

# **Sampling for Sales and Use Tax Compliance**

**A Report of the Steering Committee**

*Task Force on EDI Audit and Legal Issues  
for Tax Administration*

**December 2002**

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# Contents

<b>ACKNOWLEDGMENT.....</b>	<b>iii</b>
<b>FOREWORD.....</b>	<b>v</b>
<b>INTRODUCTION.....</b>	<b>1</b>
<b>I. AUDIT SAMPLING.....</b>	<b>1</b>
A. Purpose of This Section.....	1
B. Why Sample?.....	1
C. Audit Sampling in Areas Other Than Tax.....	2
1. Sampling and the Law.....	2
2. Internal Audit.....	2
3. Financial Statement Audit.....	2
D. Sampling for Tax Compliance.....	3
1. Federal Tax Compliance.....	3
2. Sales and Use Tax Compliance.....	3
E. Statistical Versus Nonstatistical Sampling.....	3
<b>II. AUDIT PLANNING AND STEPS IN SALES AND USE TAX SAMPLING.....</b>	<b>4</b>
A. Purpose of This Section.....	4
B. Computer Assisted Auditing.....	5
C. Understand Business and Its Accounting Systems.....	5
1. Tax Accounting Records.....	6
2. Verifying Completeness.....	7
D. Define Population of Interest.....	7
1. Define Audit Period.....	7
2. Define Business Segments.....	7
3. Define Accounts of Interest.....	8
E. The Sample Plan.....	8
F. Stratification.....	9
G. Define Sample Unit.....	9
H. Select the Sampling Technique.....	10
1. Judgmental Selection Techniques.....	10
2. Random (Probabilistic) Selection Techniques.....	10
I. Determine Sample Size.....	11
J. Locate and Examine the Sample Units.....	11
K. Sample Results.....	12
1. Projection Methods.....	12
2. Nonstatistical Evaluation.....	13
3. Statistical Evaluation.....	14
4. Point Estimate (mid-point) or Interval Adjustment.....	15

<b>III.</b>	<b>SUPPLEMENTAL ISSUES IN SAMPLING .....</b>	<b>16</b>
A.	Purpose of This Section .....	16
B.	Missing Documentation .....	16
C.	Negative Transactions.....	17
D.	Nontaxable Items and Credits .....	17
E.	Tax Erroneously Paid on Purchases .....	18
F.	Tax Law Changes .....	18
G.	Accounting/Reporting Changes .....	18
H.	Statute of Limitations.....	18
I.	Sales and Use Tax Compliance Agreements .....	18
J.	Timing Differences.....	19
<b>IV.</b>	<b>GLOSSARY OF BASIC THEORY, CONCEPTS AND TERMS.....</b>	<b>19</b>
<b>V.</b>	<b>REFERENCES.....</b>	<b>20</b>
A.	Purpose of This Section .....	20
B.	Audit Sampling - Books and Related Materials .....	21
C.	Sampling for Sales and Use Tax Audits - Papers and References .....	22
D.	Sampling Terminology .....	22
E.	Statistical Evidence and the Law.....	23
F.	Federal Agencies .....	23
G.	Professional Organizations.....	23
H.	Vendors of Sampling Software and Services.....	23
	<b>Appendix A – Summary of State Sampling Practices.....</b>	<b>25</b>
	<b>Appendix B – Persons Contributing to This Report.....</b>	<b>63</b>
	<b>Appendix C – Summary of Other Task Force Reports .....</b>	<b>67</b>

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## Foreword

The Task Force on EDI Audit and Legal Issues for Tax Administration (Task Force) was formed to coordinate efforts between the business community and tax administrators in analyzing and addressing the issues posed for tax administration by electronic commerce and related business processes. The Task Force is comprised of representatives of the Council On State Taxation (COST), Institute for Professionals in Taxation (IPT), Tax Executives Institute (TEI), Multistate Tax Commission (MTC), and Federation of Tax Administrators (FTA). This report is the seventh in a series of Task Force reports on issues relating to electronic commerce, emerging business processes and tax administration. (See Appendix C for other reports in the series.)

As part of the Task Force, a working group was formed to examine the tax administration and compliance issues associated with sampling. Sampling for sales and use tax compliance may be necessary for various reasons. Although most states employ sampling in some form, the sampling methodologies vary from state to state. Both taxpayers and taxing authorities agree that greater education is needed in this area. For this reason, the Task Force developed an educational document that is intended to identify the underlying reasons for sampling, review the typical steps involved in the compliance audit when sampling is used, and identify supplemental issues that may arise from the use of sampling in a sales and use tax environment.

This report is intended solely as an educational document for taxpayers and tax administration agencies; it makes no recommendations on sampling methods or strategies. Each taxing authority develops its own policies on acceptable sampling practices. Businesses are encouraged to work with individual taxing authorities to acquire an understanding of the sampling practices and methodologies employed for sales and use tax compliance.

The Steering Committee wishes to acknowledge the contributions of all individuals who devoted their time and effort in developing and refining this report. A complete list of participants can be found in Appendix B.

Stanley R. Arnold, Steering Committee Chair  
Commissioner, New Hampshire Department of Revenue Administration

December 2002



# **SAMPLING FOR SALES AND USE TAX COMPLIANCE**

## **A Report of the Steering Committee Task Force on EDI Audit and Legal Issues for Tax Administration**

### **INTRODUCTION**

Sampling is important to sales and use tax compliance when transactions are so voluminous that it is not feasible for an auditor to examine every transaction. The volume of transactions during a typical compliance review is growing as taxpayers' business activities increase. Both taxpayers and taxing authorities seek sampling methods that will be effective, efficient, and equitable in determining sales and use tax compliance at a reasonable cost.

Although most states employ sampling in some form, the sampling methodologies vary from state to state. However, in many instances the typical steps involved in a compliance examination, especially when sampling is used, will remain constant. Both taxpayers and taxing authorities agree that a better understanding of state practices with respect to sales and use tax compliance and sampling practices is needed.

The purpose of this paper is to (1) provide an introduction to the applications of sampling in tax and nontax environments; (2) identify the typical steps involved in the compliance review when sampling is used; (3) review supplemental issues that may arise from the use of sampling; (4) educate taxpayers and taxing authorities on the various sampling methodologies used by the states; and (5) provide a common language that taxpayers and taxing authorities may use to facilitate discussions. This paper is not intended to promulgate best practices in sales and use tax compliance examinations. Each taxing authority will make its own policy on sampling practices that are acceptable under the statutory and common law for that jurisdiction.

### **I. AUDIT SAMPLING**

#### **A. Purpose of This Section**

This section provides a brief introduction to the applications of sampling in tax audits and other areas. Many of the sampling techniques developed in other areas can be adapted for sales and use tax audits.

#### **B. Why Sample?**

Sampling methods are utilized to determine whether sales and/or use tax was underpaid, overpaid, or correctly paid. Sampling is generally utilized when:

- records are so detailed, complex or voluminous that an examination of all detailed records would be unreasonable or impractical;
- records are inadequate or insufficient, so that a detailed examination for the period in question is not otherwise possible<sup>1</sup>;
- the cost of a compliance review of all detailed records to the taxpayer or to the taxing authority will be unreasonable in relation to the benefits derived, and sampling procedures will produce reasonable results;
- the taxpayer or taxing authority specifically requests a sample be used in the conduct of the compliance review; or
- the taxpayer and taxing authority have entered into a Sales and Use Tax Compliance Agreement (SUTCA).<sup>2</sup>

### C. **Audit Sampling in Areas Other Than Tax**

#### **1. *Sampling and the Law***

The use of sampling for tax purposes has been litigated a number of times in federal and state courts. There are a number of favorable rulings on the acceptance of sampling and statistical evidence. See references listed in Section V. (page 20).

#### **2. *Internal Audit***

Sampling is used in internal audits by governmental agencies and corporations. The internal auditors perform numerous compliance tests to verify that required procedures are followed and proper documentation is submitted. Sampling is used in a compliance test to determine whether the level of compliance observed in the sample is or is not within an acceptable range. See references listed in Section V. (page 20).

#### **3. *Financial Statement Audit***

Sampling is used extensively in financial statement audits for both compliance testing and estimation. The financial auditors' compliance tests are designed to determine if the information in the entity's financial accounting system can be relied upon. The financial auditor may also sample to estimate the magnitude of adjustments that are needed to make the financial statements materially correct. Professional standards for financial statement auditors are specified in Statement on Auditing

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<sup>1</sup> When records are not available for a portion of the audit period, a sample or complete examination of the available records may form the basis for a tax adjustment ratio that can be applied to the portion of the audit period without available records.

<sup>2</sup> The Task Force has examined alternative reporting methodologies that detail the manner in which a taxpayer may calculate and report tax on its purchases and the method a taxing authority may use to evaluate compliance during an audit. See Sales and Use Tax Compliance Agreements, A Report of the Steering Committee, Task Force on EDI Audit and Legal Issues for Tax Administration, published March 2000.

Standards No. 39 (SAS 39), as amended (*AICPA Professional Standards*, Volume 1, AU Section 350).

## **D. Sampling for Tax Compliance**

### **1. Federal Tax Compliance**

The Internal Revenue Service has developed sampling techniques over the past 30 years. Statistical sampling methods are employed primarily on income and excise tax audits of very large corporations.<sup>3</sup>

### **2. Sales and Use Tax Compliance**

Taxing jurisdictions vary widely in the statutory authority enacted by the legislature to authorize sampling. Some states may have a law authorizing sampling for sales and use tax compliance examinations, but this law usually does not provide specific direction on which statistical or nonstatistical method should be used. In these cases, taxing authorities would use their administrative authority to develop the sampling methods. In addition, some states that do not have a statute or judicial decision specifically authorizing sampling are able to rely on the administrative authority of the revenue department to develop the appropriate sampling methods. Specific sampling methods are usually developed independently by each taxing authority. See Appendix A, Summary of State Sampling Practices.

Populations sampled can be described as being either heterogeneous or homogeneous. If a population is homogeneous, the individual components of the population tend to be alike. If the population is heterogeneous, the components tend to be dissimilar. Sampling for sales and use tax compliance focuses on accounting populations that tend to be heterogeneous and as a result may require additional effort in identifying the sample population. For example, a population consisting of purchases can contain items such as capital assets, inventory, services, and ordinary recurring expenses. Purchases may be for many locations and/or divisions. In addition, the quantity and the magnitude of the amounts can vary widely within the population for each of these types of purchases. To overcome the difficulties associated with sampling for sales and use tax compliance, a taxing jurisdiction may use strategies such as computer-assisted auditing and stratification of the population.

## **E. Statistical Versus Nonstatistical Sampling**

Statistical sampling is a method of sampling that permits the estimation and quantification of some population value based upon the results of a sample drawn

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<sup>3</sup> The Internal Revenue Service has issued Revenue Procedure 98-25, which specifies the requirements that IRS considers to be essential in cases where a taxpayer's records are maintained within an Automated Data Processing system.

from that population. It allows the auditor to objectively determine the precision of any estimate that is made and the confidence that may be placed in the result. Both sample *precision* and *confidence* have specific statistical definitions that are explained in Section IV, Glossary of Basic Theory, Concepts and Terms.

Audit judgment is certainly involved in planning a statistical sample. For example, the audit team (taxpayer and taxing authority) decides which transactions or accounts to sample, what constitutes an error, selection techniques, and confidence and precision criteria. However, in describing the results, this subjective judgment plays no part. The overall estimate is evaluated only by using objective statistical formulas.

Nonstatistical evaluation relies on the judgment of the audit team as to whether the sample is representative of the population. This judgment is expressed as an opinion that cannot be objectively quantified.

The International Federation of Accountants (IFAC), an international organization of national accountancy organizations, has developed pronouncements called “International Standards on Auditing” (ISA) on various auditing topics, including sampling. ISA 530 defines “statistical sampling” and “nonstatistical sampling” as follows:

*“Statistical sampling” means any approach to sampling that has the following characteristics:*

*(a) random selection of a sample; and*

*(b) use of probability theory to evaluate sample results, including measurement of sampling risk.*

*A sampling approach that does not have characteristics (a) and (b) is considered nonstatistical sampling.*

## **II. AUDIT PLANNING AND STEPS IN SALES AND USE TAX SAMPLING**

### **A. Purpose of This Section**

When conducting an audit, the audit team, which comprises both the taxing authority and the taxpayer, should consider a number of factors. These include preaudit research and planning as well as the typical steps involved in the compliance review when sampling is used. This section will distinguish, as necessary, between computerized and noncomputerized audits, and between statistical and nonstatistical strategies.<sup>4</sup>

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<sup>4</sup> Although statistical sampling can be used when conducting a manual audit, the work involved in managing and evaluating taxpayer records may not be cost-effective to the taxpayer or taxing authority. This paper assumes that the majority of statistical sampling audits for sales and use tax compliance examinations will be performed using computer-assisted methods.

## **B. Computer Assisted Auditing**

Sampling of the taxpayer's tax accounting records can be done with or without a computer. The use of computers in connection with sampling, especially when accounting records for the period under review are maintained electronically, will generally provide efficiencies in the audit. This can benefit both the taxpayer and the taxing authority. Use of computers can also provide for more precise results as certain techniques can be applied that are not otherwise possible or practical. When the population is available electronically, besides the obvious ability of the computer to handle very large populations or to sort and manipulate data, it is easier to do the following:

- Analyze the population for its completeness or suitability for sampling (Sections II.C.1. and II.C.2.)
- Refine the population by removing extraneous accounting records not relevant to the compliance review (Section II.D.)
- Stratify, or divide the population into segments (strata) (Section II.F.)
- Correspond random numbers to actual business documents (Section II.H.2.)
- Manage information obtained in the examination of the sample units (Section II.J.)
- Evaluate the sample using objective statistical formulas (Section II.K.)
- Obtain information about the population, including total amounts, record counts, and other statistical data (such as a mean, median and standard deviation of amounts to be sampled) (Sections II.F. and II.K.)

