,134	17.49	
	P2 currently working PT (<35 hrs/wk)	872	7.29	925	7.29	
	P2 currently working FT (>=35 hrs/wk)	8,761	71.66	9,429	72.01	

See notes at end of table.

Table I-2. Weighted distribution of imputed variables before and after imputation—Continued

Imputation variable	Variable category	Before imputation		After imputation		Significant difference[3]
		Sample size[1]	Weighted percent	Sample size[2]	Weighted percent	
X1PAR1OCC2	Management Occupations	2,245	12.68	2,282	12.64	
	Business and Financial Operations Occupations	755	4.55	764	4.46	Yes
	Computer and Mathematical Occupations	354	1.92	361	1.91	
	Architecture and Engineering Occupations	265	1.47	269	1.44	Yes
	Life, Physical, and Social Science Occupations	195	0.87	198	0.92	
	Community and Social Services Occupations	354	2.32	358	2.27	Yes
	Legal Occupations	199	1.12	202	1.11	
	Education, Training, and Library Occupations	1,501	9.15	1,526	9.05	Yes
	Arts, Design, Entertainment, Sports, and Media Occupations	223	1.29	234	1.30	
	Healthcare Practitioners and Technical Occupations	1,369	7.87	1,396	7.78	Yes
	Healthcare Support Occupations	640	4.78	663	4.80	
	Protective Service Occupations	223	1.60	227	1.58	Yes
	Food Preparation and Serving Related Occupations	623	4.43	633	4.37	Yes
	Building and Grounds Cleaning and Maintenance Occupations	354	3.42	369	3.40	
	Personal Care and Service Occupations	606	4.28	623	4.28	
	Sales and Related Occupations	1,102	7.04	1,133	6.98	Yes
	Office and Administrative Support Occupations	2,355	15.62	2,414	15.66	
	Farming, Fishing, and Forestry Occupations	126	1.05	132	1.10	
	Construction and Extraction Occupations	315	2.54	325	2.56	
	Installation, Maintenance, and Repair Occupations	292	2.02	303	2.05	
	Production Occupations	901	6.04	928	6.39	Yes
	Transportation and Material Moving Occupations	480	3.49	492	3.51	
	Military Specific Occupations	66	0.44	69	0.44	

See notes at end of table.

Table I-2. Weighted distribution of imputed variables before and after imputation—Continued

Imputation variable	Variable category	Before imputation		After imputation		Significant difference[3]
		Sample size[1]	Weighted percent	Sample size[2]	Weighted percent	
X1PAR2OCC2	Management Occupations	2073	15.85	2129	15.94	
	Business and Financial Operations Occupations	518	3.84	533	3.81	
	Computer and Mathematical Occupations	369	2.62	379	2.60	
	Architecture and Engineering Occupations	421	3.19	435	3.21	
	Life, Physical, and Social Science Occupations	140	0.97	142	0.96	
	Community and Social Services Occupations	165	1.31	172	1.32	
	Legal Occupations	156	1.01	160	0.99	
	Education, Training, and Library Occupations	546	4.08	564	4.02	
	Arts, Design, Entertainment, Sports, and Media Occupations	181	1.45	185	1.47	
	Healthcare Practitioners and Technical Occupations	697	4.53	710	4.45	
	Healthcare Support Occupations	187	1.58	195	1.60	
	Protective Service Occupations	342	3.03	349	2.98	
	Food Preparation and Serving Related Occupations	305	2.80	313	2.74	
	Building and Grounds Cleaning and Maintenance Occupations	316	3.34	328	3.31	
	Personal Care and Service Occupations	224	2.20	233	2.20	
	Sales and Related Occupations	794	6.04	817	6.10	
	Office and Administrative Support Occupations	762	6.30	788	6.26	
	Farming, Fishing, and Forestry Occupations	145	1.42	154	1.46	
	Construction and Extraction Occupations	967	9.82	1003	9.88	
	Installation, Maintenance, and Repair Occupations	792	7.30	812	7.31	
	Production Occupations	1096	9.32	1134	9.30	
	Transportation and Material Moving Occupations	803	7.02	838	7.15	
	Military Specific Occupations	114	0.96	115	0.94	

See notes at end of table.

Table I-2. Weighted distribution of imputed variables before and after imputation—Continued

