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Achievement Gaps in the Wake of COVID-19

Drew H. Bailey
University of California, Irvine

Greg J. Duncan
University of California, Irvine

Richard J. Murnane
Harvard University

Natalie Au Yeung
Harvard University

A survey targeting education researchers conducted in November, 2020 provides predictions of how much achievement gaps between low- and high-income students in U.S elementary schools will change as a result of COVID-related disruptions to in-class instruction and family life. Respondents were asked to suppose that the pre-COVID achievement gap was 1.00 standard deviations. The median forecast for the jump in math achievement in elementary school by spring, 2021 was very large – a change from 1.00 to 1.30 standard deviations. The predicted increase in reading achievement gaps (a change from 1.00 to 1.25 standard deviations) was nearly as large. This implies that many teachers will face classrooms of students with much more heterogeneous learning needs in the fall of the 2021-22 school year than usual. We gauged predictions for the success of efforts by teachers and other educators to make up for lost ground by asking for predictions of achievement gaps in the spring of 2022. Few of the respondents to our survey thought that achievement gaps would revert to their pre-COVID levels. In fact, median predictions of achievement gaps fell very modestly– from 1.30 to 1.25 standard deviations for math and from 1.25 to 1.20 standard deviations for reading. We discuss some implications of these predictions for school district strategies (e.g., tutoring and other skill- building programs focused on individual students) to reduce learning gaps exacerbated by the pandemic.

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SUMMARY

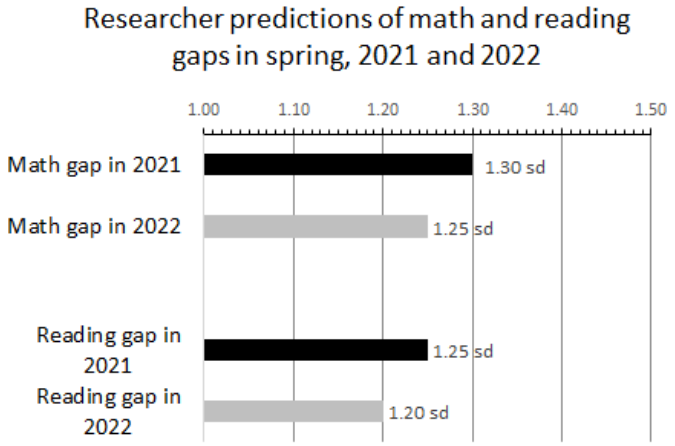
Achievement Gaps in the Wake of COVID-19

Drew Bailey, Greg J. Duncan, Richard J. Murnane, and Natalie Au Yeung

Executive Summary

This report summarizes results from a survey we conducted targeting education researchers with more than 200 respondents in late November, 2020. We asked them to predict how much the already large achievement gaps between low- and high-income students in U.S elementary schools would change as a result of COVID-related disruptions to in-class instruction. Growing evidence on differences between students in high- and low-income families in the ability to access and profit from online instruction suggests that achievement gaps may increase substantially.

We asked respondents to our survey to assume that the pre-COVID achievement gap was 1.0 standard deviations – an amount consistent with evidence comparing the test scores of children with family incomes in the top and bottom quintiles of the family income distribution. We then asked them to predict how large achievement gaps would be in the spring of 2021 and the spring of 2022. Their predictions for 2021 tell us how they expect the pandemic to affect achievement gaps in the short term, while a comparison of their predictions for 2021 and 2022 shows the extent to which they believe that the gap increases will persist. b



The results of our survey should alarm anyone who is concerned about children's school achievement gaps. The overwhelming majority of respondents predicted increases in income-based achievement gaps. The median forecast for the increase in the gap in math achievement in elementary school was a change from 1.00 to 1.30 standard deviations – a change that is similar in magnitude to half the amount of math learning that typically occurs across the entire third grade year. The forecast regarding the gap in reading achievement was only a bit smaller – a jump from 1.00 to 1.25 standard deviations.

As long as the risk of COVID-19 infection remains high, school districts have limited options for promoting in-class instruction and other methods of addressing growing achievement gaps. So it is prudent to begin to devise strategies for addressing the learning needs of children when in-class instruction can resume on a large scale – one hopes in the fall of 2021. If the median forecasts of the education researchers who responded to our survey are accurate, many

teachers will be facing the challenge of teaching students whose learning needs are much more heterogeneous than prior to the pandemic.