Use of the computer can provide more information about the population prior to actual sampling, thus allowing the audit team choices that can be incorporated into the sample plan. Whether or not the accounting records are available electronically will have a major impact in how the sampling process is carried out. When sampling is done without the use of computers, there are generally fewer options available. In many states, either by statute or regulation, a taxpayer is required to maintain electronic records and provide them to the taxing authority upon request.<sup>5</sup>

## **C. Understand Business and Its Accounting Systems**

Preparation of the sampling plan requires an understanding of the taxpayer's business and its accounting systems. This understanding allows the auditor to identify areas where more or less sampling effort is needed. Some areas may be suitable for sampling, complete detail examination, or excluded from further examination.

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<sup>5</sup> See Model Recordkeeping and Retention Regulation, A Report of the Steering Committee, Task Force on EDI Audit and Legal Issues for Tax Administration, published March 1996.

The auditor must become familiar with the taxpayer's business. A general understanding of the type of business, business locations and activities, and those activities that are within the taxing authority's jurisdiction may be reviewed prior to the initial meeting with the taxpayer. Useful sources for this general review are prior audit reports, company reports filed with regulatory agencies, the taxpayer's Web site, and industry association Web sites.

During interviews with the taxpayer, the auditor should verify the information accumulated during the preaudit research phase and note any changes that have occurred, such as business locations that have opened or closed during the period under review. The auditor and taxpayer should also review the types of records available and the process to be used in conducting the audit.<sup>6</sup>

### *1. Tax Accounting Records*

The initial meeting should be used to familiarize the auditor with the taxpayer's accounting system. Understanding how the system operates will help in development of an efficient sampling plan. The audit team should attempt to identify all records required to conduct the audit. Determining whether computerized data is available is an important preliminary step. If computerized records are to be used, the structure and content of the files and reports should be provided to the auditor. Accounts payable, accounts payable distribution, general ledger, sales transactions, invoice transactions, summary files and reports are examples of data that may be requested by the auditor. It may be beneficial to have representatives from the taxpayer's and taxing authority's Information Systems staff at the meeting to answer questions related to data format and content, and to determine the best way to provide access to the electronic records.

When detail electronic records are incomplete for the audit period, the audit team may need to adjust the scope of the audit and determine whether the available electronic records can be utilized for sampling (this may involve the consideration of alternative sampling methodologies).<sup>7</sup> The audit team will also need to determine where the electronic records will be analyzed. The taxing authority may request a copy of all relevant data which will then be reviewed at the taxing authority's site. When requesting electronic records, the taxing authority and taxpayer should agree on the format and content of the data. Once the taxing authority has successfully read the electronic data provided by the taxpayer, it will be necessary to generate summary and detail reports to ensure that the information requested is what was actually received.

If taxpayer records are not available in electronic form, statistical sampling techniques may not be feasible. Random sample selection is

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<sup>6</sup> The following two subsections address issues related to identifying, requesting and verifying a taxpayer's electronic records. For additional information, refer to Auditing Electronic Data, A Report of the Steering Committee, Task Force on EDI Audit and Legal Issues for Tax Administration, published January 1997.

<sup>7</sup> See prior reference to fn 1.



practical if the records or an index of the records can be organized in a computer file. If the records are not computerized and creating a computerized index is not feasible, then nonstatistical selection methods, such as block selection, may be the only realistic alternative.

## **2. *Verifying Completeness***

The taxing authority and taxpayer should work together to verify the completeness of the data that will be examined. Verifying completeness is an essential step to provide assurance that the data that was requested from the taxpayer is what was received. Complete data is essential to ensure the sample population that is created will be an accurate picture of the intended audit population. An auditor will perform tests to ensure the information generated by the system reconciles to the financial statements or similar reports. Some methods of verifying completeness may include review of data processing, reconciliation to general ledger, reconciliation to tax returns, reconciliation to source documents, trend analysis, or other appropriate audit procedures. This testing phase will generally include a review of the policies and procedures in place that govern the system and subsystem processes.

## **D. Define Population of Interest**

The population of interest is the general area that will be examined. For example, the audit team may decide the population of interest is all accounts payable of goods or services utilized within the taxing jurisdiction. The audit team may also decide to exclude certain types of transactions such as purchases of inventory for resale or other accounts where the probability of adjustment is extremely small. The taxpayer and taxing authority should work together to define a population that includes accounts of interest to both parties. The taxing authority will generally review the following with the taxpayer to obtain agreement on what is to be included in the audit and what information should be provided to the auditor.

### **1. *Define Audit Period***

The audit period is generally defined during the preaudit research phase. Without a defined audit period, it is not possible to verify that the electronic data files are complete. In most situations, a state's statute of limitations for assessing sales or use tax will establish the audit period.

### **2. *Define Business Segments***

The audit team should identify the business locations and cost centers that will be included in the audit. Preaudit research may show that business activities differ significantly from one location to another. In these instances, the audit team may decide to group similar locations into subpopulations and perform separate samples, projections and evaluations.

### 3. *Define Accounts of Interest*

The account reference identifies the account(s) to which the cost of the goods and/or services are distributed. It is important to gain an understanding of the taxpayer's chart of accounts so that an informed decision can be made as to which accounts should be examined and which should be excluded from the review. For example, in a use tax examination, the audit team may decide to focus on only those accounts in which use tax may have been underpaid or overpaid. The materiality of an account should be considered prior to selection. The record count and dollar volume should be analyzed as well as the intended use of the account according to the chart of accounts.

## E. **The Sample Plan**

This section suggests some elements that may be helpful to the taxing authority and taxpayers in developing the sampling plan. After considering these issues, a written sampling plan may be prepared and reviewed by the taxpayer and taxing authority.<sup>8</sup> A well-developed sampling plan will set appropriate expectations, resolve some taxpayer concerns, and reduce the time to resolve disputes at later stages of the compliance examination. Agreement in the steps and methods to be used will be the overall goal; however, this may not always be possible. The following subsections in Section II provide suggestions on the details of sample planning.

The sample plan, which is part of the overall audit plan, is the design that guides the process of sampling. The intent of the parties involved in the sample is described in the sample plan. The development of the sample plan is an ongoing process. Like all plans, some details may be decided upon or changed during the sampling process. However, at the outset, a sampling plan may include the following:

- Objective of the sample;
- Identification of the population being sampled, the sampling unit, the sampling technique to be used, and the source of the random numbers and random seed numbers;
- Description of the procedures to be followed in identifying the units to be examined, who should locate the records, and how and where the records will be presented for review;
- Outline of any special procedures to be utilized (for example, a description of a strategy to deal with missing items); and
- Description on how and what kind of evaluation and projection procedures will be applied to the sample results. In statistical sampling, this may include a statement of the desired confidence level that will be used in calculations.

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<sup>8</sup> A written sampling plan may not be a typical procedure for some states, especially in manual compliance reviews. A discussion of the sampling plan may take place as opposed to a formal written plan.

An audit may consist of several tests that each address a different area of interest and population (e.g., a paid bills test, a fixed assets test, a resale test, an exempt sales test, etc.). Some of the tests conducted may involve the use of sampling, while others may not. The sampling techniques applied may also vary among the different tests in which sampling is used; as such, a unique sampling plan (written or oral) may be needed for each area sampled.

#### **F. Stratification**

Stratification is the process of sectioning, dividing or segmenting a population into individual strata or homogeneous groups. Each group must be structured in such a way that no unit can belong to more than one stratum. Often a sample is stratified based on an attribute of the population (e.g., assets vs. expenses) and then further stratified by dollar amounts within each attribute subpopulation.

Stratifying the population and taking samples from each stratum generally improves the overall precision of the sample. This can be done in several ways and requires auditor and taxpayer judgment and mutual agreement. Stratification almost always requires the use of computerized records. Some examples of stratification are:

- Dollar ranges: Used to divide the population into two or more segments based on characteristics of dollar amounts.
- Accounts: Used for those instances when a particular account, or group of accounts, has special attributes associated with it.
- Time periods: Typically used for significant law changes or changes in a taxpayer's computer system.
- Locations: Generally used when one location significantly differs from another such as headquarters vs. manufacturing.
- Vendors: Used when the value associated with a particular vendor is significantly different from the remaining vendors and the errors associated with that vendor are expected to be different.

#### **G. Define Sample Unit**

The sampling unit is the basic unit that will be sampled. The desired sample unit is one that will provide an accurate assessment of its intended use and can be traced back to the source document. The sampling unit may be a line item, invoice, voucher, batch number, purchase order, time period, contract, location, or customer. Line items provide the greatest detail and are often easiest to tie to the general ledger. The format of computerized data will generally determine the sample unit. In a noncomputerized audit, the method in which records are filed may control the determination of the sample unit.

## H. Select the Sampling Technique

A sample, by definition, is when part of the population is reviewed for the purpose of obtaining a conclusion about the population as a whole. How this is done, or the choice of sample selection method, is crucial to the overall process. When the records are not suitable or complete, the sample can be subjectively selected. Samples drawn subjectively are judgmental samples. In any judgmental sample, the probability of selection of the sampling units cannot be measured.

To obtain an objective evaluation of the sample results, more sophisticated sampling methods must be used. Therefore, some sort of random selection process is generally the method of selecting the sample. Random selection, which requires removal of selection bias, is fundamental to any methodology that can be objectively evaluated.<sup>9</sup> What is meant here by “random” is any selection procedure where the probability of selection is known (“probabilistic” sampling would be a more accurate description of this class of sampling).

### 1. *Judgmental Selection Techniques*

Individual sampling units in a judgmental sample are usually not drawn from throughout the population. Judgmental techniques may be necessary due to the method in which records are stored. One example of judgmental selection is Block Sampling in which the audit team selects blocks of contiguous transactions, usually grouped together on a time basis (e.g., records batched on a specific date).

### 2. *Random (Probabilistic) Selection Techniques*<sup>10</sup>

The results of any valid random sample can be objectively evaluated. The following are examples of probabilistic sampling methods that may be applied in a sales and use tax audit:

- Simple Random Sample

A random sample drawn from a population that is not stratified. A random number table or random selection software can be utilized to develop a list of unique random numbers that are corresponded to individual sampling units in the population. When the population is in electronic format, random selection of the population is a much simpler and faster process.

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<sup>9</sup> Note that in random selection methods, the bias of the sampler is removed from the selection process. However, there is nothing inherently wrong in using judgment or discretion of the auditor and/or taxpayer in defining a population to be sampled using random selection techniques. In fact, defining or refining a population on sound judgment prior to random selection is a desirable sampling technique. A random sample drawn from a population that has had items removed, such as inventory items, is still a random sample.

<sup>10</sup> Most computerized random selection processes begin with a random seed number. Each random seed number will generate a unique set of random numbers. The random seed number for each sample should be documented and provided to the taxpayer. By preserving the random seed number, it should be possible to recreate the sample and expand it if necessary.

- **Systematic with Random Start**  
Instead of corresponding a random number to each sampling unit as in simple random sampling, a random number is selected to correspond with only the first sample unit. Then, each  $k^{\text{th}}$  item is selected in the order it occurs (at the time of selection) in the population. The interval, or  $k$ , represents an integer derived by taking the population count and dividing by the desired sample size. Generally, a random number from 1 to  $k$  is utilized to start the selection process. The audit team may choose to use multiple starts to approach a more random selection method.
- **Stratified Random Sample**  
Sample units from a population are divided into individual groups or strata prior to selecting the sample. An independent random sample is taken from each stratum, similar to a nonstratified simple random sample. Within a stratum, each sample unit has an equal chance of selection. However, all sample units from the entire population do not necessarily have an equal chance of selection. Frequently, sample units are placed into strata based on dollar amounts. The larger dollar items may have a greater chance of selection when compared to sample units in other strata. Stratified random samples generally provide for more precise results when compared to simple random samples of the same size.

### **I. Determine Sample Size**

The sample size is the number of sampling units selected for examination from the sample universe. In a stratified random sample, a separate sample will be drawn from each stratum, the size of which could be determined judgmentally or statistically. Sample sizes may be pre-set or determined using mathematical formulas and/or computerized programs. In addition, a taxing authority may have guidelines establishing a minimum sample size per strata or for all strata combined. The number of strata may also play a factor in the determination of sample size as will the overall value of the population being sampled compared to the value of any single item being reviewed in detail. If sample size is statistically determined, the confidence level, required precision and variability of the population are the most significant factors in establishing sample size. The taxing authority may establish the confidence level and precision at fixed percentages.

### **J. Locate and Examine the Sample Units**

Once the sample units have been selected from the population, they must be matched to actual documents. In computer-assisted audits, electronic files representing sampled populations should have sufficient information, or data fields, that will allow for identification of the documents that relate to the selected sample units. These documents must be located and presented for review so that an accurate conclusion about taxability can be made. A comprehensive sample

plan will establish who has responsibility for locating and retrieving source documents from the files. The sample plan should also describe when and where the documents will be examined, and thereafter, who has responsibility for returning them to the files. After examining the documents, the auditor should record an audit conclusion on each sampling unit. The auditor's conclusions should be made available to the taxpayer.

## **K. Sample Results**

Generally, the purpose of sampling in sales and use tax compliance is to estimate some unknown amount from a population. In most cases, the unknown amount is the total tax (or taxable) error in the population.<sup>11</sup> Once a value for this unknown amount is established for each sample unit, the results may be projected to the population.<sup>12</sup>

Each time sample results are projected to the population, sampling error will result. Sampling error is the difference between the actual unknown amount and the projected amount from the sample results. Statistical evaluation can provide an estimate of the sampling error while nonstatistical evaluation cannot, since nonstatistical evaluation relies on judgment and statistical evaluation relies on objective analysis. Under certain circumstances, either approach may be valid.

Various methods may be used to project the sample results to the population. It is valid to rely on only one approach, such as ratio estimation, or choose from several approaches. Agency policy may dictate which projection method will be used and whether samples will be evaluated statistically. If agency policy does not determine the projection method or evaluation technique, these choices should be made prior to selecting the sample and included in the sample plan.

### **1. Projection Methods**

There are several valid approaches available for projecting the sample results to the population. The three most commonly used projection methods are<sup>13</sup>:

*Difference Estimation* – This method takes the average error value for the sample and expands (multiplies) this by the total number of sampling units in the population to arrive at an estimate of the total for the population. Difference estimation relies solely on the unknown values from the sample to estimate the total unknown value for the population. Invoice amounts, or other values from the sample, are ignored in the calculations.