Imputation variable	Variable category	Before imputation		After imputation		Significant difference[3]
		Sample size[1]	Weighted percent	Sample size[2]	Weighted percent	
X1FAMINCOME	Family income less than $15,000	1,414	11.07	1,526	11.27	
	Family income between $15,000 and $35,000	2,800	20.81	2,982	21.04	
	Family income between $35,000 and $55,000	2,588	17.99	2,713	17.71	
	Family income between $55,000 and $75,000	2,334	14.64	2,461	14.58	
	Family income between $75,000 and $95,000	1,707	10.27	1,814	10.20	
	Family income between $95,000 and $115,000	1,366	7.93	1,454	7.88	
	Family income between $115,000 and $135,000	887	4.83	946	4.83	
	Family income between $135,000 and $155,000	688	4.01	732	4.00	
	Family income between $155,000 and $175,000	333	1.87	361	1.91	
	Family income between $175,000 and $195,000	220	1.22	232	1.20	
	Family income between $195,000 and $215,000	291	1.49	310	1.51	
	Family income between $215,000 and $235,000	111	0.48	115	0.47	
	Family income greater than $235,000	731	3.38	783	3.40	
X1HHNUMBER	2 Household members	758	5.16	838	5.33	
	3 Household members	2,942	19.18	3,249	19.32	
	4 Household members	5,408	34.61	5,848	34.26	Yes
	5 Household members	3,466	24.39	3,745	24.09	Yes
	6 Household members	1,498	10.03	1,658	10.26	Yes
	7 Household members	553	3.85	624	3.96	
	8 Household members	242	1.61	263	1.59	
	9 Household members	95	0.61	106	0.63	
	10 Household members	47	0.28	52	0.29	
	11+ Household members	40	0.28	46	0.27	

See notes at end of table.

Table I-2. Weighted distribution of imputed variables before and after imputation—Continued

Imputation variable	Variable category	Before imputation		After imputation		Significant difference[3]
		Sample size[1]	Weighted percent	Sample size[2]	Weighted percent	
X1PAREDEXPCT	Less than high school	52	0.33	54	0.38	
	High school diploma or GED	1,121	8.46	1,251	8.86	Yes
	Start an associate's degree	138	0.98	146	0.94	Yes
	Complete an associate's degree	1,071	8.00	1,167	8.04	
	Start a bachelor's degree	121	0.96	130	0.92	Yes
	Complete a bachelor's degree	4,574	29.01	4,866	28.92	
	Start a master's degree	68	0.41	73	0.39	Yes
	Complete a master's degree	3,132	19.55	3,315	19.27	
	Start Ph.D/M.D/law/other prof degree	33	0.20	36	0.23	
	Complete Ph.D/M.D/law/other prof degree	3,491	20.90	3,710	20.84	
	Don't know	1,555	11.21	1,681	11.22	

[1] Unweighted sample size excludes records with item nonresponse.
[2] Unweighted sample size includes all records with either actual or imputed values.
[3] Rows are flagged where the difference between the before and after estimates is significantly different from zero at the 0.05 significance level.
NOTE: Detail may not sum to totals because of rounding.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

I.2 Multiple Imputation

Single-value imputation (section I.1) was reserved for important *categorical* variables used in standard analyses. By contrast, three continuous variables were identified for a model-based methodology referred to as multiple imputation (MI). Missing values for socioeconomic status (SES), the student ability estimate in mathematics (*theta*), and the standard error of measurement (*sem*) for theta were replaced with five imputed values. Information associated with procedures to calculate and impute SES is provided in section 7.3.2.2 and in appendix J.

The scoring algorithm used to generate *theta* and *sem* is discussed in section 2.3.3. Among the 21,444 students who responded to the questionnaire, 96.9 percent (96.8 percent weighted) had sufficient information to score *theta* and *sem*. A set of 5 imputed values was generated for the remaining 663 students with questionnaire data using SAS PROC MI. The highlights of the MI methodology for *theta* and *sem* are provided in section 7.3.2. Table I-3 includes the variables evaluated for the theta/sem MI model. Only covariates associated either with *theta* and *sem* actually calculated from the student respondent data or the pattern of item nonresponse exhibited in the data were retained for the final MI model. Techniques for identifying the model covariates are the same as those detailed for SES in appendix J.

The five imputed values for *theta* and *sem* are contained in the HSLS:09 base-year variables X1TXMTH1–X1TXMTH5 and X1TXMSEM1–X1TXMSEM5, respectively. The average of the five values (X1TXMTH and X1TXMSEM) is used along with the analysis weights to estimate the population values with appropriate software. Note that records with calculated scores that did not require imputation will have identical values in the five variables. The imputation flag X1TXMATH_IM distinguishes the imputed from the non-imputed values.

Table I-3. Covariates evaluated for inclusion in the *theta* and *sem* multiple imputation by whether the variable was retained for the final model

Imputation model covariates used for theta and sem	Model covariates
	Student characteristics
✓	Sex
✓	Race/ethnicity
	Hispanic ethnicity indicator
	Asian race indicator
	Black race indicator
✓	Language minority status
✓	Postsecondary educational aspirations
	Parent/guardian characteristics
	Parent 1 education
	Parent 2 education
✓	Highest parent education
✓	Parent 1 occupational prestige score
✓	Parent 2 occupational prestige score
	Parent 1 employment status
	Parent 2 employment status
✓	Categorized family income
	Family composition
	Number in household
	Parent 1 time in the home
✓	Postsecondary educational aspirations
	School characteristics—sampling
✓	School type
	Region
✓	Division
✓	Locale
✓	Augmented-sample state
	School characteristics—nonsampling
✓	Percent other-race students
	Percent Asian students
	Percent Black students
	Percent Hispanic students
✓	Charter school indicator
✓	Total student enrollment count
✓	Grade span
✓	Number of full-time equivalent teachers
	9th-grade student enrollment count
✓	Student/teacher ratio