As teachers and other educators seek to make up for lost ground, how successful will they be? One measure of success is the extent to which achievement gaps in the spring of 2022 revert to their pre-COVID levels – assumed, in our survey, to be 1.00 standard deviations. Few of the respondents made this prediction. In fact, median predictions of achievement gaps fell very modestly– from 1.30 to 1.25 standard deviations for math and from 1.25 to 1.20 standard deviations for reading. One-quarter of respondents even predicted that gaps in both math and reading achievement would be larger in the spring of 2022 than in the spring of 2021. We find these forecasts particularly alarming because a persistent increase in achievement gaps between groups of students could well translate into greater inequality in economic success later in life.

Achievement gaps are not immutable, as demonstrated by the 40 percent decline in the size of the Black/White achievement gap over the course of the 1970s and 1980s. Moreover, some tutoring and other skill-building strategies that have focused on individual students or small groups of students have proved successful. Predictions from the education researchers who responded to our survey highlight the urgency of developing effective strategies that can be implemented, post-COVID, to reduce learning gaps exacerbated by the pandemic.

Achievement Gaps in the Wake of COVID-19

Authors: Drew Bailey[*1], Greg J. Duncan[1], Richard J. Murnane[2], and Natalie Au Yeung[1]

Affiliations:
[1] University of California, Irvine
[2] Harvard University

*Correspondence to: Drew Bailey (dhbailey@uci.edu). Data from the survey have been deposited *here*.

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Achievement Gaps in the Wake of COVID-19

Abstract: A survey targeting education researchers conducted in November, 2020 provides predictions of how much achievement gaps between low- and high-income students in U.S elementary schools will change as a result of COVID-related disruptions to in-class instruction and family life. Respondents were asked to suppose that the pre-COVID achievement gap was 1.00 standard deviations. The median forecast for the jump in math achievement in elementary school by spring, 2021 was very large – a change from 1.00 to 1.30 standard deviations. The predicted increase in reading achievement gaps (a change from 1.00 to 1.25 standard deviations) was nearly as large. This implies that many teachers will face classrooms of students with much more heterogeneous learning needs in the fall of the 2021-22 school year than usual. We gauged predictions for the success of efforts by teachers and other educators to make up for lost ground by asking for predictions of achievement gaps in the spring of 2022. Few of the respondents to our survey thought that achievement gaps would revert to their pre-COVID levels. In fact, median predictions of achievement gaps fell very modestly– from 1.30 to 1.25 standard deviations for math and from 1.25 to 1.20 standard deviations for reading. We discuss some implications of these predictions for school district strategies (e.g., tutoring and other skill-building programs focused on individual students) to reduce learning gaps exacerbated by the pandemic.

Achievement Gaps in the Wake of COVID-19

Introduction

The onset of the COVID-19 pandemic in March 2020 created major disruptions in schooling for children in the United States. Public school systems have responded to the crisis in a variety of ways, some suspending in-class instruction in favor of on-line learning, while others have moved to a hybrid model that combines socially distanced in-class instruction with distance learning, and still others have continued to provide in-class instruction with smaller classes and shorter school days to allow for social distancing. There is also significant variation in the timing of responses to the pandemic; in-school instruction ended much sooner in locales such as New York City, where infection rates spiked early, than in parts of the country that experienced later spikes. However, increases in COVID-19 infection rates throughout the country during the fall of 2020 have made it clear to policymakers, parents, and formal educators that COVID-19 disruptions to schooling are widespread, severe, and quite long-lasting.

Few analysts of American education doubt that the pandemic has hindered learning for a great many children. A critical related question is whether the COVID-19 pandemic and school systems' responses are increasing achievement gaps between children from economically advantaged and disadvantaged families. This would be particularly troubling because family-income-based gaps in children's achievement were already large before the pandemic, contributing to gaps in educational attainments and subsequent labor market earnings (Murnane and Levy, 1996; Papay et al., 2020).

There are several reasons why the disruptions caused by the pandemic may increase income-based achievement gaps. First, parents in low-income families are more likely to be "front-line workers" exposed to the COVID-19 virus, and less likely to have access to high-quality health care. Consequently, the pandemic may widen the gap between high- and low-income parents with respect to health and the ability to support their children. Second, low-income families are less likely than more affluent families to have high-quality Internet service and computers in their homes, making it more difficult for their children to access on-line instruction. Third, relative to their more affluent peers, children from low-income families are more likely to attend public schools that lack the resources to support teachers' efforts to provide high-quality online instruction. Fourth, low-income parents are less able to supplement school instruction with private tutoring and other forms of enrichment. Moreover, they are less able to enroll their children in private schools if they conclude that public schools' responses to the pandemic are inadequate.