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<sup>11</sup> In the case of SUTCA audits, the total subject to tax is estimated.

<sup>12</sup> The process of projecting to the population may be referred to as "evaluation" by some states.

<sup>13</sup> Taxing authorities may use different terminologies to describe the projection methods used. Taxing authorities may also use other valid approaches for projecting the sample results not discussed here.

*Ratio Estimation* – This is the most common method of projecting in sales and use tax audits. Most nonstatistical projections use this approach to estimate error. The percentage of error found in the sample is applied to a total amount from the population, such as total invoice amount, to estimate total error.

*Regression Estimation* – This method is similar to ratio estimation in that it measures the relationship between two values found in the sample, commonly invoice value and the error value. The linear relationship between these two values is used to provide an estimate for the population. However, the calculation of the two methods is not similar. The formulas necessary to perform the calculations are complex, typically requiring the use of computer software.

Each method listed above provides for a different estimate of the total. Typically, agencies will use only one estimation method to project totals. In some states, all methods are computed from the sample results. The method that provides the smallest estimate of *sample error*, not necessarily the smallest estimated total, is generally used as a basis for an adjustment.<sup>14</sup>

## 2. *Nonstatistical Evaluation*

Nonstatistical methods may be the only way to evaluate sample results where:

- The sample was selected judgmentally, or
- Parts of the population had no chance at selection, or
- Problems may have been encountered in the random selection process.

Some states may elect to evaluate valid random samples nonstatistically, where a statistical evaluation may be possible.

Evaluation of the sample is a continuing process that involves auditor judgment, technical knowledge, and familiarity with the industry being audited. Because of the subjective nature of nonstatistical evaluation, audit tests are necessary to assure that the sample is representative of the population. These tests rely mostly on auditor or taxpayer judgment and may include:

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<sup>14</sup> All of these estimation methods come in stratified and unstratified forms. Ratio and regression estimation have two forms of stratified estimation: separate and combined estimation. For more information on these estimation methodologies, please refer to *Statistical Auditing* by Donald M. Roberts (AICPA, 1978) and *Sampling Techniques* by William G. Cochran (Wiley, 3<sup>rd</sup> edition, 1977).

- A comparison of the distribution of the invoice amounts from the sample with the population,<sup>15</sup>
- An analysis of the nature and quality of errors, including any trends within the errors themselves, and/or
- An analysis of the materiality of the errors.

### 3. *Statistical Evaluation*

Statistical evaluations should be done only if the sample is randomly selected. Further, statistical inference can be made only on the sampled population, i.e., sample units that have had a *chance* at being selected and projected.

In statistical evaluations, as in nonstatistical evaluations, the sample results are projected to the most likely estimated total, called the point estimate (mid-point). Unlike nonstatistical evaluations, statistical evaluations will compute a confidence interval around the point estimate with a given confidence level. This confidence level may be established by agency policy. If it is not set by policy, the confidence level should be determined prior to selecting the sample units and included in the sample plan.

An estimate of the sampling error can be made from the sample results. The complex formula required to make these calculations can be easily solved by computer software.<sup>16</sup> Adding and subtracting the estimated sampling error, or *precision amount*, from the point estimate, determines the confidence interval. The upper limit of the confidence interval is computed by adding the precision amount. The lower limit of the confidence interval is obtained by subtracting the precision amount. Calculating the confidence interval provides a means by which to measure sampling risk. Sampling risk is the risk that the auditor's conclusion, based on a sample, would be different when compared to an examination of every item in the population.

There are several methods that may be used to statistically evaluate a stratified random sample, including: a combined evaluation of all strata, a combined evaluation of all strata excluding the detail stratum, an individual evaluation of each stratum, or a combination of these methods. The method used is generally established by agency policy and should be provided to the taxpayer and included in the sample plan.

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<sup>15</sup> Requires the use of computerized records.

<sup>16</sup> The formula for these calculations can be obtained from the sources listed in the References section of this paper.



#### 4. *Point Estimate (mid-point) or Interval Adjustment*

If the sample results can be statistically evaluated, a tax adjustment can be made based on:

- The point estimate,
- The lower limit of the confidence interval, or
- The upper limit of the confidence interval.

If the basis for the adjustment from the sample results is not defined by the taxing authority, it should be decided upon prior to selecting the sampling units and included in the sample plan. Of the states that calculate *precision* on samples, the majority project at the point estimate. For the remaining states that perform samples but do not statistically evaluate them, the projection basis would be equivalent to the point estimate (see Appendix A, Summary of State Sampling Practices).

As noted above, taxing authorities may base the tax adjustment on the point estimate, which is the most likely estimate of the unknown total. However, the wider the *confidence interval* or the higher the *precision*, the more tenuous the point estimate becomes. Of the taxing authorities that calculate precision, some state a desired level of precision while others do not. Some taxing authorities will use the precision calculation as a method to determine which statistical estimator should be used in evaluating the sample results. Regardless of the taxing authorities' use of precision, it should be stated in advance of the sample selection and included in the sample plan.

For instance, a taxing authority may indicate a precision goal of 30% or some other amount. In a sample that does not attain the desired precision level, the taxing authority or the taxpayer may have the option of expanding the sample or accepting the current results. The decision to accept the current results when they do not meet the stated goal is usually a decision that is agreed to by the taxing authority and taxpayer. The reason for acceptance is usually a trade-off between precision and efficiency due to the increased sample size that would be required to reach the desired degree of precision. If a precision goal is utilized, the basis should be stated in the sampling plan.

In the other instance where a taxing authority uses precision to determine which statistical estimator to use, they will often indicate that the statistical estimator with the smallest sampling error will be used.

Taxing authorities may utilize a *confidence interval* adjustment for the tax deficiency or credit. In such cases, the lower limit or upper limit of the confidence interval is used as the basis of the audit adjustment. The interval approach can be utilized for both deficiencies and credits. In the

case of a deficiency, a statement could be made that the tax due is at least some amount, based on a predetermined confidence level. In the case of a credit, the tax overpayment is at least some amount, based on a predetermined confidence level. In either case, the most likely tax due, the point estimate, is reduced by the estimate of sampling error.

### III. SUPPLEMENTAL ISSUES IN SAMPLING

#### A. Purpose of This Section

Issues may arise from the use of sampling techniques in sales and use tax compliance examinations. These issues can range from the ability to project overpayments to the tax treatment of missing documentation. Proper planning and open communication between the taxpayer and taxing authority can resolve many of these issues. This section will address the most common supplemental issues that may arise from the use of sampling in a sales and use tax environment.

#### B. Missing Documentation

A missing item is a source document representing a sampling unit that has been drawn as a sample item and cannot be located. Missing source documents constitute a possible attribute or characteristic of an accounting population. According to Herbert Arkin,<sup>17</sup> a random sample is bound to have missing items if it is drawn from a population that has many missing documents.

If the source document cannot be located in the taxpayer's records and a replacement is not available from the vendor (or customer), a decision will need to be made on how the sample unit should be valued. Some methods for valuing the sample unit follow.<sup>18</sup> The examples referenced below are based on the assumption that computerized records are being utilized in the sample.

- The item may be accepted as reported with no adjustment.  
For example, a missing item represented a common purchase made from a vendor that always charged tax on similar transactions.
- A partial adjustment may be made based on alternative evidence or procedures.  
For example, a missing invoice from a vendor with a history of errors was included in the sample. The auditor used the proportionate errors found in the other transactions and applied it to the missing invoice.
- The item may be considered unsubstantiated and totally adjusted.  
For example, a transaction represented the only purchase from a vendor. The auditor treated the purchase as an error.

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<sup>17</sup> Refer to the *Handbook of Sampling for Auditing and Accounting*, Herbert Arkin (McGraw-Hill, 3<sup>rd</sup> edition, 1984), page 21.

<sup>18</sup> Other approaches for valuing missing sample items may be utilized in addition to those discussed here.

A missing item may be treated as totally in error if a taxpayer is unable to provide sufficient evidence regarding that item. Replacing the sample containing the missing items with an entirely new sample is an option. However, if there were a significant number of missing items in the first sample, it is likely that another sample will also contain missing items.

### **C. Negative Transactions**

Negative transactions occur for many reasons. Traditionally, they have been generated as a result of errors or a return of merchandise and usually reflect the net effect of what the original transaction should have been. Negative transactions found in most types of accounting populations need to be included in any sampling plan to properly reflect their impact on the overall audit results.

Common methods for handling negative transactions<sup>19</sup>

- include negative transactions in total population, stratify the dollars, and select sample
- include negative transactions in total population, stratify the dollars based on absolute value, and select sample
- create separate populations for positive and negative transactions, stratify the dollars in each population independently of the other, select samples from each projecting the errors against each population independently
- attempt to match negative transactions to corresponding positive transactions based on common fields; create separate populations for remaining positive and negative transactions, stratify the dollars in each population independently; select sample for the positive transactions, analyze negative transactions and either select a sample or use to match against the sample population of the positive transactions

### **D. Nontaxable Items and Credits**

Unless otherwise addressed in statute, nonadjusted items and credits should be given equal weight as other items in the sample. Nonadjusted items are those which initially appear to be taxable exceptions; however, upon additional review of supporting evidence, they are found to have been properly taxed. Examples include, but are not limited to, items with tax self-accrued and remitted, nontaxable items, exempt items, and items for which tax is listed on a separate invoice. Credits include, but are not limited to, credit memo transactions, tax accrued in error, tax paid to a reciprocal taxing authority, and adjustment transactions.

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<sup>19</sup> When there is a mix of positive and negative transactions within the sample population, as in the first two bullet points, it is inappropriate to utilize either the combined ratio or combined regression estimator. Taxing authorities may also use other valid approaches for handling negative transactions not discussed here.

**E. Tax Erroneously Paid on Purchases**

Tax overpayments made to vendors may receive different treatment in some states. Many states require that purchasers who have paid tax in error to vendors go back to the vendors when seeking a refund of the tax paid. In these instances, overpayments may not be included in the sample as credits to be projected. In computer-assisted audits, the taxing authority may be able to develop detail listings of transactions for these vendors to assist the taxpayer in seeking a refund.

**F. Tax Law Changes**

Stratifying a population into groups of transactions before and after a major tax law change may be helpful if the taxability or error rate changed significantly. In other situations, this stratification might not be useful and a random sample containing a combination of transactions before and after the law change may be representative. Generally, the volume of records and significance and timing of the change will determine the approach.

**G. Accounting/Reporting Changes**

Changes in accounting/reporting procedures during an audit period may lead to inconsistencies that should be considered in sampling. Examples include changes in accounting software, chart of accounts or key accounting personnel. As noted above, depending on the volume of records and significance and timing of the change, a separate population may or may not be created.

**H. Statute of Limitations**

A state's statute of limitations for assessing sales or use tax establishes the time period during which (1) the taxpayer can file a claim for refund, or (2) the state can make an original or additional assessment of sales or use tax. This period may be extended for cases of fraud and failure to file a return. The statute of limitations should be taken into consideration when performing a sample examination to ensure the sample/population base remains within the audit period. Once an audit period is defined, taxing authorities will request waivers on statutes to keep periods open that may otherwise expire while the review is in progress.

**I. Sales and Use Tax Compliance Agreements**

Another application for sampling is to estimate effective tax rates, also known as Sales and Use Tax Compliance Agreements (SUTCAs). SUTCAs are upfront agreements between the taxpayer and the tax authority that detail the manner in which the taxpayer is to calculate and report tax on its purchases and the manner in which tax compliance is to be evaluated on audit.

## J. Timing Differences

Timing differences occur when the date a transaction is subject to tax and the date it is recorded by the taxpayer differ. Special care must be taken when reviewing transactions to determine the proper taxability and timing of the transaction as well as the effect the transaction has on the population and sample base. For example, timing differences may be an issue associated with installment contracts.

## IV. GLOSSARY OF BASIC THEORY, CONCEPTS AND TERMS

The **audit population** is the total set of units or elements from which the sample is to be drawn. In statistics books, the audit population would be referred to as the sampling frame. For a use tax audit, the population is usually the total set of invoices or vouchers from which the sample is to be drawn.

The **sampling unit** is the individual unit or element that is to be sampled. For a sales and use tax audit, the sampling unit may be an invoice, a voucher, a line item from an invoice, an account distribution from an invoice, batch number, purchase order, or time period.

The **sample** is the set of units selected from the population that will be audited.

A **random sample** is a method of sampling in which each member of the population has an equal chance of being selected and the items are drawn at random.

A **statistical sample** is a randomly selected sample which uses probability theory to evaluate sample results, including measurement of sampling risk (ISA 530).

A **parameter** is the population value or characteristic that the auditor is estimating. In a sales and use tax audit, the parameter that the auditor is usually estimating is the total change in the taxpayer's tax liability.

The sample **mean** is a measure of central tendency obtained by summing the values of all the items in the sample and dividing by the number of items in the sample.

The **median** of the population is a value which divides the population so that one-half of the items are the same as or greater than the median, and one-half of the items are the same as or less than the median.

The **point estimate** is the estimated value of the population parameter and represents what the auditor is attempting to estimate in a sales and use tax audit.

The **variance** is a measure of the dispersion of the values of a set of data about the mean.

The **standard deviation** is the square root of the variance. A large standard deviation relative to the mean is an indication that there is a lot of variability of the data.

The *standard error of the mean* is the standard deviation of a sampling distribution.

A *normal probability distribution* is a bell curve distribution. Approximately 68% of the area of a normal distribution lies within one standard deviation of the mean, 95% within two standard deviations of the mean, and almost all of the area within three standard deviations of the mean.

*Confidence levels* are the degree of confidence, expressed in terms of probability, that the estimated population parameter will fall within an interval or range of values. For example, if the auditor states there was 90% confidence that the total, but unknown, additional tax was between \$500 and \$1000, this would indicate that 90 samples out of 100 with similar characteristics would be expected to contain the total tax value within the precision range.