NOTE: *theta* = mathematics ability estimate; *sem* = standard error of measurement of *theta*.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Appendix J.
Socioeconomic Status

Socioeconomic status (SES), a measure of the family's relative position within the social structure of the United States, is an important variable in education research. For example, an SES index has been in use for the National Center for Education Statistics (NCES) Secondary Longitudinal Studies since first constructed in NLS:72[1] more than 35 years ago. With changing times and social situations (e.g., increased female labor market participation) and with new opportunities for strengthening the measure, a slightly different version of the SES index was developed for each of the subsequent NCES studies. All stress the importance of parental education, occupation, and income as key building blocks for the index. The measure of SES again has evolved for the High School Longitudinal Study of 2009 (HSLS:09) in response to changing parent-guardian roles within the American family.

The purpose of the report presented in this appendix is to detail the following tasks.

- Two SES indices were developed for HSLS:09 that incorporate information from biological parents and non-biological adult guardians of the sampled student. The second measure additionally adjusts for school urbanicity (city, suburban, town, and rural). The purpose of this task was (1) to maximize comparability to other NCES surveys such as the Education Longitudinal Study of 2002 (ELS:2002) with the first index, and (2) to introduce a new index with improved measurement properties for the HSLS:09 construct.
- Two imputation methodologies were implemented to address item nonresponse (weighted sequential hot-deck) and unit nonresponse (multiple imputation) among parents/guardians of the participating students. The purpose of this task was to ensure that all HSLS:09 participating 9th-grade students had a measure of SES on the base-year data files.[2]

J.1 Definition of HSLS:09 SES

SES is calculated for many types of surveys. The definition of SES, however, varies from study to study and details on the equation used to calculate SES are often not provided. A literature review for a number of surveys,[3] including those conducted by NCES, confirmed the common use of the following SES components (i.e., building blocks):

- Parent/guardian education;
- Parent/guardian occupation (quantified through a prestige score[4]); and
- Family income.

[1] NLS:72 = National Longitudinal Study of the High School Class of 1972, http://nces.ed.gov/surveys/nls72/.
[2] SES for 21,444 participating 9th-grade students is located on the HSLS:09 public-use file as well as the restricted-use file. Data, including SES, for the 548 questionnaire-incapable students are only available on the HSLS:09 restricted-use file. See chapter 3 for a discussion of the classification of the student sample.
[3] References can be found, for example, at the following sites: http://nces.ed.gov/programs/coe/2006/supnotes/n07.asp, and http://www.apa.org/pi/ses/resources/publications/task-force-2006.pdf.
[4] See Nakao and Treas (1990) for a discussion of the prestige score.

The next two sections detail the SES indices developed for HSLS:09 beginning with a measure most comparable to definitions used in a recent NCES survey.

J.1.1 HSLS:09 SES Index (X1SES)

Two SES indices were developed for HSLS:09 that differ slightly from the definitions used in previous NCES studies. The first index (X1SES) was calculated to most closely match the definition used in, for example, ELS:2002 and should be used by researchers desiring this comparison. However, HSLS:09 SES includes responses from all parent/guardian types while ELS:2002 SES focused only on biological, adoptive, and step parents.

HSLS:09 SES was constructed as a function of five component variables obtained from the parent/guardian questionnaire:

1. the highest education among parents/guardians in the two-parent family of responding student, *or* the education of the sole parent/guardian;
2. the education level of the other parent/guardian in the two-parent family;[5]
3. the highest occupation prestige score among parents/guardians in the two-parent family of a responding student, or the prestige score of the sole parent/guardian;
4. the occupation prestige score of other parent/guardian in the two-parent family;[6] and
5. family income (X1FAMINCOME).

Missing component values for the responding parent/guardian (item nonresponse) were imputed prior to calculating the SES indices. This methodology is discussed in section J.2.

Following standard practices used in previous NCES surveys, estimated means and standard deviations for each of the five SES components were calculated using responses from the parent questionnaire, the home-life contextual analysis weight (W1PARENT discussed in section 6.5.3), and SUDAAN®, software that accounts for the complex HSLS:09 sample design. With these estimates, a component-specific z-score was calculated using the following formula:

$$z_{ik} = \frac{x_{ik} - \hat{\bar{x}}_i}{std\left(x_i\right)} \tag{J.1}$$

where i is the index for the SES component (i=1,…,5); k is the index for the student records; x_{ik} is the value for the i^{th} SES component taken from the parent questionnaire associated with the k^{th} student; $\hat{\bar{x}}_i$ is the weighted mean of the i^{th} SES component using the home-life analysis weights;

[5] The highest parent/guardian education was calculated as the maximum value of X1PAR1EDU and X1PAR2EDU. This value was used as the first SES component. If the sampled student had a second parent, then the minimum value of X1PAR1EDU and X1PAR2EDU was used for the second SES component. Otherwise, the second component was set to missing.