It is too early to know even the short-run impacts of the COVID-19 pandemic on children's learning gains and on family-income-based gaps in children's achievement. We explore another source of information about these impacts – the forecasts of education researchers. In the current study, we recruited a large sample of education researchers, asking them to make quantitative forecasts of how socioeconomic gaps will change in the short run (from before the pandemic to the spring of 2021) and longer run (from before the pandemic to the spring of 2022).

Why Forecasts?

For several reasons, forecasts by researchers may be useful for enumerating and quantifying the impacts of problems created by the COVID-19 pandemic and alerting policymakers to the nature of need for specific policy responses (for reviews of the usefulness of forecasts for research and practice, see DellaVigna, Pope, & Vivalt, 2019; Tetlock, Mellers, & Scoblic, 2017). First, researcher predictions, especially when averaged, have been shown to provide an accurate forecast of the results of future experimental studies (e.g., DellaVigna & Pope, 2018; Dreber et al., 2015). Thus, if researchers believe socioeconomic gaps in achievement test scores are likely to grow, that information might be useful for encouraging research on how best to address that issue, both during and after the pandemic.

Second, by identifying areas where there is no consensus, forecasting can point to topics requiring further theorizing and research. In the current study, we examine whether education researchers from different disciplines forecast different achievement gaps, whether they predict that the size of the gaps will differ in 2022 and 2021, and whether they believe that the gaps will grow more in math or reading.

Third, forecasting errors can be useful for identifying problems in the researchers' mental models of the factors that affect educational opportunity. Finally, collecting forecasts is an important step for improving future forecasts. In the future, our forecasts and potential moderators of their accuracy can be checked against actual test score data, and this will tell us more about the features of the data that are likely to be most useful when forecasting other educationally relevant outcomes.

Existing Evidence

As of December, 2020, researchers have developed three types of information on the impact of the COVID-19 pandemic on family-income-related gaps in children's achievement. First are predictions based on evidence from previous events that have hindered children's learning, such as weather-related school closures. Kuhfeld et al. (May 2020) forecast substantially lower achievement gains as a result of COVID-related declines in instructional time, with larger relative losses in math than in reading and for lower-achieving students relative to high achievers. Notably, however, these forecasts fail to account for learning gains that may have been facilitated by online instruction between March and June of 2020.

The second type of evidence relates to the responses of schools and parents to the onset of the COVID-19 epidemic. The vast majority of public school systems ended in-class instruction in the spring of 2002, albeit on different dates and for different lengths of time. Most moved to online schooling, providing varying levels of support as teachers sought to provide effective instruction. The evidence to date allows us to draw three conclusions: The amount of online instruction students receive is less than the amount of in-class instruction they were offered pre-COVID-19; the average quality of instruction is lower; and student participation rates are lower, especially among children from low-income families (Rapaport et al., 2020). Barnett and Jung (2020) have shown that these patterns also hold for the education provided to preschool-aged children.

In response to school closings, many parents have searched online for learning resources for their children. According to Bacher-Hicks, Goodman, and Mulhern (2020), online searches for both school-centered and parent-centered learning resources increased dramatically in the

months following the onset of the COVID-19 pandemic. They also show that searches increased much more in relatively affluent than in lower-income areas.

The third and most direct type of evidence is from studies of children's learning losses as a result of COVID-19. Engzell, Frey, and Verhagen (2020) examined learning losses in the Netherlands, where schools were closed for only eight weeks and the infrastructure for remote learning is excellent. They report that because of COVID-19, primary school students lost eight percent of a standard deviation of achievement in school subjects such as math and reading. This is equivalent to losing the academic progress a child is likely to achieve during one-fifth of a year of schooling. They also show that the average child made little progress while learning from home through online instruction. An especially troubling finding was that learning losses were 55 percent larger among students whose parents had relatively low levels of educational attainment than among children with more highly educated parents.

Kuhfeld and her colleagues (Nov. 2020) examined the short-run impact of COVID-19 by comparing the reading and math scores of more than three million elementary school students enrolled in more than 8,000 schools in fall 2020 with those of students enrolled in the same grades of the same schools in fall 2019. They report that average student achievement in reading was similar in fall 2020 to that of comparable children in 2019, but 5 to 10 percentile points lower in math. In a technical appendix to their report, the researchers report that students in grades 3-6 in high-poverty schools achieved lower scores in reading in fall 2020 than in fall 2019, although this was not the case for students in low-poverty schools. Moreover, students showed growth in both reading and math skills between winter 2020 (before COVID-19 struck) and fall 2020, but growth in math was slower than in previous years. Finally, Kuhfeld et al. point out that their estimates of relative learning losses from COVID-19, especially for children from low-income families, are probably underestimates since a disproportionate number of the students from low-income families in their sample did not take the fall 2020 assessments.