*Precision* represents the total range within which the population value would fall at a given confidence level. It can either be expressed in dollar value or as a percentage of additional tax. (Nontax auditing applications often express precision as a percentage of the population dollar value.) It is a range boundary around a particular estimate expressed as “plus” or “minus” some percent or amount. For example, an estimate at a given confidence level might be \$1000 plus or minus \$100 or 10%.

*Precision and confidence* levels are generally used together in describing sample results and estimating population values. In fact, there is a direct relationship. Given two audits with identical sample and population characteristics, the one with the higher specified confidence level will also exhibit a wider precision range.

*Stratification* is the process of dividing the population of sampling units (account distributions) into segments (strata) based upon some characteristic such as the dollar amount of the sampling unit. Stratification usually increases *sampling efficiency*, enabling the sampler to draw a smaller sample.

A *stratum* (plural, strata) is a section, layer, or division within a population. For example, if the population is stratified on the dollar amount of the account distribution, then a stratum might be the account distributions greater than or equal to \$100 and less than \$500. In a *stratified random sample*, the population is divided into strata and independent random samples are drawn from each stratum.

## V. REFERENCES

### A. Purpose of This Section

This section contains references on sampling that may be useful for sales and use tax professionals. This is not an all-inclusive list of references and the Task Force does not endorse one source over another. Inclusion of a reference is not intended to signify that it is a better or more reliable source than one not included. In

addition, some of the listed references may no longer be in print. References listed in this section were not necessarily used in the creation of this paper.

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*Audit Sampling*, Auditing Practice Release, AICPA, 1999.

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Guy, Dan M., Douglas R. Carmichael, and O. Ray Whittington. *Practitioner's Guide to Audit Sampling*. New York: John Wiley & Sons, 1998.

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### **C. Sampling for Sales and Use Tax Audits – Papers and References**

Bright, Joseph C., Jr., Joseph B. Kadane, and Daniel S. Nagin, "Statistical Sampling in Tax Audits," 13 *Law and Social Inquiry* 305, (Spring 1988).

Heintz, James A., and John M. Wendt, "Improved Use Tax Auditing Through Sampling," 25 *Government Accountants Journal* 62, (Summer 1976).

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Sprowls, R. Clay, "The Admissibility of Sample Data Into a Court of Law," 4 *UCLA Law Review* 222, (1957).

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Yancey, Will, and Roger Pfaffenberger, "Use and Abuse of Sampling in Sales and Use Tax Audits," 13 *State Tax Notes* 1673, (December 29, 1997).

Yancey, Will, *Statistical Sampling in Sales and Use Tax Audits*, (CCH, 2002).

### **D. Sampling Terminology**

*Defense Acquisition University Stat Refresher*,  
<http://www.cne.gmu.edu/modules/dau/stat/>

*Internet Glossary of Statistical Terms*,  
<http://www.animatedsoftware.com/statglos/statglos.htm>

*Knowledge Base*, <http://trochim.human.cornell.edu/kb/sampling.htm>



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Federal Judicial Center, *Reference Manual on Scientific Evidence*, 2<sup>nd</sup> ed., (2000), <http://www.fjc.gov/>

U.S. Supreme Court, *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579, (1993), <http://laws.findlaw.com/US/509/579.html>

Yancey, William F., *Statistical Evidence in Litigation*, [http://www.willyancey.com/statistical\\_evidence.htm](http://www.willyancey.com/statistical_evidence.htm)

### **F. Federal Agencies**

Department of Health and Human Services, Office of Audit Services, <http://www.oig.hhs.gov/organization/OAS/index.html>

General Accounting Office, <http://www.gao.gov/>

Government Audit Training Institute (operated by Graduate School, USDA), [http://www.grad.usda.gov/programs\\_services/auditing/gatp.cfm](http://www.grad.usda.gov/programs_services/auditing/gatp.cfm)

Inspectors General Audit Training Institute, <http://www.igati.org/>

### **G. Professional Organizations**

American Institute of Certified Public Accountants, <http://www.aicpa.org/>

American Statistical Association, <http://www.amstat.org/>

Association of Government Accountants, <http://www.agacgfm.org/>

Information Systems Audit and Control Association, <http://www.isaca.org/>

Institute of Internal Auditors, <http://www.theiia.org/>

### **H. Vendors of Sampling Software and Services**

ACL Services, Ltd., <http://www.acl.com/>

Audimation Services, Inc., <http://www.audimation.com/>

AuditWatch, Inc., <http://www.auditwatch.com/>

CaseWare International Inc., IDEA, <http://www.caseware-idea.com/>

Computer Associates, Inc., Panaudit,  
<http://www3.ca.com/solutions/productsAZ.asp>

Department of Health and Human Services, Office of Inspector General,  
RAT-STATS software, <http://www.hhs.gov/progorg/oas/ratstat.html>

Helberg, Clay, "Statistics on the Web,"  
<http://www.execpc.com/~helberg/statframes.html>

Lane, David M., "HyperStat Online,"  
<http://www.davidmlane.com/hyperstat/index.html>

Professional Development Institute at the University of North Texas,  
<http://www.pdi.org/gov.htm>

SAS Institute, Inc., <http://www.sas.com/>

SPSS, <http://www.spss.com/>

Stark, Philip B., "SticiGui: Statistical Tools for Internet and Classroom Instruction  
with a Graphical User Interface,"  
<http://www.stat.berkeley.edu/users/stark/SticiGui/index.htm>

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Westat, <http://www.westat.com/>

Yancey, Will, "Statistical Education and Software,"  
<http://www.willyancey.com/statistics.htm>

## Appendix A

### Summary of State Sampling Practices (as of December 2002)

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	<i>ALABAMA</i>	<i>ALASKA</i>	<i>ARIZONA</i>	<i>ARKANSAS</i>
<i>Contact</i>	Joseph W. Cowen 334-242-1270	Bruce Kinney 907-269-1042		Danny Walker 501-682-4870
<i>Use of sampling or estimation</i>	Yes	No. Do not plan to use in the future.		Yes
<i>Statutory or regulatory authority</i>	No. Dept. of Revenue opinion allows discretion to sample.			Yes. Arkansas Code Ann. Z6-18-305 (a) (2) (A) and (a) (2) (B)
<i>Written sampling agreements?</i>	Yes. Agreements are not binding. We try to have an agreement in place before conducting the sample. Occasionally a taxpayer will back out of the agreement, in which case we can complete a total tax due audit or assess using the sample. We have never been to court on the issue of sampling.			Yes. Agreements are binding if results of sample are representative of period/population being sampled.
<i>Informational brochures or publications?</i>	No			No
<i>Sampling techniques</i>	Stratified random; Simple random; Block/cluster; Time periods			Systematic; Block/cluster; Time periods. Use of statistical sampling methods are currently being reviewed for future use.
<i>Minimum, maximum or average number of strata?</i>	No			No
<i>Calculation of sample sizes</i>	Formula			Formula for statistical sampling; For nonstatistical sampling, sample size is determined on a case-by-case basis with the sampling technique that is used.
<i>Minimum errors to project?</i>	Yes			No

	<b>ALABAMA</b>	<b>ALASKA</b>	<b>ARIZONA</b>	<b>ARKANSAS</b>
<i>Projection techniques</i>	Percentage of error; End/mean projection; Mean estimator			Percentage of error; Average dollar per unit
<i>Compute precision or confidence level?</i>	Yes. 90% two-sided is commonly used; however, examiners have the authority to change if factors dictate.			No. To be determined for statistical sampling by department policy.
<i>Use adjustment different from point estimate?</i>	Lower confidence limit for liabilities; upper confidence level for refunds.			To be determined as part of department policy for statistical sampling.
<i>Range of precision for typical audit</i>	10% flexible depending on population dispersion.			To be determined as part of department policy for statistical sampling.
<i>Steps taken when results do not fall within expected precision or confidence?</i>	Expand the sample			To be determined as part of statistical sampling.
<i>Software package(s) for selection and/or evaluation of samples</i>	ACL; Rat-Stats (U.S. Army Audit Agency)			To be determined
<i>High dollar, non-recurring transactions?</i>	Stratify into groups and examine in detail.			To be determined as part of department policy for statistical sampling. For nonstatistical sampling, item would be withdrawn from sample and addressed separately.
<i>Missing documentation</i>	Counts as taxable because of taxpayer's requirement to maintain records.			To be determined as part of department policy for statistical sampling. For nonstatistical sampling, item would be considered taxable. If documentation for sample period missing, consideration of substituting another period would be given.

	<b>ALABAMA</b>	<b>ALASKA</b>	<b>ARIZONA</b>	<b>ARKANSAS</b>
<i>Sample/projection for overpayments?</i>	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - yes for tax paid to vendor; yes for use tax paid.			Within Audit - no for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.
<i>Number of samples conducted calendar year 1999</i>	Sales & Use Tax: 102 nonstatistical 6 statistical			Sales & Use Tax: 400 nonstatistical (estimated)

## Sampling for Sales and Use Tax Compliance

	<i>CALIFORNIA FTB</i>	<i>CALIFORNIA BOE</i>	<i>COLORADO</i>	<i>CONNECTICUT</i>
<i>Contact</i>	Jadwiga Z. Lutek 312-759-4158	Kelly Reilly 916-324-2372	Karen Torsney 303-355-0400	Steve Veilleux 860-297-5627
<i>Use of sampling or estimation</i>	Yes	Yes	Yes	Yes
<i>Statutory or regulatory authority</i>	No. Agency has discretion to sample.	No. Agency has discretion to sample.	No. Agency may sample with consent of the taxpayer.	No. Agency may sample with consent of the taxpayer.
<i>Written sampling agreements?</i>	No	Yes. Agreements are not binding. Staff must complete Form BOE-472, Audit Sampling Plan, whenever sampling is conducted. The information and methods documented in this form are not binding on either the taxpayer or Board staff. The sampling plan may be modified if new or additional data are encountered. If deviation from the plan is required, it will be fully discussed with the taxpayer.	Yes, but agreements are not binding.	Yes, but agreements are not binding. Our standard letter of understanding may include an identification of the test period for our statistical sampling audits. An audit sampling form is used by our EDP-Audit staff as a clarification tool.
<i>Informational brochures or publications?</i>	No	Yes. Audit Manual Chapters 4 and 13; available in paper and electronic formats. Contact: Kelly Reilly (see phone above) Kelly.reilly@boe.ca.gov <a href="http://www.boe.ca.gov/pdf/fam-13.pdf">www.boe.ca.gov/pdf/fam-13.pdf</a>	No	No
<i>Sampling techniques</i>	Stratified random; Simple random; Systematic; Methods used by auditors are primarily nonstatistical, according to GAAS. Therefore, the audit objective is stated first, then methodology is chosen to meet the audit objective.	Stratified random; Simple random; Systematic; Block/cluster; Time periods	Stratified random; Simple random; Systematic; Block/cluster; Time periods; Majority are still block.	Stratified random; Simple random; Block/cluster; Time periods; Other - may conduct a detail of certain accounts.
<i>Minimum, maximum or average number of strata?</i>	No	No	No	In general, our EDP-Audit staff recommends six strata, plus an additional detailed exam stratum.

	<i><b>CALIFORNIA FTB</b></i>	<i><b>CALIFORNIA BOE</b></i>	<i><b>COLORADO</b></i>	<i><b>CONNECTICUT</b></i>
<i>Calculation of sample sizes</i>	Nonstatistical - determine audit objective, percentage of population that one wishes to review and choose a sampling method.	Formula; Auditor judgment	Formula. With consideration for audit time and availability of taxpayer records.	Formula; For block sampling, audit examiners use the shortest period of time that is representative.
<i>Minimum errors to project?</i>	No	Yes, per stratum.	No	No
<i>Projection techniques</i>	Percentage of error	Percentage of error; Average dollar per unit	Percentage of error; Average dollar per unit; End/mean projection; Ratio estimator; Difference estimator; Mean estimator; Regression estimator	Percentage of error
<i>Compute precision or confidence level?</i>	No	Yes. 80% two-sided.	No	Yes. The level varies.
<i>Use adjustment different from point estimate?</i>	No, but additional tests may apply when the misstatement found due to sampling is determined to be material.	No	Varies among taxpayers.	Mid-point estimator is used.
<i>Range of precision for typical audit</i>	N/A	Maximum allowable is 75% using differences to compute the precision. Actual average range achieved is 40%-50%.	Varies among taxpayers.	N/A
<i>Steps taken when results do not fall within expected precision or confidence?</i>	Expand the sample. The preliminary sampling results are discussed with the taxpayer and a course of action is determined. There may be reasons the percentage of error is high.	Stop the audit; Expand the sample; Project anyway depending upon the unique circumstances of each audit and taxpayer preference.	Further discussion with taxpayers.	N/A; see above.
<i>Software package(s) for selection and/or evaluation of samples</i>	None	ACL (Only used by computer audit specialist); In-house evaluation template.	ACL; Excel; Monarch	ACL; VBA routines developed by EDP-Audit staff.

## Sampling for Sales and Use Tax Compliance

	<i>CALIFORNIA FTB</i>	<i>CALIFORNIA BOE</i>	<i>COLORADO</i>	<i>CONNECTICUT</i>
<i>High dollar, non-recurring transactions?</i>	Review individually rather than sample. For example, if most balances in an account are under \$1,000,000 but three are over \$5,000,000, then those three are individually examined. To continue to include them in the population as part of the sample would skew the results of determining the percentage of error in the account balances.	Refer to Audit Manual Chapter 4 (section 0405.20(e)) relating to non-statistical sampling.	Review at 100%	Examiner conducts a detailed examination of all items within this category.
<i>Missing documentation</i>	Discuss the situation with the taxpayer. At times a new or expanded sample is needed, or sometimes the taxpayer agrees to omit the missing items from the population. For example, if all information from a particular vendor is missing, the taxpayer may agree to run a new population total omitting invoices from that particular vendor.	Refer to Audit Manual Chapter 13 (section 1302.25(g)).	Treat as taxable unless auditor can be satisfied otherwise (e.g. review of invoices show all other invoices by same vendor are correct).	The examiner considers the items to be in error and fully subject to tax. The taxpayer and audit management sometimes reach a negotiated settlement.
<i>Sample/projection for overpayments?</i>	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - yes for tax paid to vendor; yes for use tax paid. Dept. position is that tax returns or refund claims should not be prepared by the taxpayer or the taxpayer's representative by the use of sampling. In those cases, overpayments on a formal claim for refund or an informal claim made during the audit process, may not be allowed. If the returns and refund claims were not prepared by sampling, the auditor would first determine that the population that they are sampling is reliable, then conduct the sample and compare it to the return or claim for refund. In that case, audit sampling may result in an overpayment, provided the statute of limitations is open for the overpayment.	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - yes for tax paid to vendor; yes for use tax paid. Tax paid to vendor - allow only for tax-paid purchases resold. Sales tax paid by a purchaser to a vendor in error must be recovered from the vendor.	Within Audit - no for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.	Within Audit - no for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.