[6] The maximum value of X1PAR1OCC2 and X1PAR2OCC2 represented the highest parental prestige score and was used as the third component to calculate SES. The minimum value of X1PAR1OCC2 and X1PAR2OCC2 was used as the fourth SES component (including a missing value for students with only one parent/guardian).

and $std(x_i)$ is the estimated population standard deviation for the i^{th} SES component calculated with W1PARENT. Procedures to calculate the components of expression J.1 are detailed in the next section.

SES for the k^{th} student was then calculated as the unweighted average[7] of the survey-based z-scores,

$$SES_k = \frac{1}{\delta_{+k}} \left(\sum_{i=1}^{\delta_{+k}} \delta_{ik} \, z_{ik} \right) \tag{J.2}$$

where $\delta_{ik} = 0$ if x_{ik} is missing (e.g., single-parent household) and equals one otherwise. Thus, $\delta_{+k} = \sum_{i=1}^{5} \delta_{ik} \; (\leq 5)$ is the total number of nonmissing SES components.[8]

J.1.2 HSLS:09 SES Index Adjusted for School Urbanicity (X1SES_U)

A second HSLS:09 SES index (X1SES_U) was constructed using the same parent/guardian responses as discussed for the first index. The development of this index was based on the hypothesis that the construct would be comparable and thus more stable across groups in the target population only if certain characteristics were controlled. For example, with the definition used in ELS:2002, an SES value would be the same for a family with a specified level of income, education, and occupation regardless of their location within the United States. By incorporating into the SES definition important factors such as urbanicity, the relative SES value is allowed to change as the value of the controlling variable(s) changes.[9]

Several candidate controlling variables, referred to as covariates in the subsequent discussions, and their interactions are evaluated in this analysis to define HSLS:09 SES. From this set, the covariate school urbanicity (X1LOCALE) was shown to have good measurement properties (e.g., precision, validity) for the HSLS:09 SES construct. The HSLS:09 SES index adjusted for school urbanicity was then constructed in four steps:

1. SUDAAN proc descript and W1PARENT were used to calculate the weighted mean ($\hat{\bar{x}}_i$), the weighted variance, and the design effect *within* the four-level school urbanicity variable for each SES component.

[7] A factor analysis approach to generate SES with differential component weights was also considered but never actually implemented. Because of (1) the comparison from one round of HSLS:09 to the next and (2) the lack of an established model to use in a confirmatory factor analysis, a simple average calculation was used for HSLS:09 SES as in previous NCES studies.

[8] Missing z-scores were generated for the SES components X1PAR2EDU and X1PAR2OCC2 for students with only one parent/guardian and excluded from the calculation of the SES index.

[9] This approach follows from various techniques such as covariate-adjusted estimation in epidemiology (see, e.g., http://www.health.state.ny.us/diseases/chronic/ageadj.htm) and regression-based estimation (see, e.g., Research Triangle Institute 2008, and the various references within).

2. The population standard deviation, $std(x_i)$ in expression J.1, was calculated as the square root of the estimated variance multiplied by the sample size divided by the design effect.
3. The five z-scores were constructed using expression (J.1) with the urbanicity-adjusted $\hat{\bar{x}}_i$ and $std(x_i)$ estimates.
4. The HSLS:09 urbanicity-adjusted SES index was then determined through an unweighted average of the five z-scores constructed using expression (J.2).

J.1.3 Comparison of two HSLS:09 SES Indices (X1SES and X1SES_U)