Data supplied to Chetty and his colleagues (2020) by Zearn, an online platform for learning mathematics, provides additional insight into the impact of COVID-19 on children's achievement. Zearn Math was being used by approximately 925,000 students in the U.S. in spring 2020, and schools continued to use this online platform as part of their math curriculum after COVID-19 caused a shift to remote learning. Chetty and his colleagues conducted a time-series analysis of the number of accomplishment badges children earned each week on Zearn Math between the beginning of January 2020 and the end of April 2020. They found that the accomplishments of children in high-income areas declined initially when COVID struck, but quickly returned almost to the pre-COVID average. In contrast, the number of accomplishment badges completed by children in lower-income areas fell by 50 percent when the pandemic began and remained at this low level through the end of the school year. While acknowledging that the Zearn Math platform captures only one aspect of education, the research team concluded that the evidence suggests that the pandemic has increased inequality in children's human-capital development.

In summary, to date there is only very limited evidence on even the initial impact of COVID-19 on the learning of American children from different backgrounds. Because it is so important to understand how the pandemic has affected short-term and longer-term family-income-based gaps in student achievement, it seemed useful to survey educational researchers about their forecasts of short- and longer-run impacts.

The survey

Our data are based on 222 responses to a survey that we sent targeting education researchers. Responses were received between November 18 and 27, 2020. Owing to logistical and financial constraints, we opted for a convenience rather than a probability sample. And while we sought to elicit responses from a disciplinarily diverse set of researchers, because of the procedures we used in drawing the sample our results should not be assumed to be representative of potential responses of the population of researchers who work on education issues. Our procedures were registered with the Institutional Review Board at the University of California, Irvine.

After developing and refining our survey with the help of a number of researchers, the first three authors sent links to the survey to current and former colleagues, advisory boards and heads of several professional associations and funders in the field of education research, plus the Twitter feed of a prominent science writer. To accurately describe the sources from which respondents accessed the survey, we generated 15 distinct survey links and tracked the responses associated with each link. Apart from collecting the email addresses of respondents who requested a copy of our results, our survey was anonymous.

The heart of our survey consists of questions asking for predictions of "NAEP-type" achievement gaps in math and reading in spring 2021 and spring 2022 for children attending elementary school (see Appendix 1 for survey question wording). To anchor these predictions, we asked respondents to assume that the actual achievement gaps for math and reading between children in the top and bottom quintiles of the family income distribution just prior to the onset of COVID-19 were 1.00 standard deviations – gaps that correspond roughly to actual achievement gaps in elementary school (Duncan and Magnuson, 2011; Reardon, 2011).

Thus, a response of "1.20 sd" for the 2021 math gap constitutes a prediction that the income-based math gap would grow by .20 sd (i.e., from 1.00 sd to 1.20 sd) between winter 2020 and spring 2021. Third graders typically gain about .52 sd in math achievement and .36 sd in reading achievement over the course of the school year, so a .20 sd prediction amounts to a relative loss of about four months of math learning and six months of reading achievement for low-income students relative to their high-income peers (Hill et al., 2008).

Because transitory achievement gains and losses are much less worrisome than longer-term trends, we also asked respondents to predict the size of the relevant gaps in spring 2022. Comparing the predictions between the springs of 2021 and 2020 provides a measure of the expected degree to which achievement gap increases occasioned by the COVID-19 pandemic will narrow in the subsequent school year.

Lastly, we asked three questions designed to help explain differences in predictions across groups: Respondents were asked about their academic field, whether they had ever taught in a K-12 classroom, and whether they were living with school-aged children. We expected that researchers with K-12 classroom teaching experience and those living with school-aged children would be especially aware of the advantages that higher-income parents are able to provide for their children and thus predict the largest increases in achievement gaps. A summary of participant characteristics appears in Table 1.

As with any survey, our questions represent only one of a number of possible ways to elicit these kinds of gap predictions. Since our ultimate goal is to compare predictions with

observed changes in achievement gaps, we might have tied our questions to specific tests – e.g., 4th grade NAEP scores or scores recorded in state administrative data sets. However, NAEP tests are administered only every other year – and the director of the National Center for Education Statistics recently announced that because of problems created by COVID-19, the planned 2021 administration of NAEP will be postponed for at least a year (Woodworth, 2020). State testing and data-release policies vary across states and time, making it difficult to estimate national changes in average achievement gaps. For these reasons, we opted for conceptual clarity by asking about predicted changes in family-income-related achievement gaps from just prior to the onset of the pandemic to one and two years later.