	<i>CALIFORNIA FTB</i>	<i>CALIFORNIA BOE</i>	<i>COLORADO</i>	<i>CONNECTICUT</i>
	Auditors use sampling as an audit tool. Therefore, we may accept the adjustments made by other governmental agencies in our audits even if the adjustments were a result of sampling. For example, when the CA BOE uses sampling during an audit to adjust use tax paid, our department will accept the results when we are verifying use tax paid on the same items. In that case, the sampling was done for us. However, the taxpayer must also be in agreement, and have paid the use tax proposed by the BOE in order for us to accept the results.			
<i>Number of samples conducted calendar year 1999</i>	Income Tax: >50 statistical	Sales & Use Tax: 2126 nonstatistical 333 statistical Data not available for calendar year 1999. Figures were extrapolated based upon data from February to September 2000.	Sales & Use Tax: 750 nonstatistical	Sales & Use Tax: >2800 nonstatistical <10 statistical

## Sampling for Sales and Use Tax Compliance

	<i>DELAWARE</i>	<i>DISTRICT OF COLUMBIA</i>	<i>FLORIDA</i>	<i>GEORGIA</i>
<i>Contact</i>			Julie Pendleton 770-996-9100 x500	Bill Branan 404-651-5410
<i>Use of sampling or estimation</i>			Yes	Yes
<i>Statutory or regulatory authority</i>			Yes. Section 212.12(6), Florida Statutes	No. Only with consent of taxpayer.
<i>Written sampling agreements?</i>			Yes. Agreements are binding. Parties agree that the sample shall be deemed to be representative of all the taxpayer's business, and the findings of this sampling shall be projected over the period set forth in the attachment to the agreement.	No
<i>Informational brochures or publications?</i>			No (under development).	Yes. Electronic format. Contacts: Bill Branan 404-651-5410 Diane Flemming 404-463-2638 Don Bloom 404-651-5446
<i>Sampling techniques</i>			Stratified random; Time periods	Stratified random; Simple random; Block/cluster; Time periods
<i>Minimum, maximum or average number of strata?</i>			Yes. Seven strata are used.	Yes. Number of strata depends on size of population. We normally do not exceed 7 strata.
<i>Calculation of sample sizes</i>			Formula	Formula
<i>Minimum errors to project?</i>			No	No
<i>Projection techniques</i>			Percentage of error; Ratio estimator; Difference estimator (preferred); Mean estimator	Percentage of error; Average dollar per unit
<i>Compute precision or confidence level?</i>			Yes. We use a 95% confidence level. The amount of sampling error (E) acceptable to the department is determined and agreed upon. It is balanced with sample size to be cost-effective yet acceptable.	No. Confidence level (normally 95%) and precision are used to calculate the sample size, but are not used as an evaluation tool.
<i>Use adjustment different from point estimate?</i>			We assess at the mean.	Project to the point estimate.

	<i>DELAWARE</i>	<i>DISTRICT OF COLUMBIA</i>	<i>FLORIDA</i>	<i>GEORGIA</i>
<i>Range of precision for typical audit</i>			Varies with each audit. See above.	N/A
<i>Steps taken when results do not fall within expected precision or confidence?</i>			Expand the sample (following the pilot).	N/A
<i>Software package(s) for selection and/or evaluation of samples</i>			FERAS (Florida Electronic Record Auditing System); WinFMT (Windows-based Florida Multi-Tax Software).	ACL
<i>High dollar, non-recurring transactions?</i>			A detail stratum containing all high-dollar items in the population is identified and separated from the population to be sampled.	Stratify and examine all transactions above a specified dollar limit. An item in one of the strata to be sampled is considered representative and will not be deleted.
<i>Missing documentation</i>			Any sample points for which the taxpayer cannot provide the source documents are considered taxable (deficiency determined).	Select spares
<i>Sample/projection for overpayments?</i>			Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; yes for use tax paid. Taxpayer's records must be adequate but voluminous.	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.
<i>Number of samples conducted calendar year 1999</i>			Sales & Use Tax: 25 statistical	Sales & Use Tax: 1504 nonstatistical 15 statistical We do not represent these as time statistical samples. These audits are stratified random samples which utilize some statistical techniques and methods. Because there is no evaluation of the results, we do not refer to the samples as statistical.

## Sampling for Sales and Use Tax Compliance

	<i>HAWAII</i>	<i>IDAHO</i>	<i>ILLINOIS</i>	<i>INDIANA</i>
<i>Contact</i>	Randall Leong 808-587-1700	Mark Stones / Joe Randall 208-334-7675	Dan Hall 217-524-5400	Randy Neff     David Kolb 317-233-0389   317-233-6036
<i>Use of sampling or estimation</i>	Yes	Yes	Yes	Yes
<i>Statutory or regulatory authority</i>	No. Agency has discretion to sample.	No. Only with consent of the taxpayer.	No	Yes. IC 6-8.1-4-2(a)(3) & IC 6-8.1-4-2(a)(6)
<i>Written sampling agreements?</i>	No	No	No	No
<i>Informational brochures or publications?</i>	No	No	Yes. Electronic and paper formats. Contact: Taxpayer Information Illinois Department of Revenue P.O. Box 19001 Springfield, IL 62794 <a href="http://www.revenue.state.il.us">www.revenue.state.il.us</a>	Yes. Paper format.
<i>Sampling techniques</i>	Time periods	Stratified random; Simple random; Systematic; Block/cluster; Time periods; If the taxpayer records don't support any of the above, the auditor may use any reasonable sampling technique (this must be coordinated with supervisor).	Stratified random; Simple random; Systematic; Block/cluster; Time periods	Stratified random; Block/cluster; Time periods
<i>Minimum, maximum or average number of strata?</i>	No	No, but presently developing this policy.	No	No
<i>Calculation of sample sizes</i>	Judgmental; determined by auditor.	Presently developing this policy.	Formula; Also utilize tables and judgment to analyze the population characteristics.	Primarily formula for statistical sampling. Judgment and prior audit findings may also be utilized. Auditor's judgment for nonstatistical sampling.
<i>Minimum errors to project?</i>	No	No. Will have a policy in the future.	Yes	No standard minimum. Auditor discretion may be used.
<i>Projection techniques</i>	Percentage of error	Percentage of error; End/mean projection; Ratio estimator; Difference estimator; Mean estimator; Regression estimator	Percentage of error; Average dollar per unit; Difference estimator; Mean estimator; Combined ratio estimator; Combined regression estimator.	Percentage of error; Ratio estimator; Difference estimator; Mean estimator; Combined ratio estimator

	<i>HAWAII</i>	<i>IDAHO</i>	<i>ILLINOIS</i>	<i>INDIANA</i>
<i>Compute precision or confidence level?</i>	No	No. May in the future.	Yes. 90% two-sided.	Yes. 90% two-sided.
<i>Use adjustment different from point estimate?</i>	No response	No	No	No
<i>Range of precision for typical audit</i>	No response	N/A	5%-40% with an average of approximately 25%.	5%-30%
<i>Steps taken when results do not fall within expected precision or confidence?</i>	No response	N/A	Project anyway	Make taxpayer aware of precision. If taxpayer and Department are willing to accept risk, project anyway. If not, will consider expanding sample.
<i>Software package(s) for selection and/or evaluation of samples</i>	No response	Rat-Stats	Pan Audit Plus; COBOL for selection and an internal program for evaluations.	ACL; Excel spreadsheets; Rat-Stats
<i>High dollar, non-recurring transactions?</i>	Take it out of the sample if taxpayer can prove it is a nonrecurring transaction.	These items would be removed from the population and handled as a separate isolated occurrence.	Normally the high dollar transactions are detailed. The dollar amount where this begins depends on each taxpayer's records.	Largest dollar records are reviewed in detail. Cut-off for detail transactions is determined for each sample population.
<i>Missing documentation</i>	Treat it as an error.	Normally consider them taxable unless the taxpayer can give sufficient evidence showing they are not taxable.	Each audit is independent. The missing item may be handled as an error, as correct, with a percentage of the item an error, or some other methodology may be employed.	Auditor analyzes available information such as similar invoices from vendor, expense account charged, department, etc. At auditor's discretion to determine if the available information is sufficient to establish transaction as exempt. If not, treat as taxable.
<i>Sample/projection for overpayments?</i>	Within Audit - no for tax paid to vendor; no for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.	Within Audit - sometimes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - sometimes for tax paid to vendor; sometimes for use tax paid. Normally exercise limited supervision over the sampling process to ensure the validity of the sample.	Within Audit - no for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; yes for use tax paid. Tax paid to a vendor in error must be recovered from the vendor. The claim is not filed with the Department. The vendor would file a claim with the Department to recover amounts refunded to a customer.	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.

## Sampling for Sales and Use Tax Compliance

	<i>HAWAII</i>	<i>IDAHO</i>	<i>ILLINOIS</i>	<i>INDIANA</i>
<i>Number of samples conducted calendar year 1999</i>	We do not keep track of the samples conducted in our audits.	Sales & Use Tax: 200 nonstatistical	Sales & Use Tax: 3714 nonstatistical 234 statistical Income Tax: 1235 nonstatistical 5 statistical Other: 520 nonstatistical 1 statistical	Sales & Use Tax: 1999 - 55 statistical 2000 - 71 statistical 2001 - 68 statistical nonstatistical unknown

	<i>IOWA</i>	<i>KANSAS</i>	<i>KENTUCKY</i>	<i>LOUISIANA</i>
<i>Contact</i>	Jeff Aten 515-281-6463	Robert Lewis 785-296-7487	EDI Section 502-564-2113 x4196	Donald Barnette 225-925-7548
<i>Use of sampling or estimation</i>	Yes	Yes	Yes	Yes
<i>Statutory or regulatory authority</i>	No. Agency has discretion to sample.	Yes. K.S.A. 79-3610	No	No. Only with consent of the taxpayer.
<i>Written sampling agreements?</i>	Yes. Agreements are binding, but taxpayer still has right to appeal any audit findings.	No. Have to notify the taxpayer in writing of intent to use sampling. Taxpayer is not required to sign an agreement. Sampling will be used even if the taxpayer opposes it.	No	Yes. Agreements are not binding as we have no statutory authority to force a taxpayer to accept a sample if the records are available.
<i>Informational brochures or publications?</i>	No	Yes. Both electronic and paper format. Contact: Charla Wagner 785/291-3288 or Charla.wagner@kdor.state.ks.us	No	No
<i>Sampling techniques</i>	Stratified random; Simple random; Systematic; Block/cluster; Time periods	Stratified random; Simple random; Time periods	Stratified random; Block/cluster	Stratified random; Simple random; Systematic; Block/cluster; Time Periods
<i>Minimum, maximum or average number of strata?</i>	No	Yes. 1-7	Yes. 7	No
<i>Calculation of sample sizes</i>	Based on our and other states' experience and record availability.	Formula. Normally use minimum of 250 per stratum.	200 minimum	Formula
<i>Minimum errors to project?</i>	Yes	Yes	No	No
<i>Projection techniques</i>	Percentage of error	Percentage of error; End/mean projection; Ratio estimator; Difference estimator; Mean estimator; Regression estimator	Ratio estimator	Percentage of error; Ratio estimator
<i>Compute precision or confidence level?</i>	Yes. 90% two-sided; we are considering going back to 80%.	Yes. 80% one-sided or 60% two-sided.	No	No. Developing a policy.
<i>Use adjustment different from point estimate?</i>	No. We used lower limit once or twice to settle audit with complicated issues.	Yes. 80% lower level	No	Developing a policy
<i>Range of precision for typical audit</i>	± 50%. We do not do computer audits and rarely have more than two strata.	25% or below	No	Developing a policy

## Sampling for Sales and Use Tax Compliance

	<b>IOWA</b>	<b>KANSAS</b>	<b>KENTUCKY</b>	<b>LOUISIANA</b>
<i>Steps taken when results do not fall within expected precision or confidence?</i>	Project anyway; unless the auditor or taxpayer explains why sample is not representative, then may compromise.	Stop the audit; Expand the sample	No position at this time.	Developing a policy.
<i>Software package(s) for selection and/or evaluation of samples</i>	Select - have been using Lotus and Excel; will probably switch to Rat-Stats. Evaluate - have used formula from IL; likely to switch to Rat-Stats.	ACL; Rat-Stats; Monarch & Access	ACL; Rat-Stats	ACL; Rat-Stats; Excel
<i>High dollar, non-recurring transactions?</i>	Our assumption is that it is recurring and should remain part of the projection. Taxpayer allowed to prove nonrecurring and show actual.	Assess in period found; not included in error percentage.	Detail	Usually high dollar transactions are audited 100% and not included in the sample. Occasionally, nonrecurring transactions are removed from the sample and reviewed separately.
<i>Missing documentation</i>	The item is considered an error unless taxpayer has enough other information to show otherwise, e.g., a particular customer could have an obvious resale exemption.	Considered an error.	An error, unless sufficient documentation to prove otherwise.	Items are considered taxable unless other evidence shows tax has been paid or accrued.
<i>Sample/projection for overpayments?</i>	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - yes for tax paid to vendor; yes for use tax paid..	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; yes for use tax paid.	Yes, for tax accrued.	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - depends.
<i>Number of samples conducted calendar year 1999</i>	Sales & Use Tax: 310 nonstatistical 4 statistical	Sales & Use Tax: 2000 nonstatistical 200 statistical	Sales & Use Tax: 980 nonstatistical	Sales & Use Tax: 721 nonstatistical 150 statistical Income Tax: 1 nonstatistical Other: 104 nonstatistical