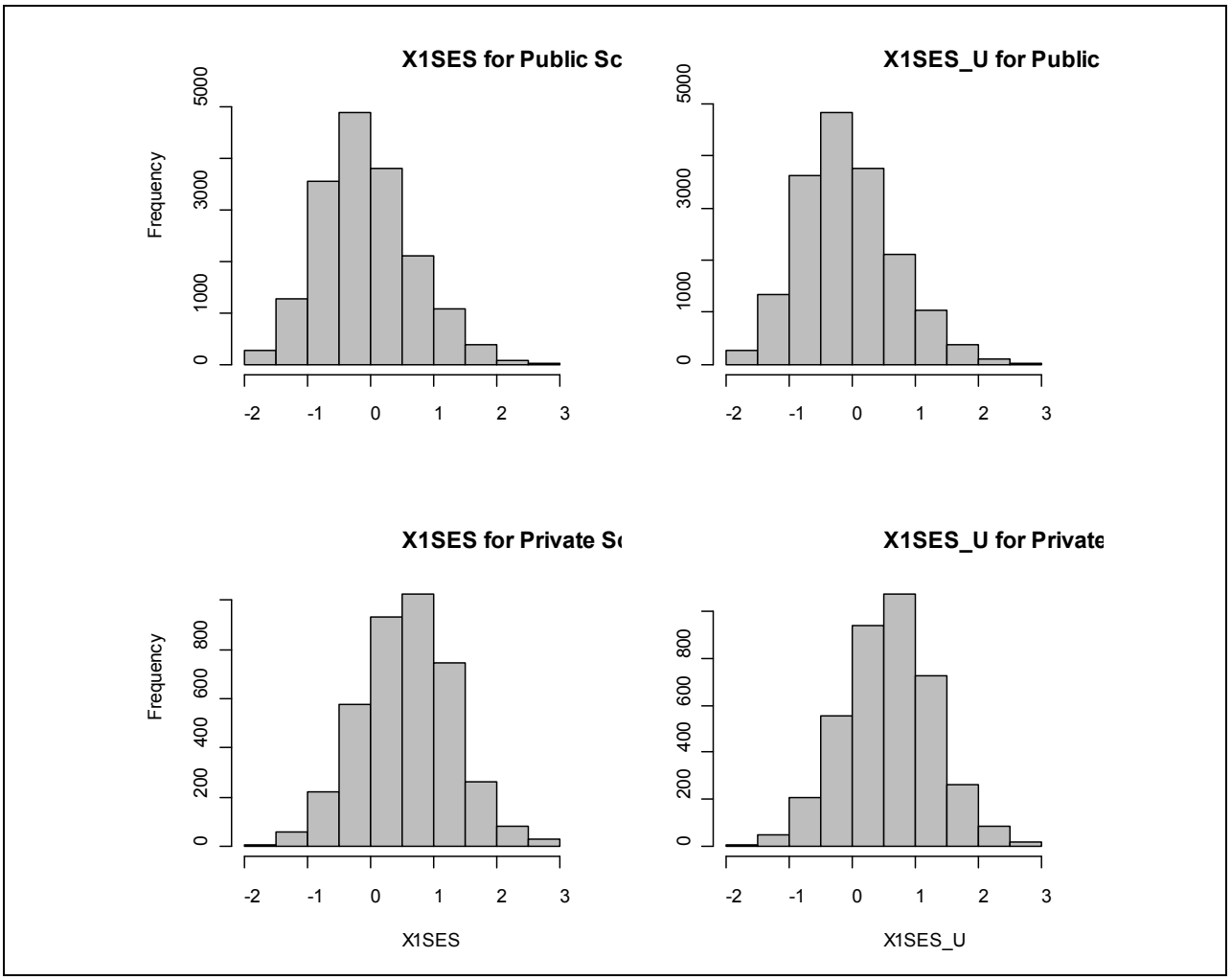
The two HSLS:09 SES indices are variants of the same construct to quantify the relative economic and social status for households containing at least one U.S. 9th-grade student. The distribution of the 21,444 sample cases across the quintiles for the two measures is very similar as shown in table J-1. Approximately 89 percent of the respondent cases have a common quintile category across the two definitions as seen by summing the diagonal percentages (i.e., 14.9 + 14.3 + 16.4 + 18.8 + 24.6). The association between the corresponding continuous SES measures was confirmed (Pearson correlation > 97.2 percent with p-value < .0001). Figure J-1 contains the histograms for the two SES variables by categorized school type, showing that the distributions are also similar.

Table J-1. Comparison of quintiles for X1SES with X1SES_U

	X1SESQ5_U (quintile)											
X1SESQ5	Lowest fifth		Low-middle fifth		Middle fifth		High-middle fifth		Highest fifth		Total	
(quintile)	n	pct[1]	n	pct[1]	n	pct1	n	pct1	n	pct1	n	pct[1]
Total	3,546	16.5	3,716	17.3	4,095	19.1	4,564	21.3	5,523	25.8	21,444	100.0
Lowest fifth	3,199	14.9	235	1.1	0	0.0	0	0.0	0	0.0	3,434	16.0
Low-middle fifth	347	1.6	3,062	14.3	296	1.4	0	0.0	0	0.0	3,705	17.3
Middle fifth	0	0.0	419	2.0	3,517	16.4	297	1.4	0	0.0	4,233	19.7
High-middle fifth	0	0.0	0	0.0	282	1.3	4,021	18.8	250	1.2	4,553	21.2
Highest fifth	0	0.0	0	0.0	0	0.0	246	1.1	5,273	24.6	5,519	25.7

[1] Unweighted percent is based on total number of responding students.
NOTE: X1SESQ5 and X1SESQ5_U are X1SES and X1SES_U, respectively, categorized into quintiles.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Public-Use Data File.

Figure J-1. Unweighted histograms for X1SES and X1SES_U by school type



NOTE: The mean, skewness, and kurtosis for the data shown above are: X1SES for Public schools (-0.06, 0.45, 0.14); X1SES_U for public schools (-0.08, 0.45, 0.19); X1SES for Private schools (0.57, 0.02, 0.00); and X1SES_U for private schools (0.58, 0.01, 0.08).
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Public-Use Data File.