Our reference to "children attending elementary school" is broad and ignores the large differences in achievement growth rates across the first six school grades (Hill et al., 2008). In using the "elementary school" wording, we sought an average estimate among younger school-age children and avoided the worry that tying it to a particular grade might pick up idiosyncratic aspects of the chosen grade.

Four respondents' forecasts for gaps in 2022 were very low (for reading, .05 or .10), while their forecasts for 2021 were closer to 1.0 (.10 .15, .20, and .60). We inferred from this pattern of responses (implausibly small 2022 forecasts, larger forecasts in 2021, and similarity of forecasts to the distribution of forecasts after adding 1 to them) that these respondents intended to offer forecasts that were 1.0 larger (i.e., that they were forecasting gap *growth*, rather than gaps) and recoded them accordingly. Additionally, five respondents made very large forecasts of between 2 and 4 SD. To limit the influence of these outlying observations on our estimates and descriptive figures, we recoded these responses to 2 SD. We also describe central tendencies with both means and medians, and show the full distribution of responses.

Results

A summary of predictions is presented in the top panel of Table 2. The median forecast for the increase in the math achievement gap from before the pandemic to the spring of 2021 was a change from 1.00 to 1.30 standard deviations – a change that amounts to more than half of the amount of math learning that typically occurs across the entire third grade year (Hill et al., 2008). The prediction for the reading achievement gap was only a bit smaller – a jump from 1.00 to 1.25 standard deviations.

How successful will teachers and other educators be in making up for ground lost during the 2020-21 school year? One possible measure of success is the extent to which achievement gaps in the spring of 2022 revert to their pre-COVID levels – assumed in our survey to be 1.00 standard deviations. Few of the respondents made this prediction. In fact, median predictions of achievement gaps fell very modestly – from 1.30 to 1.25 standard deviations for math and from 1.25 to 1.20 standard deviations for reading. Indeed, one-quarter of respondents even predicted that gaps in both math and reading would be larger in the spring of 2022 than in the spring of 2021.

Full distributions of forecasted SES gaps on math and reading tests are shown in Figure 1 (2021 predictions) and Figure 2 (2022 predictions). Each point corresponds to a survey response, and the cello-shaped figures smooth these points out with kernel density plots. Forecasts range from .80 standard deviations (which represent a decrease in the gap) to 2.0 standard deviations (which represent a doubling of the gap). In all cases, responses are positively skewed. In addition

to the large number of responses between 1.10 and 1.30, responses clustered at round numbers, such as 1.10, 1.20, 1.50, and 2.

Perhaps our most notable finding is the degree of consensus among researchers that gaps will grow between pre-pandemic months and the spring of 2021. Out of 221 respondents with non-missing responses for each of the four forecasts, no more than two respondents per forecast estimated that gaps would decline (i.e., be smaller than 1 SD). No more than seven estimated that a gap in 2021 would be equal to 1, and no more than 18 estimated that a gap in 2022 would revert to its pre-pandemic assumed value of 1.0 standard deviations. All other forecasts were greater than 1 and varied widely.

Figure 3 shows the distributions of *differences* in forecasts between 2021 and 2022. The y-axis is scaled to indicate fade out – i.e., shrinking gaps between the springs of 2021 and 2022. Differences were roughly centered on zero, indicating that, on average, researchers did not expect the pandemic-related increases in achievement gaps to change across the 2021-22 school year. However, more forecast a smaller gap in 2022 than in 2021 (48% of respondents for math and 45% for reading) than predicted a larger gap (30% and 27% of respondents for math and reading) or no change at all (22% and 28% of respondents for math and reading). Thus, researchers showed substantial heterogeneity in their forecasts of the nature of changes in gaps between 2021 and 2022.

We gauged the statistical significance of some of these changes by regressing forecasts on subject and year in a linear mixed-effects model, with observations nested within participants. Forecasts of gap growth were significantly smaller for reading than math (b = -.036, p = .0002), and smaller in 2022 than in 2021 (b = -.021, p = .028), although the sizes of both of these differences were small relative to the median forecasted gap growth values of .20-.30.