	<b>MAINE</b>	<b>MARYLAND</b>	<b>MASSACHUSETTS</b>	<b>MICHIGAN</b>
<i>Contact</i>	Judy Methot 207-822-6371	Richard Glacken 410-767-1500	Denise Sasso 617-887-5026	Terry Edwards 972-241-8548
<i>Use of sampling or estimation</i>	Yes	Yes	Yes	Yes
<i>Statutory or regulatory authority</i>	No. Agency has discretion to sample.	Yes. Tax General Article 13-302 (a-1)	Yes. Mass. General Laws Chapter 62C Section 24	No. Agency does have discretion to sample.
<i>Written sampling agreements?</i>	Yes. Agreements are not binding; nothing in statute to enforce it.	Yes. They are not required by law, but once signed, they are considered to be binding.	Yes	No; pending
<i>Informational brochures or publications?</i>	No	No	Yes. <a href="http://www.massdor.gov">www.massdor.gov</a> CAATS (Computer Assisted Audit Techniques) Brochure	No; pending
<i>Sampling techniques</i>	Systematic; Block/cluster; Time periods	Stratified random; Simple random; Systematic; Block/cluster; Time periods	Primarily a variable sampling plan based on stratified mean per unit.	Stratified random; Simple random; Systematic; Block/cluster; Time periods
<i>Minimum, maximum or average number of strata?</i>	No	No	Yes. Usually minimum of 6 strata.	Yes. Minimum of 4 strata in electronic audits.
<i>Calculation of sample sizes</i>	N/A	Formula	Sample size is primarily based on 5% alpha error and 80% power with allocation to strata based on strata frequency and standard deviation. There may be modifications of initial sample size calculations based on a statistical review.	Have minimum sample sizes for transactions, clusters and time periods.
<i>Minimum errors to project?</i>	No	No	Yes. Statistical errors to project are based on the number of sample strata confidence intervals used for sample validation plus a confidence interval for the projected tax error rate.	No
<i>Projection techniques</i>	Percentage of error	Percentage of error; Average dollar per unit; Ratio estimator; Difference estimator; Mean estimator	Sample strata error ratio estimates are used to project a population tax error rate.	Ratio estimator; Difference estimator
<i>Compute precision or confidence level?</i>	No	Yes. Prefer 90% two-sided, but may adjust based on sample size.	Yes. 95% confidence intervals are calculated for all sample strata and also for the projected tax error rate.	No

## Sampling for Sales and Use Tax Compliance

	<b>MAINE</b>	<b>MARYLAND</b>	<b>MASSACHUSETTS</b>	<b>MICHIGAN</b>
<i>Use adjustment different from point estimate?</i>	N/A	Prefer point estimate, but will use lower or upper limit depending on audit circumstance.	No	No. Use point estimate.
<i>Range of precision for typical audit</i>	N/A	10% - but may vary depending on sample size.	2% range of population mean.	N/A
<i>Steps taken when results do not fall within expected precision or confidence?</i>	N/A	Stop the audit; Expand the sample; Project anyway; Other - depends on circumstances. Expand the sample would be first option, or stop audit and project depending on initial sample size.	Expand the sample	N/A
<i>Software package(s) for selection and/or evaluation of samples</i>	ACL; Access	ACL; Monarch; Access	ACL; SAS; STATA 7.0	Rat-Stats to select sample units; Manually evaluate samples.
<i>High dollar, non-recurring transactions?</i>	Exclude from test	Delete from sample.	Normally audited in detail.	Evaluate to ensure that these transactions are actually nonrecurring in the population. If so, we pull them from sample and all like transactions from the population, and do a 100% examination on those transactions.
<i>Missing documentation</i>	N/A	Treat as a taxable invoice or factor taxable percentage based on remaining sample result.	Auditor's judgment to tax at the appropriate rate until documentation is provided.	We count it as an error generally.
<i>Sample/projection for overpayments?</i>	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - yes for tax paid to vendor; yes for use tax paid.	Case by case basis.	Within Audit - no for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.
<i>Number of samples conducted calendar year 1999</i>	Unknown	Sales & Use Tax: 450 nonstatistical 3 statistical Income Tax: 25 nonstatistical	Not available	Sales & Use Tax: 1300 nonstatistical (approximate). Completed 1861 sales and use tax audits; approximately 70% or 1300 were conducted using nonstatistical sampling. In all instances, "block" sample methods would have been used without random start.

	<i><b>MINNESOTA</b></i>	<i><b>MISSISSIPPI</b></i>	<i><b>MISSOURI</b></i>	<i><b>MONTANA</b></i>
<i>Contact</i>	Maggie Anderson 320-654-5515	Shelton Vance 601-923-7305	Joe K. Evans 314-877-0417	Jim McKeon 406-444-1940
<i>Use of sampling or estimation</i>	Yes	Yes	Yes	Yes
<i>Statutory or regulatory authority</i>	Yes. M.S.289.35 "...The Commissioner may use statistical or other sampling techniques consistent with generally accepted accounting principles in examining returns or records and making assessments."	Code Section 27-65-43, MS Code of 1972, Annotated. No Regulation.	Yes. MO Reg. 12CSR 10-3.568	Yes. Montana Code Annotated 15-30-145.
<i>Written sampling agreements?</i>	No	No	Yes. Sample agreements are generally binding on both parties.	No
<i>Informational brochures or publications?</i>	No. We provide custom explanations to accounts that are sampled.	No	No	No
<i>Sampling techniques</i>	Stratified random; Simple random; Time periods	Stratified random	Stratified random; Simple random; Systematic; Block/cluster; Time periods	Systematic; Time periods
<i>Minimum, maximum or average number of strata?</i>	Yes. Our current sampling program was developed 20 years ago. We are in the process of replacing this software. The maximum number of strata used is 25, which also was an average number. This may be reduced in the future.	The number of strata is determined by the size of the population. An average of six strata would be expected.	No	Yes. Stratify using income ranges.
<i>Calculation of sample sizes</i>	Formula	The sample size is determined upon analysis of the stratified population.	Formula (simple random samples); For stratified random sample we use a minimum sample size of 1000 items (4 @ 250, 5 @ 200).	Based on sample population and FTE available.
<i>Minimum errors to project?</i>	Yes	No	No	No

## Sampling for Sales and Use Tax Compliance

	<b>MINNESOTA</b>	<b>MISSISSIPPI</b>	<b>MISSOURI</b>	<b>MONTANA</b>
<i>Projection techniques</i>	Percentage of error; Ratio estimator; Mean estimator	Percentage of error	Percentage of error (block); Average dollar per unit (simple random); End/mean projection (simple random); Ratio estimator; Difference estimator; Mean estimator; Regression estimator (4 estimators are used in stratified random samples).	Percentage of error; Average dollar per unit
<i>Compute precision or confidence level?</i>	Yes. 95% confidence - two side	No	Yes, for stratified random samples; used for quality control - we look at 75%-80%-90% two-sided.	No
<i>Use adjustment different from point estimate?</i>	No	No	No. Use mid-point.	No
<i>Range of precision for typical audit</i>	Records are not kept.	It is our intention to review greater than 60% of the dollar value of the population while viewing less than 10% of the population detail. While no specific confidence level is computed, we believe this plan meets our objective for a reasonable review of records.	Would prefer to have 10% or less; if over 25% we would review the sample plan and possibly expand the sample.	Varies, depending on project.
<i>Steps taken when results do not fall within expected precision or confidence?</i>	Project anyway.	Because no confidence level is computed, the auditor is expected to review the results to determine reasonableness compared to the total population under examination. If an unreasonable result is calculated, management review would be invoked to assist in the review and conclusion.	Expand the sample; Project anyway; Review sample plan to see if population was correctly defined.	Stop the audit.

	<b>MINNESOTA</b>	<b>MISSISSIPPI</b>	<b>MISSOURI</b>	<b>MONTANA</b>
<i>Software package(s) for selection and/or evaluation of samples</i>	ACL (just starting to use). We use a mainframe program that was designed for us by an accounting firm. This program was used to read and analyze taxpayer data, stratify, calculate sample size, and select the sample. When the audit was completed, the sample results were reviewed and projected using the software. This software is now obsolete and we are in the process of switching to ACL.	ACL; Monarch; IDEA	ACL; Rat-Stats for simple random samples; IRS estimators for stratified random samples.	SAS; Mainframe applications
<i>High dollar, non-recurring transactions?</i>	For stratified random sample, the high dollar transactions are looked at 100%. Capital assets are also generally looked at 100%. For statistical stratified random sampling program, all items selected remain as part of the sample. For nonstatistical samples these items are reviewed by the specialist and may be removed from the sample and reviewed 100%.	These transactions are removed, assuming they are determined to be extraordinary for the taxpayer and the audit period.	If it can be demonstrated that it is truly an extraordinary item, it is removed and treated as a one-time only item.	Manually review and make decision based on review.
<i>Missing documentation</i>	In general, we presume that missing transactions are taxable. Other supporting evidence can be evaluated in determining if tax has been paid correctly.	Missing documentation is treated as an error, unless overwhelming evidence exists to indicate the transaction was not taxable.	Absent other supporting evidence, it would be considered taxable.	Depending on missing documentation, may request information from taxpayer.
<i>Sample/projection for overpayments?</i>	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.	Yes	Within Audit - no for tax paid to vendor; case-by-case for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; case-by-case for use tax paid.	Within Audit - N/A for tax paid to vendor; N/A for use tax paid; Taxpayer-initiated claim - N/A for tax paid to vendor; N/A for use tax paid.
<i>Number of samples conducted calendar year 1999</i>	Sales & Use Tax: 750 nonstatistical 30 statistical	Not tracked	Sales & Use Tax: 1750-2000 nonstatistical 15 statistical	Income Tax: 50,000 nonstatistical 800 statistical

## Sampling for Sales and Use Tax Compliance

	<b>NEBRASKA</b>	<b>NEVADA</b>	<b>NEW HAMPSHIRE</b>	<b>NEW JERSEY</b>
<i>Contact</i>	Shaun Sookram 402-471-5751	Bruce Courtney 702-486-2348	Maurice P. Gilbert 603-271-3400	Robert K. Thompson 609-292-5185
<i>Use of sampling or estimation</i>	Yes	Yes	Yes. Very limited use.	Yes
<i>Statutory or regulatory authority</i>	No. Only with consent of the taxpayer.	Yes. Nevada Revised Statutes (NRS) 360.300.1 <sup>©</sup>	No. Agency has discretion to sample.	No. Agency has discretion to sample.
<i>Written sampling agreements?</i>	Yes. Agreements are binding. Exceptions are allowed for unusual items. Agreements are viewed as legally binding.	No	No	No
<i>Informational brochures or publications?</i>	No	No	No	No
<i>Sampling techniques</i>	Stratified random; Block/cluster; Time periods	Time periods	Block/cluster; Time periods	Block/cluster; Time periods
<i>Minimum, maximum or average number of strata?</i>	No	No	No	No
<i>Calculation of sample sizes</i>	Formula	Per Dept. policy, 3 randomly selected months of 36-mo. audit period. Sample can be narrowed or expanded based on business size and number of transactions (auditor discretion important). Assets done on actual basis (full audit).	Usually select 2 or 3 time periods based on their volume of activity.	With cooperation of the taxpayer.
<i>Minimum errors to project?</i>	No	No	No	No
<i>Projection techniques</i>	Percentage of error	Percentage of error	Percentage of error	Percentage of error
<i>Compute precision or confidence level?</i>	Yes. 95% two-sided.	No	No	No
<i>Use adjustment different from point estimate?</i>	No	No	No response.	N/A
<i>Range of precision for typical audit</i>	5%	N/A	No response	N/A

	<b>NEBRASKA</b>	<b>NEVADA</b>	<b>NEW HAMPSHIRE</b>	<b>NEW JERSEY</b>
<i>Steps taken when results do not fall within expected precision or confidence?</i>	Project anyway	N/A	No response	N/A
<i>Software package(s) for selection and/or evaluation of samples</i>	ACL	Excel "Randbetween" function used to select sampled months.	No response	ACL; SAS
<i>High dollar, non-recurring transactions?</i>	Treat as exception and outside of the sample.	Not included with sample. Treated as one-time events.	No response	Will usually examine 100% and will not project them.
<i>Missing documentation</i>	Work with taxpayer to arrive at a reasonable resolution. Presume due if no other evidence available to refute.	Replace sample (period) if pertains to 1 of 3 periods. Expand sample, average available transactions, change to full audit.	No response	Will either tax or substitute another document.
<i>Sample/projection for overpayments?</i>	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - yes for tax paid to vendor; yes for use tax paid.	Within Audit - no for tax paid to vendor; no for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.	No response	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.
<i>Number of samples conducted calendar year 1999</i>	N/A	Sales & Use Tax: 80% of audits conducted incorporated nonstatistical sampling methods.	No response	Sales & Use Tax: 3500 nonstatistical 1 statistical

## Sampling for Sales and Use Tax Compliance

	<i>NEW MEXICO</i>	<i>NEW YORK</i>	<i>NORTH CAROLINA</i>	<i>NORTH DAKOTA</i>
<i>Contact</i>		Kristine Ward 518-457-3026	Thad Cable 704-342-6123 x-266	Blane Braunberger 701-328-3472
<i>Use of sampling or estimation</i>		Yes	Yes	Yes
<i>Statutory or regulatory authority</i>		No. Only with consent of taxpayer. Auditors frequently use sampling techniques to identify underpayments or overpayments of tax in the conduct of sales tax audits. The results of the sampling cannot be extrapolated and assessed without taxpayer consent. This does not prohibit the use of sampling to identify areas that require further audit analysis.	No. Only with consent of the taxpayer.	No. Only with consent of the taxpayer.
<i>Written sampling agreements?</i>		Yes. Agreements are binding on the taxing authority and taxpayer. Either party may withdraw their agreement prior to assessment.	Yes. Agreements are binding in principle. We use a sampling plan that outlines the department's path for sampling.	No
<i>Informational brochures or publications?</i>		Yes. Paper format. Contact: Kristine Ward Sales and Use Tax Audit Bureau Field Audit Management Bldg. 9, Room 332, State Campus Albany, NY 12227 Kristine.Ward@tax.state.ny.us	No	No
<i>Sampling techniques</i>		Stratified random; Block/cluster; Time periods	Stratified random; Time periods	Stratified random; Simple random; Block/cluster
<i>Minimum, maximum or average number of strata?</i>		Yes. Usually 5-9 strata are used.	No	No
<i>Calculation of sample sizes</i>		Total sample size for all strata are set judgmentally. Allocation of the total sample amongst the individual stratum are set by formula using Neyman Allocation Procedures.	Formula	Examine a minimum of 200 sampling units per stratum.
<i>Minimum errors to project?</i>		No	No	No