J.2 SES Imputation

The SES indices were constructed for all responding students and included on the HSLS:09 data files. This requirement, however, necessitated the imputation of missing values. First, missing SES components for responding parents/guardians (item nonresponse) were imputed using a single-value imputation procedure and used to calculate the SES values (section J.2.1). Second, SES values for students without any parent responses (unit nonresponse) were directly imputed through a multiple imputation procedure instead of imputing all of the SES components (section J.2.2). Table J-2 displays the distribution of the responding students by imputation group that are discussed in more detail in the subsequent sections.

Table J-2. Distribution of responding students by SES imputation group

Parent response status	SES imputation methodology	Responding students n	Responding students Percent[1]
Total		21,444	100.0
Respondents, complete interview	†	14,807	69.0
Respondents with item nonresponse	WSHD imputation of components,[2] SES indices calculated	1,622	7.6
Nonrespondents	Multiple imputation of SES indices	5,015	23.4

† Not applicable.
[1] Unweighted percent is based on total number of responding students.
[2] SES components were obtained from parent responses and included parent/guardian education, parent/guardian occupation, and family income. Urbanicity, used with the second HSLS:09 index, was available for all schools on the NCES files and therefore did not require imputation.
NOTE: SES = socioeconomic status. WSHD = weighted sequential hot-deck.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Public-Use Data File.

J.2.1 Imputation of SES Components for Item Nonrespondents

Parents for 76.6 percent (n = 16,429 or 14,807 + 1,622) of the 21,444 responding students on the HSLS:09 public-use file participated in the study. Complete information required to calculate the HSLS:09 SES indices was obtained from 14,807 (69 percent) while the parent/guardian response to one or more SES component questions was missing for 1,622 records (7.6 percent). As shown in table J-3, family income (X1FAMINCOME) had the highest percentage of nonresponse among the five SES components. A weighted sequential hot-deck imputation procedure (WSHD), detailed previously in section 7.3.1.2, was used along with available parent information to replace the missing (categorical) SES component values with a single value (i.e., single-value imputation). With this new information, SES measures X1SES and X1SES_U were then calculated for the 1,622 student records.

Table J-3. Percent of cases with imputed SES component variables

SES component variable	Number of items imputed [1]	Percent imputed	
		Unweighted	Weighted [2]
Parent 1 highest level of education (X1PAR1EDU)	184	1.1	1.3
Parent 2 highest level of education (X1PAR2EDU)	255	1.6	1.9
Parent 1 current/most recent occupation: 2-digit O*NET code (X1PAR1OCC2)[4]	360	2.2	2.7
Parent 2 current/most recent occupation: 2-digit O*NET code (X1PAR2OCC2)[4]	379	2.3	2.6
Total family income from all sources in 2008 (X1FAMINCOME)	959	5.8	5.6

[1] The number of items imputed is the unweighted count of responding parents (out of 16,429) missing a response to the variable.
[2] The final student home-life analysis weight (W1PARENT) was used to calculate the weighted percent imputed among those where a valid response should have been provided. Those records where the question was not applicable (i.e., -7 values) were excluded from the imputation process.
NOTE: O*NET = Occupational Information Network.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year Public-Use Data File.

J.2.2 Imputation of SES Indices for Unit Nonrespondents

Researchers are often interested in using SES in analyses involving student assessment and survey data. However, as shown in Table J-2, 5,015 responding students (23.4 percent of 21,444) did not have any parent information (sampling or questionnaire response) from which to calculate this construct. Instead of constructing the indices from imputed SES components as with the item-nonresponse cases, HSLS:09 SES indices (X1SES and X1SES_U) for these records were directly imputed with assisting information from the other 16,429 responding student records. A multiple imputation (MI) methodology implemented through a series of models was used to address the unit nonresponse. MI was chosen over WSHD to better capture the variation associated with the (continuous) SES constructs.[10] Details of the methodology, the MI models, and associated sensitivity analyses are discussed below.

J.2.2.1 Multiple Imputation Methodology

A multiple imputation procedure, implemented through SAS® PROC MI, was used to obtain five continuous values for the HSLS:09 SES index (X1SES1-X1SES5) and for the index adjusted for school urbanicity (that is, locale) (X1SES1_U-X1SES5_U) so that researchers could account for the variation in the imputed values. The average of these values (X1SES and X1SES_U, respectively) was also included on the file and is used along with the analytic weight to estimate, for example, the population average SES value. The MI procedure for SES was similar to the method used for the mathematics ability estimate (*theta*) and the standard error of measurement (*sem*) for *theta* (see previous discussion in section 7.3.2).

[10] A WSHD procedure imputes exact values exhibited in the data and is therefore more appropriate for categorical or binary variables.

The 5,015 student records (table J-2) requiring SES imputation and possessing no parent data were divided into two groups based on the student information available for the MI model.[11] As described below, a separate MI model was developed for each group (table J-4).