Forecasts of means by subgroup are displayed in Figure 4. Estimates were smaller for researchers with training in economics or who selected the "other" response option, with larger estimates for researchers with training in psychology, education, or public policy. Differences by K-12 teaching status and having a school-aged child at home were small.

To test whether forecasts differed by discipline, having been a K-12 teacher, or having school-aged children at home, we added each of these factors, one by one, to the linear mixed-effects model with year and subject as the other regressors. Likelihood ratio tests indicated that forecasts differed significantly by discipline ($\chi2(5) = 13.6$, p = .019), but not by K-12 teaching experience ($\chi2(1) = .5$, p = .50) or having a school-aged child at home ($\chi2(1) = 1.1$, p = .30).

A number of our respondents provided ideas in the "Comment" field of the survey. Some thought that results would differ across elementary school grades and between elementary and secondary grades. Of the 15 respondents who mentioned age as a potential moderator, 10 expected gaps to grow more among younger children, one thought gaps would grow more among older children, and four did not specify a direction of the moderating effect of age. Some respondents speculated that the results would depend on the nature of distance learning, state policies around schooling, or by race/ethnicity, urbanicity and other demographic characteristics. Some indicated that parent involvement would be an important factor in this context. Some participants explained that they expected math gaps to grow more than reading gaps because home activities are more likely to substitute for reading instruction than for math instruction. Some wished that we had asked about changes in socioemotional functioning. We agree with the

thrust of many of these comments but worried that asking more than seven questions would adversely affect our response rates. We welcome similar surveys by other researchers.

Discussion

Educational researchers predict that COVID-19 will markedly increase achievement gaps between children from low-income families and those from higher-income families. Expressed in terms of typical patterns of learning for third graders, the lost ground amounts to falling an extra half-year behind children from more affluent families in both math and reading. Moreover, the researchers doubt that the increased gaps will decline significantly in the course of the 2021-22 school year. If not reversed, these trends will seriously jeopardize the ability of schools to improve the life chances of children growing up in low-income families and further increase the high level of income inequality in the United States.

As long as the risk of COVID-19 infection remains high, school districts have limited options for promoting in-class instruction and other methods of addressing the problem of growing achievement gaps. So it is prudent to begin to devise strategies for meeting the learning needs of children when in-class instruction can resume on a large scale – one hopes in the fall of 2021. If, as predicted by the education researchers who responded to our survey, achievement gaps indeed increase by between one-fifth and one- third in the course of the 2020-2021 school year, many teachers will be facing the challenge of teaching students whose learning needs are much more heterogeneous than prior to the pandemic.

While there are no silver bullets to reverse the increase in income-related achievement gaps, evidence from a variety of sources shows that thoughtful investments will make a difference. Moreover, educators can learn from a growing number of resources about promising investment strategies. For example, Kraft and Falken (2020) provide an evidence-based blueprint for scaling effective tutoring strategies. Guryan et al. (2020) show that a particular mentoring strategy improved attendance and reduced course failures among high-risk students in Chicago middle schools. The U.S. Department of Education's Institute of Education Sciences (IES, 2020) commissioned the country's Regional Education Labs to produce a series of evidence-based resources and guidance about teaching and learning in a remote environment. The IES-funded What Works Clearinghouse (2020) provides a careful review of the evidence from research on the effectiveness of distance learning. Reich and co-authors (2020) summarize guidance from state education agencies about ways to maximize the effectiveness of remote learning strategies. Reimers and Schleicher (2020) and Reimers and colleagues (2020) provide descriptions of strategies other countries have adopted to reverse learning losses resulting from the pandemic.

Of course, it will be important to study the effectiveness of specific strategies that states and school districts implement to reverse pandemic-related increases in achievement gaps. IES has signaled that this will be a priority for the organization (Schneider & Karg 2020). However, enough is known about promising strategies to merit significant investment in reversing the educational consequences of COVID-19, especially for socioeconomically disadvantaged students. While the costs will be significant, the costs of not making these investments could be far larger and long-lasting.