	<i>NEW MEXICO</i>	<i>NEW YORK</i>	<i>NORTH CAROLINA</i>	<i>NORTH DAKOTA</i>
<i>Projection techniques</i>		Percentage of error (block/cluster and time period samples); Ratio estimator (block/cluster and time period samples); Difference estimator (statistical sampling).	Percentage of error.	Percentage of error; Difference estimator
<i>Compute precision or confidence level?</i>		Yes. 90% two-sided confidence level with a maximum allowed precision of 25%.	Yes. 95% confidence level; 5% error rate; 2% desired precision.	Yes. 90% two sided.
<i>Use adjustment different from point estimate?</i>		No	No	No
<i>Range of precision for typical audit</i>		Typically between 5%-15%.	2% desired precision (stratified random sample).	Goal of 30%.
<i>Steps taken when results do not fall within expected precision or confidence?</i>		Evaluate the results based on the materiality of the tax and expand the sample or determine if an alternative audit methodology is necessary.	Expand the sample.	Expand the sample. We would expand the sample or possibly use the lower limit of the confidence interval.
<i>Software package(s) for selection and/or evaluation of samples</i>		In-house written COBOL programs.	IDEA	ACL; Rat-Stats
<i>High dollar, non-recurring transactions?</i>		High dollar transactions are normally audited in detail.	Items in the last stratum will not be sampled and they will be examined in their entirety.	Transactions would generally fall into a detail stratum.
<i>Missing documentation</i>		The auditor is allowed to use their judgment to either accept another invoice from the same vendor for proper tax treatment or to hold the missing items taxable.	Missing sample items will be taxed at the appropriate rate.	Assess it until documentation is provided.
<i>Sample/projection for overpayments?</i>		Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - yes for tax paid to vendor; yes for use tax paid.	Within Audit - no for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; yes for use tax paid. Taxpayer-initiated refund claim will be worked in conjunction with the department and they will use our stratified random sampling requirements.	Within Audit - no for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - yes for tax paid to vendor (refund claim with vendor); no for use tax paid.

## Sampling for Sales and Use Tax Compliance

	<i><b>NEW MEXICO</b></i>	<i><b>NEW YORK</b></i>	<i><b>NORTH CAROLINA</b></i>	<i><b>NORTH DAKOTA</b></i>
<i>Number of samples conducted calendar year 1999</i>		Sales & Use Tax: 120 statistical	*Fiscal year 1999 (7/1/99-6/30/00) Sales & Use Tax: 77 statistical; nonstatistical unknown Income Tax: Nonstatistical unknown; 0 statistical Scrap Tire: 2 statistical; nonstatistical unknown Franchise: 1 statistical; nonstatistical unknown	Sales & Use Tax: 1 statistical (just started statistical sampling 7/1/99).

	<i>OHIO</i>	<i>OKLAHOMA</i>	<i>OREGON</i>	<i>PENNSYLVANIA</i>
<i>Contact</i>	David W. Boeder 614-466-4810	Dennis Lewis 405-522-4725		Joe Wincovitch 717-783-9910
<i>Use of sampling or estimation</i>	Yes	Yes		Yes
<i>Statutory or regulatory authority</i>	Yes. Sections 5739.13 and 5741.13 of the Ohio Revised Code.	Yes; Sales & Use Tax Rule 710:65-5-2 (OTC may only suggest a sample audit).		Yes. Tax Reform Code of 1971, Article II, Chapter 61, § 8A.1 - 8A.11
<i>Written sampling agreements?</i>	Yes. Agreements are binding.	Yes. Agreements are binding on the Tax Commission.		Yes. Agreements are not binding. Use a form which is signed by both the auditor and taxpayer which explains the testing procedure. The taxpayer, by signing, agrees with procedures but it is not binding.
<i>Informational brochures or publications?</i>	No	No		No
<i>Sampling techniques</i>	Stratified random; Block/cluster; Time periods (we use a particular time period(s) as our block sample).	Block/cluster; Time periods		Stratified random; Block/cluster; Time periods
<i>Minimum, maximum or average number of strata?</i>	Yes; prefer 4 - 6	No		Yes; no more than 5 or 6.
<i>Calculation of sample sizes</i>	No response	Usually monthly activity		Between 200 and 400 items per strata which is based upon results of other audits, and we tend to over-sample to avoid selecting twice - that is, selecting a pre-sample to determine sample size.
<i>Minimum errors to project?</i>	No	No		No
<i>Projection techniques</i>	Percentage of error	Percentage of error; Static dollar amounts applied to months not sampled.		Percentage of error
<i>Compute precision or confidence level?</i>	No	No		Yes. 90% two-sided.
<i>Use adjustment different from point estimate?</i>	No	N/A		No

	<i>OHIO</i>	<i>OKLAHOMA</i>	<i>OREGON</i>	<i>PENNSYLVANIA</i>
<i>Range of precision for typical audit</i>	Do not calculate. Would like + or - 5%	N/A		Our average precision is $\pm 24.5\%$ M.O.E. at 90% C.I. (as calculated from a recent block of 52 populations on which statistical sampling was employed).
<i>Steps taken when results do not fall within expected precision or confidence?</i>	Expand the sample	N/A		The taxpayer may request additional transactions to be included in the sample.
<i>Software package(s) for selection and/or evaluation of samples</i>	SAS; Rat-Stats	N/A		ACL
<i>High dollar, non-recurring transactions?</i>	For block samples it would be excluded from the sample base and the projection and handled separately after confirming transaction was a unique occurrence. It would not be our intention to exclude it from a statistical sample. Probably if high dollar would be in 100% review category (strata) anyway.	Remove from projection. Treat as single line item.		In block sampling, items $\pm 2\%$ of population are not projected. In statistical sampling, especially with stratification, the 2% threshold is not exceeded on individual transactions.
<i>Missing documentation</i>	Try to find other transactions involving same company; or pursue copies from supplier or customer; or evaluate account to which it is charged as to its taxability; or assume it is taxable (an error).	Allow taxpayer to obtain, if possible. If not obtained, include in projection.		No set procedure; the auditor may either decide to assume the item to be taxable or ascertain evidence of taxability from other sources such as similar transactions.

	<i><b>OHIO</b></i>	<i><b>OKLAHOMA</b></i>	<i><b>OREGON</b></i>	<i><b>PENNSYLVANIA</b></i>
<i>Sample/projection for overpayments?</i>	Within Audit - no for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid unless same period as completed audit that was assessed, company reported on percentage basis, or came to us first before drawing sample and got approval.	Within Audit - no for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - yes for tax paid to vendor; yes for use tax paid.		Within Audit - no for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid. Subject to 3-year statute of limitations.
<i>Number of samples conducted calendar year 1999</i>	Sales & Use Tax: 1120 nonstatistical (estimated using 75% of audits conducted in fiscal year 2000 (7/1/99 - 6/30/00)). 2 statistical	Sales & Use Tax: 43 nonstatistical		Sales & Use Tax: Nonstatistical not tracked; System to track statistical will be implemented sometime in 2001.

## Sampling for Sales and Use Tax Compliance

	<i><b>RHODE ISLAND</b></i>	<i><b>SOUTH CAROLINA</b></i>	<i><b>SOUTH DAKOTA</b></i>	<i><b>TENNESSEE</b></i>
<i>Contact</i>	John Nugent 401-222-6250	David Mays 803-898-5681	Bruce Christensen 605-773-3311	Rosie McClurkan 615-741-9288
<i>Use of sampling or estimation</i>	Yes	Yes	Yes	Yes
<i>Statutory or regulatory authority</i>	No. Only with consent of the taxpayer.	Yes. 12-54-100	Yes. SDCL § 10-59-35 Written requirements for audit - List of taxable items. Source: SL 1994, ch 105. 64:06:01:35.04. Sample periods for audits. Source: 15 SDR 58, effective Oct.19, 1988; 19 SDR 42, effective Sept. 29, 1992; 20 SDR 103, effective Jan. 10, 1994; 21 SDR 219, effective July 1, 1995; 27 SDR 9, effective Aug. 7, 2000. General Authority: SDCL 10-45-47.1(5), 10-47B-2, 10-59-38, 49-31-51.1(4). Law Implemented: SDCL 10-45-45, 10-47B-2, 10-59-5, 49-31-51.1(4).	No. Only with consent of the taxpayer.
<i>Written sampling agreements?</i>	Yes	Yes. Agreements are not binding. Notification of sampling procedures provided and signed by taxpayer to document understanding of sampling plan.	Yes. Agreements are not binding on either party. The actual requirements are to explain the sample methods used and supply written notification to the taxpayer of the items to be sampled.	Yes. Agreements are binding.
<i>Informational brochures or publications?</i>	No	Yes. Paper format. Computer Assisted Audit System brochure.	No	Yes. Paper format. Contact: Rosie McClurkan rmccurkan@mail.state.tn.us
<i>Sampling techniques</i>	Block/cluster; Time periods	Stratified random; Block/cluster; Time periods	Simple random; Systematic; Block/cluster; Time periods	Stratified random; Block/cluster; Time periods
<i>Minimum, maximum or average number of strata?</i>	No	No	No	No

	<i>RHODE ISLAND</i>	<i>SOUTH CAROLINA</i>	<i>SOUTH DAKOTA</i>	<i>TENNESSEE</i>
<i>Calculation of sample sizes</i>	Auditor discretion with taxpayer agreement.	Formula	Formula; Transaction & cluster samples are set by formula but time periods are set by policy. It is recommended that 30 days, 4 months, or 15 weeks be used for time period audits. There is some auditor discretion allowed based upon the circumstances of the audit.	Formula; using TSEP software.
<i>Minimum errors to project?</i>	N/A	No	No	No
<i>Projection techniques</i>	Percentage of error.	Percentage of error; Average dollar per unit; End/mean projection; Difference estimator; Mean estimator	Ratio estimator; Difference estimator	Percentage of error (nonstatistical samples); Difference estimator (statistical samples).
<i>Compute precision or confidence level?</i>	No	Yes. 95% two-sided.	No	Yes. 75% one-sided for statistical samples.
<i>Use adjustment different from point estimate?</i>	N/A	No	No	Yes. 75% LCL for assessments in statistical samples; 75% UCL for credits in statistical samples.
<i>Range of precision for typical audit</i>	N/A	Between 5% and 20%.	N/A	Not available.
<i>Steps taken when results do not fall within expected precision or confidence?</i>	N/A	Expand the sample; Project anyway; Materiality of expanding sample is discussed with auditor and taxpayer.	No response	Project at 75% confidence level.
<i>Software package(s) for selection and/or evaluation of samples</i>	N/A	ACL	Random number generator obtained from the state of Texas.	ACL; TSEP (free software)

## Sampling for Sales and Use Tax Compliance

	<i>RHODE ISLAND</i>	<i>SOUTH CAROLINA</i>	<i>SOUTH DAKOTA</i>	<i>TENNESSEE</i>
<i>High dollar, non-recurring transactions?</i>	Remove from sample - bill separately.	Detail review (with no projection) when performing stratified samples. Included in projection base for block or time period samples.	Based upon the facts of the audit, the auditor has the discretion to either leave the item in the sample or choose to remove it from the errors, remove it from the sample, and remove it and all like transactions from the population and tax them separately.	In statistical samples, 100% of high dollar items are examined. Procedures for nonstatistical samples are not defined.
<i>Missing documentation</i>	Included in sample.	Tax determination made based on information available.	Based upon the audit situation, the auditor is allowed to use his or her discretion. A single missing invoice or resale certificate generally becomes an error where entire blocks of records (6 months due to flooding) generally result in reselection of those items in the sample.	Request missing document from supplier. If all attempts to find the document fail, the item will be held taxable.
<i>Sample/projection for overpayments?</i>	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.	Within Audit - no for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid. The purchaser must request any overpayment of sales taxes directly from the vendor.	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - yes for tax paid to vendor; yes for use tax paid. For tax paid to vendor - up to amount of the assessment.
<i>Number of samples conducted calendar year 1999</i>	Sales & Use Tax: 350 nonstatistical	Sales & Use Tax: 6 statistical; nonstatistical not tracked	Sales & Use Tax: 200 nonstatistical	Sales & Use Tax: 1,000 nonstatistical; 54 statistical Other Taxes: 500 nonstatistical