- **Model 1**. This model included 20,781 cases where student survey data were available and where *theta* was calculated from assessment information. SES scores were imputed for 4,936 of the cases (23.8 percent) without parent data to calculate the indices. In addition to *theta*, covariates used for this model included several student and school characteristics as shown by the check marks in table J-5. No parent/guardian characteristics were used in model 1.
- **Model 2**. This model included the remaining 663 cases where student survey data were present but *theta* had to be imputed because of missing or insufficient assessment data. There were 79 such cases (11.9 percent of 663 total) without parent information to compute SES. In addition to the 663, 15,845 records with calculated *theta* and SES values used in the first model were also included as a method for improving the predictive capabilities of the second MI model. In the absence of *theta* (a variable shown with the HSLS:09 data to be highly associated with SES), parent variables used in the *theta* model were included in this SES model. Because these values were missing for the 79 cases, this MI model effectively imputed the parent variables associated with *theta* simultaneously with SES using the survey information available. This approach was used as a method for strengthening the association of the provided responses and sample characteristics established in the data with SES. As depicted by the check marks in table J-5, model 2 used the same school characteristics as those used in model 1 and the same student characteristics with the exception of *theta*, which was not used for model 2. In addition, model 2 used the parent characteristics shown in table J-5.

Similar to the imputation approach for *theta* (section 7.3.2.1) and cited throughout the literature, covariates for the two SES MI models were identified from HSLS:09 variables known for the student respondents that (1) correlate with the calculated value of SES, or (2) correlate with the pattern of missing SES. For the first criterion, variables were individually loaded into a linear model to test for a statistical association with SES. A logistic model was used to test for a relationship between the candidate covariates and an indicator variable for presence/absence of SES with the second criterion. Variables with an unweighted item response[12] rate of at least 98 percent were included in the analysis (see table J-5 for the complete list of variables). Among the variables meeting either criterion, a pair-wise comparison of association was examined in order to construct a parsimonious MI model. If a pair of variables exhibited a correlation larger than 0.7, then the variable with the weaker association with SES was eliminated. If the SES association for the two variables was similar, then the variable possessing the stronger association with other model covariates was eliminated. Finally, if the variables were similar on

[11] A third model, similar to model 1, was developed for the questionnaire-incapable students where approximately 70.3 percent of the students (385 of 548) did not have parent/guardian responses.

[12] Unweighted item response rates were calculated for all data included in an imputation model. Missing candidate variable values, previously imputed using a weighted hot-deck procedure, were classified as non-missing for the purposes of this analysis.

Table J-4. Description of students within each imputation model

Theta	Parent status for SES	Model 1 n	Model 1 Percent[1]	Model 2 n	Model 2 Percent[1]	Total n	Total Percent[1]
Calculated	Total	20,781	100.0	15,485	96.0	20,781	96.9
	Respondent	13,450	64.7	13,450	81.5	13,450	62.7
	Respondent (item nonresponse)[2]	2,395	11.5	2,395	14.5	2,395	11.2
	Nonrespondent	4,936	23.8	†	†	4,936	23.0
Imputed	Total	0	0.0	663	4.0	663	3.1
	Respondent			506	3.1	506	2.4
	Respondent (item nonresponse)[2]			78	0.5	78	0.4
	Nonrespondent			79	0.5	79	0.4
	Total cases per model	20,781	100.0	16,508	100.0	21,444	100.0

† Not applicable.
[1] Unweighted percent is based on total within each column.
[2] SES components were imputed for responding parents with item nonresponse.
NOTE: SES = socioeconomic status.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

both association criteria, then the variable with the larger item response rate was retained for the MI model. Variables included in the MI models are identified with a check mark in table J-5. Results from the analysis to isolate the model variables identified the same covariates for X1SES and X1SES_U.

J.2.3 Model Assessment

Two analyses were conducted to evaluate the sensitivity of the imputation model 1. The first focused on the exclusion of *theta* to ensure that the ability measure was not overly influencing the imputation of SES. The second included a small simulation study to determine the effectiveness of the imputation model in predicting known SES values.

J.2.3.1 Importance of Theta

A third imputation model was developed to include all 21,444 responding student records and the variables specified for model 2 in table J-5. Thus, 5,321 cases (= 4,936 + 79 from models 1 and 2, respectively out of 21,444, or 24.8 percent unweighted) without parent data were subject to imputation. The X1SES_U results from the original MI models were compared against those produced by this test model using the following criteria: (1) statistically significant difference between the average SES values using a t-test that accounts for the complex design; and (2) magnitude of the design effects. A significant test result indicates a sizeable difference in the imputation models and a smaller design effect indicates a more stable estimate. Similar results were found for the evaluation of X1SES. In summary, model 1 (tables J-2 and J-5) was preferred over a similar model excluding *theta*.