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Table 1.
Descriptive Statistics of Respondent Characteristics

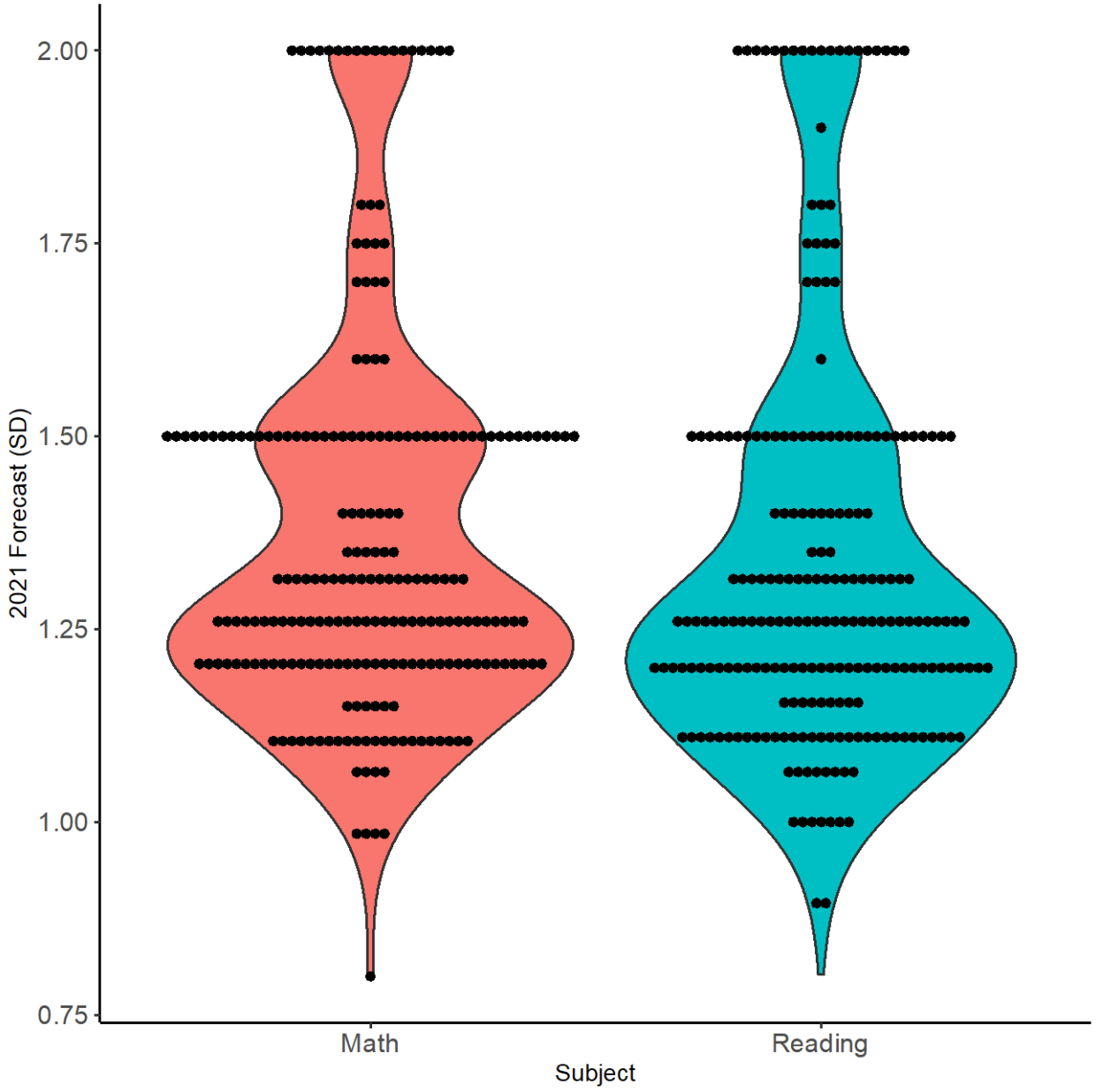
	Percentage (%)
Discipline	
Economics	21.2
Education	46.4
Psychology	9.5
Public Policy	9.0
Sociology	10.8
Others	3.2
Has taught K-12 before	
Yes	44.1
No	55.9
Has children at home	
Yes	47.3
No	52.7
Recruitment source	
AERA Special Interest Groups	16.2
Society for Research on Educational Effectiveness	3.6
Twitter	7.2
Contacted directly by authors	73.0
N	221

Table 2.