	<b>TEXAS</b>	<b>UTAH</b>	<b>VERMONT</b>	<b>VIRGINIA</b>
<i>Contact</i>	David Rock 512-475-0248	Andy Coffman 801-297-4742	Marshall M. Wheelock 802-257-0486	Jim Mason 804-367-0954      Richard Dotson 804-786-2126
<i>Use of sampling or estimation</i>	Yes	Yes	Yes	Yes
<i>Statutory or regulatory authority</i>	Yes. Vernon's 111.0042	No. Only with consent of the taxpayer.	No. Agency has discretion to sample.	No
<i>Written sampling agreements?</i>	No. Written notification to the taxpayer must be provided. The statute does not require agreement by the taxpayer. This notification is binding.	Yes. Neither party is bound by signing a sample projection form. Modifications to the sample can be made after initial sample completion.	Yes. The agreement is not binding as either party may seek to adjust findings.	No
<i>Informational brochures or publications?</i>	Yes. Electronic and paper format. Contact: David Rock 512-475-0248 Fax 512-475-0349	No	No	No
<i>Sampling techniques</i>	Stratified random; Simple random; Systematic; Block/cluster; Time periods	Simple random; Systematic; Block/cluster; Time periods	Simple Random; Block/Cluster; Time Periods	Block; Stratified; Systematic
<i>Minimum, maximum or average number of strata?</i>	Yes. Recommend a minimum of 3 strata and a maximum of 12 strata per group.	No	No	Yes
<i>Calculation of sample sizes</i>	Specified minimum number of sample units varies depending on the sampling technique utilized.	Formula; Also, set minimums for each sampling unit (i.e., 30-day minimum for a day sample).	Other: judgment call by examiner and supervisor.	Varies on stratification.
<i>Minimum errors to project?</i>	Yes	No	No	No
<i>Projection techniques</i>	Percentage of error; Average dollar per unit	Percentage of error; Ratio estimator	Percentage of error; Average dollar per unit	Percentage of error
<i>Compute precision or confidence level?</i>	No	No	No	No
<i>Use adjustment different from point estimate?</i>	No	No	No	No
<i>Range of precision for typical audit</i>	Varies depending on the sampling technique used.	Precision is not measured.	N/A	Not measured

## Sampling for Sales and Use Tax Compliance

	<i>TEXAS</i>	<i>UTAH</i>	<i>VERMONT</i>	<i>VIRGINIA</i>
<i>Steps taken when results do not fall within expected precision or confidence?</i>	N/A Not computed.	Since confidence and precision are not measured, projection is made regardless of these factors.	N/A	N/A
<i>Software package(s) for selection and/or evaluation of samples</i>	Internally developed software package. Incorporates some of the above.	Rat-Stats for sample selection.	None	IDEA 2002
<i>High dollar, non-recurring transactions?</i>	These items are detailed.	Treated as extraordinary items. They are removed from the sample projection and assessed separately.	Removed from sample and assessed separately.	Outside of sample
<i>Missing documentation</i>	Considered errors until located. Alternative evidence is allowed.	Treat as taxable error.	Treated as taxable subject to evidence to the contrary.	Treated as taxable
<i>Sample/projection for overpayments?</i>	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - yes for tax paid to vendor; yes for use tax paid. Independent samples created by taxpayers must comply with Comptroller-approved procedures. Samples used must be approved by Comptroller personnel.	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - yes for tax paid to vendor; yes for use tax paid. No limitations.	Within Audit - no for tax paid to vendor; no for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid.	Within Audit or Refund Request
<i>Number of samples conducted calendar year 1999</i>	Sales & Use Tax: 10,000 nonstatistical Other: 2000 nonstatistical	Sales & Use Tax: 560 nonstatistical (of 700) Motor Carrier: 86 nonstatistical (of 700) Oil & Gas: 50 nonstatistical (of 50) Motor Fuel: 56 nonstatistical (of 75) Corp. Income: 34 nonstatistical (of 34) Statistical sampling is not performed by the agency.	Records not kept of sampling usage.	Unknown

	<i>WASHINGTON</i>	<i>WEST VIRGINIA</i>	<i>WISCONSIN</i>	<i>WYOMING</i>
<i>Contact</i>	Scott Elliott 509-482-3838	Alice Hall 304-558-8523	Anthony L. Kliemann 414-227-4518	Rick Scheer 307-777-5209
<i>Use of sampling or estimation</i>	Yes	Yes	Yes	Yes
<i>Statutory or regulatory authority</i>	No. Agency has discretion to sample.	Yes. 110 C. S. R. 15, Section 14.6	Yes. Sec 77.59(2) Wis. Statutes.	Yes. Department rules and regulations.
<i>Written sampling agreements?</i>	Yes. Agreements are binding.	No	No	No
<i>Informational brochures or publications?</i>	No. Plan to have in the future.	No	Yes. Electronic format. Contact: Anthony L. Kliemann 414-227-4518 or <a href="mailto:aklieman@dor.state.wi.us">aklieman@dor.state.wi.us</a> or <a href="http://www.dor.state.wi.us/html/taxpubs.html">http://www.dor.state.wi.us/html/taxpubs.html</a>	No
<i>Sampling techniques</i>	Stratified random; Simple random; Systematic; Block/cluster; Time periods	Stratified random; Time periods	Stratified random; Time periods; Alphabetically based sample based on customer or vendor name.	Stratified random; Simple random; Systematic; Block/cluster; Time periods
<i>Minimum, maximum or average number of strata?</i>	Yes. Electronic audits: 3-6 strata plus detail.	No	No	No
<i>Calculation of sample sizes</i>	Manual audit: size computed to get 250 items of interest in the sample. Electronic audit: size based on anticipated error rate.	Use internet sites such as <a href="http://www.ncs.com/ncscorp/research/calc.htm">www.ncs.com/ncscorp/research/calc.htm</a>	Experience based on attempt to balance several factors.	No response
<i>Minimum errors to project?</i>	Yes	No	No	No
<i>Projection techniques</i>	Ratio estimator; Difference estimator; Mean estimator; Regression estimator	Percentage of error	Average dollar per unit	Percentage of error; Average dollar per unit

	<b>WASHINGTON</b>	<b>WEST VIRGINIA</b>	<b>WISCONSIN</b>	<b>WYOMING</b>
<i>Compute precision or confidence level?</i>	Yes. Electronic audit: 80% one-tailed	No. At the internet site referred to above, we use 95% confidence level and a confidence interval of 5%.	Yes. Prefer precision of <10 precision at 90% two-sided confidence level; accept <20% precision. If precision is greater than 20% we discuss a possible expansion of sample size with taxpayer as way to reduce precision. We may or may not increase the sample size based on negotiations with the taxpayer.	No
<i>Use adjustment different from point estimate?</i>	Lower bound - Debits Upper bound - Credits	No	No; use midpoint as the point estimate.	No
<i>Range of precision for typical audit</i>	30% or better.	See above.	Average precision is less than 10% at 90% confidence, with only a few exceptional cases exceeding 20%.	No response
<i>Steps taken when results do not fall within expected precision or confidence?</i>	Project anyway. Lower bound - state takes the risk and will project anyway.	N/A	Expand the sample; Both sides agree (with knowledge of the precision computations) to accept the results anyway.	Expand the sample
<i>Software package(s) for selection and/or evaluation of samples</i>	ACL; IRS; Rat-Stats; Excel	ACL	Home-grown COBOL programs.	Rat-Stat
<i>High dollar, non-recurring transactions?</i>	High dollar items put in detail stratum before sampling. Strata that are then sampled are not adjusted for high dollar items.	Sometimes isolate and remove from sample.	In statistical sample, stratification puts all high dollar items into a stratum that is reviewed 100%. In nonstatistical samples, the nature of the error is taken into account along with other relevant facts to determine a resolution that is fair to both the taxpayer and the state.	Make these transactions "stand-alone" and do not project them.

	<b>WASHINGTON</b>	<b>WEST VIRGINIA</b>	<b>WISCONSIN</b>	<b>WYOMING</b>
<i>Missing documentation</i>	Obtain copy from customer/vendor. Review other documentation—other invoices, accrual reports, contracts, etc. 100% taxable when no documentation exists.	Determination is made after consideration of other factors in the audit.	Initially they are presumed taxable and presumed that no tax was paid. The taxpayer can convince the auditor that such a presumption is probably wrong based on other evidence available. The auditor has a great deal of discretion in this area, if a claim is made based on facts. The taxpayer always has the option of obtaining a copy of the invoice from the vendor, which would then settle the issue.	Have to sample what information is there and project the result based on "best information available" (BIA). Missing documents counted as an error.
<i>Sample/projection for overpayments?</i>	Within Audit - yes for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - yes for tax paid to vendor; yes for use tax paid. Sampling design must be agreed to by state. Sample items must be available for review. Verify results.	Within Audit - sometimes for tax paid to vendor; sometimes for use tax paid; Taxpayer-initiated claim - sometimes for tax paid to vendor; sometimes for use tax paid.	Within Audit - yes for tax paid to vendor; yes for use tax paid. We apply the same procedures for overpayments that we do for underpayments.	Within Audit - no for tax paid to vendor; yes for use tax paid; Taxpayer-initiated claim - no for tax paid to vendor; no for use tax paid. If they accrue their own taxes in error we can give them credit.
<i>Number of samples conducted calendar year 1999</i>	Sales & Use Tax: 1500 nonstatistical; 6 statistical	Sales & Use Tax: 700 nonstatistical 1 statistical (partly statistical as described in above).	Sales & Use Tax: 1000 nonstatistical 60 statistical Income Tax: Few nonstatistical 0 statistical	Sales & Use Tax: 211 nonstatistical IFTA/IRP: 66 nonstatistical Fuel Tax: 22 nonstatistical

	<b><i>New York City</i></b>
<i>Contact</i>	Jeffrey Talan 718-403-3659
<i>Use of sampling or estimation</i>	NYC does not currently use sampling or other estimation methods; nor does NYC intend to do so in the future.
<i>Statutory or regulatory authority</i>	No; only with the consent of the taxpayer.
<i>Written sampling agreements?</i>	Yes. Sampling agreements would be required and would be binding.
<i>Informational brochures or publications?</i>	Yes. Contact: Jeffrey Talan 345 Adams St. 7 <sup>th</sup> Fl Brooklyn NY, 11201 talanj@doflan.ci.nyc.ny.us
<i>Sampling techniques</i>	Stratified random
<i>Minimum, maximum or average number of strata?</i>	No
<i>Calculation of sample sizes</i>	Formula
<i>Minimum errors to project?</i>	No
<i>Projection techniques</i>	Percentage of error
<i>Compute precision or confidence level?</i>	Yes. 90%, two-tailed.
<i>Use adjustment different from point estimate?</i>	No response
<i>Range of precision for typical audit</i>	Although we have methodology in place, we do not use it.
<i>Steps taken when results do not fall within expected precision or confidence?</i>	No response.

	<i>New York City</i>
<i>Software package(s) for selection and/or evaluation of samples</i>	No response.
<i>High dollar, non-recurring transactions?</i>	No response.
<i>Missing documentation</i>	No response.
<i>Sample/projection for overpayments?</i>	Don't use.
<i>Number of samples conducted calendar year 1999</i>	None





## **Appendix B**

### **Persons Contributing to This Report**

Stanley R. Arnold  
New Hampshire Department of Revenue Administration (retired)

Norman W. Ayers  
New York State Department of Taxation & Finance

Dawn Baldwin  
Michigan Department of Treasury (independent consultant now)

Barbara Barton  
Electronic Data Systems

Andy Blumbergs  
New York State Department of Taxation & Finance

David Boeder  
Ohio Department of Taxation (retired)

Julie Bragg  
International Paper Company

Barbara Britt  
Deloitte & Touche

Forrest Bush  
Washington Department of Revenue

Vic Carpenter  
Michigan Department of Treasury (retired)

Barbara Connolly  
The ServiceMaster Company

Harley T. Duncan  
Federation of Tax Administrators

Joe Evans  
Missouri Department of Revenue

Don Graham  
Alabama Department of Revenue

Paul Greenfield  
Connecticut Department of Revenue Services

Judith Gries  
Chartwell Advisory Group

Dan Hall  
Illinois Department of Revenue

Harold Jennings  
Multistate Tax Commission

Beth Ann Kendzierski  
Apria Healthcare, Inc.

Stephen Kranz  
Council on State Taxation

Doug Lindholm  
Council On State Taxation

David Mays  
South Carolina Department of Revenue

William McArthur  
United Technologies Corp.

Christopher Mucke  
Ford Motor Company

Edwin P. Nacci  
General Motors Corporation

Stephen P. Olivier  
ChevronTexaco Corporation

Dorothy Pearson  
Dynegey

Kelly Reilly  
California State Board of Equalization

Jeffrey M. Rhines  
Grant Thornton, LLP

Sandra Robertson  
Georgia-Pacific Corporation

Stephanie Rosenbusch  
Federation of Tax Administrators

Robert Schauer  
Washington Department of Revenue

Rick Scheer  
Wyoming Department of Audit

Robert Shickora  
New Jersey Division of Taxation

Barbara A. Timek  
AT&T

Steve Veilleux  
Connecticut Department of Revenue Services

Kristine Ward  
New York State Department of Taxation & Finance

Will Yancey  
Independent Consultant

Diane Yetter  
Yetter Consulting Services, Inc.



## **Appendix C**

### **Summary of Other Task Force Reports**

***Model Recordkeeping and Retention Regulation*** is intended to govern taxpayer retention of books and records, particularly electronically generated and retained records, for tax administration purposes. To date, *Alabama, Arizona, Arkansas, California State Board of Equalization, Connecticut, Florida, Georgia, Illinois, Iowa, Maryland, Michigan, New Hampshire, New Jersey, New Mexico, City of New York, North Dakota, South Carolina* and *Utah* have adopted the model regulation in whole or in part.

***Auditing Electronic Data*** provides an overview of the basic framework of the tax audit and examines various issues related to auditing in an electronic environment.

***Procurement Cards and Tax Compliance: Bridging the Gap*** discusses use tax compliance issues associated with corporate procurement cards and examines alternative methods of achieving the appropriate compliance.

***Evaluated Receipts Settlement (ERS) and Tax Compliance*** focuses on understanding the ERS process and identifying potential solutions that would be helpful in addressing the audit and recordkeeping issues created by the use of ERS.

***Model Direct Pay Permit Regulation*** examines the issues involved in the use of “direct pay” permits, a procedure through which certain purchasers are allowed to pay use tax on their purchases directly to the state tax administration agency, rather than to a retailer. The report also contains a model regulation to govern direct pay authority and a survey of state practices in this area.

***Sales and Use Tax Compliance Agreements (SUTCAs)*** are agreements between taxing agencies and taxpayers that specify an agreed-upon method for calculating and remitting tax on specified purchases, and which identify alternative reporting methodologies, best practices, and recommendations for taxpayers and tax agencies to follow when entering into these agreements. This report includes a summary of state practices with respect to sales and use tax compliance agreements.

Editor’s Note: All reports are available from the Federation of Tax Administrators’ Web site: <http://www.taxadmin.org/>