Table J-5. HSLS:09 variables evaluated for the SES multiple imputation models by whether or not the variable was included in the respective model

HSLS:09 variable	Included in the multiple imputation model? [1] Model 1 [2]	Model 2 [3]
Student characteristics		
Sex	☐	☐
Race/ethnicity	☐	☐
Hispanic indicator	☐	☐
Asian indicator		
Black indicator		
Language minority status	☐	☐
Postsecondary educational aspirations	☐	☐
Mathematics ability estimate (*theta*)	☐	
Parent/guardian characteristics		
Parent 1 education		
Parent 2 education		
Highest parent education		☐
Parent 1 occupational prestige score		
Parent 2 occupational prestige score		
Parent 1 employment status		☐
Parent 2 employment status		
Categorized family income		☐
Family composition		☐
Number in household		☐
Parent 1 time in the home		☐
Postsecondary educational aspirations		☐
School characteristics—sampling		
School type	☐	☐
Region		
Division	☐	☐
Locale	☐	☐
Augmented-sample state	☐	☐
School characteristics—nonsampling		
Percent other-race students	☐	☐
Percent Asian students	☐	☐
Percent Black students	☐	☐
Percent Hispanic students	☐	☐
Charter school indicator	☐	☐
Total student enrollment count	☐	☐
Grade span	☐	☐
Number of full-time equivalent teachers		
9th-grade student enrollment count	☐	☐
Student/teacher ratio	☐	☐

[1] The records included in each model are detailed in table J-4.
[2] Model 1 was used to impute SES for student records with a calculated mathematics ability estimate (theta) but without a corresponding parent interview.
[3] Model 2 was used to impute SES for student records with neither a calculated mathematics ability estimate (theta) nor a corresponding parent interview. See section J.2.2.1 for a discussion of the model covariates.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. High School Longitudinal Study of 2009 (HSLS:09) Base Year.

Criterion 1—Detectable Difference. A statistical test, conducted with SUDAAN and the student analysis weights (W1STUDENT), did not detect a significant difference in X1SES_U values generated for the same set of records (p-value = 0.10). Among the 37 domains defined by overall, by school type, and school type by the characteristics region, locale, sex, and Hispanicity, only 4 domains were significant at the 0.05 significance level but not at 0.01. The differences, however, were substantively uninteresting with less than a 0.02 percentage point difference in SES. Therefore, this criterion did not suggest a preferred model over the other.

Criterion 2—Design Effects. The 37 domains discussed above were again tapped for the design effect analysis. Excluding trivial differences less than 0.05, design effects were smaller for the original models compared with the test model in 59 percent of the domains. Thus, for criterion 2, the MI model including theta (i.e., model 1) was preferred. Based on this evaluation, model 1 as presented in table J-5 was used for cases with a calculated *theta*. Note that model 2 also remained unchanged and was used for cases with an imputed *theta* although *theta* was not used as a covariate.

J.2.3.2 Simulation Study for Imputation Model 1

A small simulation study was conducted to determine if model 1 could generate SES values statistically close to the actual value calculated for a subset of the student records with parent responses. For the purpose of this study, the X1SES_U values for the 15,845 student records with a calculated *theta* were used for comparative purposes as the truth (i.e., population values). Note that these records were used in both models 1 and 3 discussed in section J.2.1.

The steps in the simulation study included the following:

Step 1. For the 15,845 "population" records a new SES variable was created (*newSES*). Note that the value for this new variable was set to missing for all records.

Step 2. A random sample of 3,764 records (23.8 percent[13]) was selected from the set of 15,845.

Step 3. Five *newSES* values were generated in place of the missing value using model 1.

Step 4. The average of the five *newSES* values was calculated for a subsequent evaluation.

The four steps were repeated 10 times, resulting in an analysis data set containing 50 newly imputed values and 10 average values. The average of the actual SES values was compared against the average of the imputed values within each of the key reporting domains used for the previous analysis. Minimal differences were detected between the two averages within the 37

[13] Records were subsampled at a rate equivalent to the item nonresponse rate shown in table K-5 for model 1.

domains. Across the domains, the absolute differences ranged from zero[14] to 0.12 with an average difference value of 0.03.

J.3 HSLS:09 SES Variables

At completion, a set of HSLS:09 variables was generated for the two SES indices. For the first index, X1SES1–X1SES5 contains the five MI values, X1SES is the average of the five MI values, and X1SESQ5 is the associated quintile for X1SES. The corresponding set of variables for the urbanicity-adjusted index includes X1SES1_U–X1SES5_U, X1SES_U, and X1SESQ5_U. The values of X1SES1–X1SES5 and X1SES, as well as X1SES1_U-X1SES5_U and X1SES_U, are identical for the 16,429 records exempt from the multiple imputation process (i.e., 14,807 students with no imputed SES data and the 1,622 students with responding parents and one or more imputed SES components). These three groups of records (table J-2) were flagged on the data files as: X1SES_IM = 0 (no imputation); X1SES_IM = 2 (SES component imputation); and X1SES_IM = 1 (multiple imputation).

[14] The minimum absolute difference was extremely small but greater than zero.