Descriptive Statistics of Researcher Predictions of Math and Reading Gaps in Spring 2021 and 2022

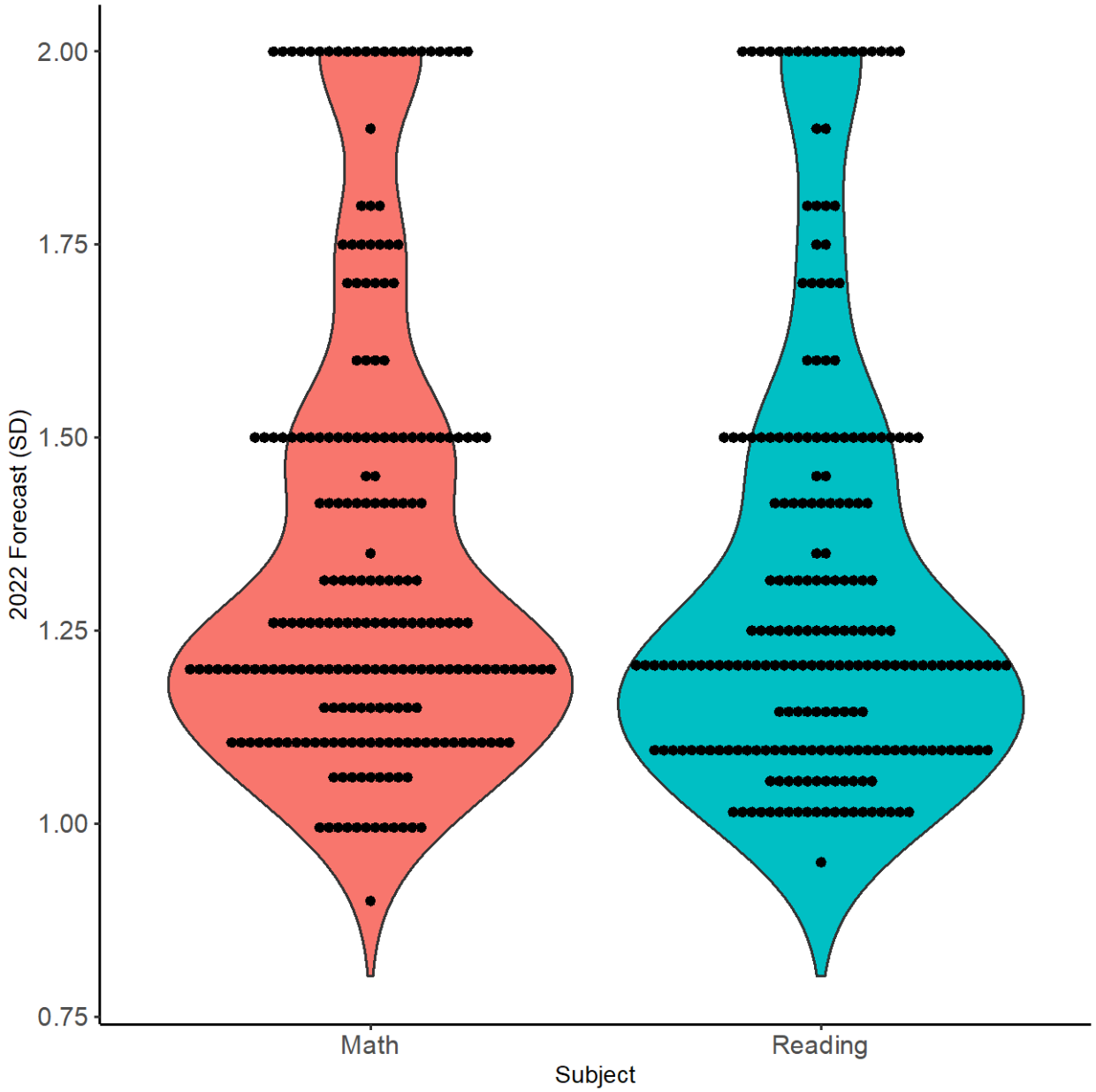
	Mean	SD	Median	Percentage (%)
Predicted math achievement gap in 2021	1.37	0.26	1.30	
Predicted math achievement gap in 2022	1.36	0.29	1.25	
Predicted reading achievement gap in 2021	1.34	0.27	1.25	
Predicted reading achievement gap in 2022	1.31	0.29	1.20	
Comparison between the predicted math and reading gaps in 2021				
Both are equal				47.5
Math gap is predicted to be greater than reading gap				36.2
Math gap is predicted to be smaller than reading gap				16.3
Comparison between the predicted math and reading gaps in 2022				
Both are equal				48.9
Math gap is predicted to be greater than reading gap				35.7
Math gap is predicted to be smaller than reading gap				15.4
Comparison between the predicted math gap in 2021 and 2022				
Both are equal				22.2
Math gap will be larger in 2021				48.0
Math Gap will be larger in 2022				29.9
Comparison between the predicted reading gap in 2021 and 2022				
Both are equal				27.6
Reading gap will be larger in 2021				45.2
Reading gap will be larger in 2022				27.1
N	221			

Figure 1: Distributions of 2021 Forecasts



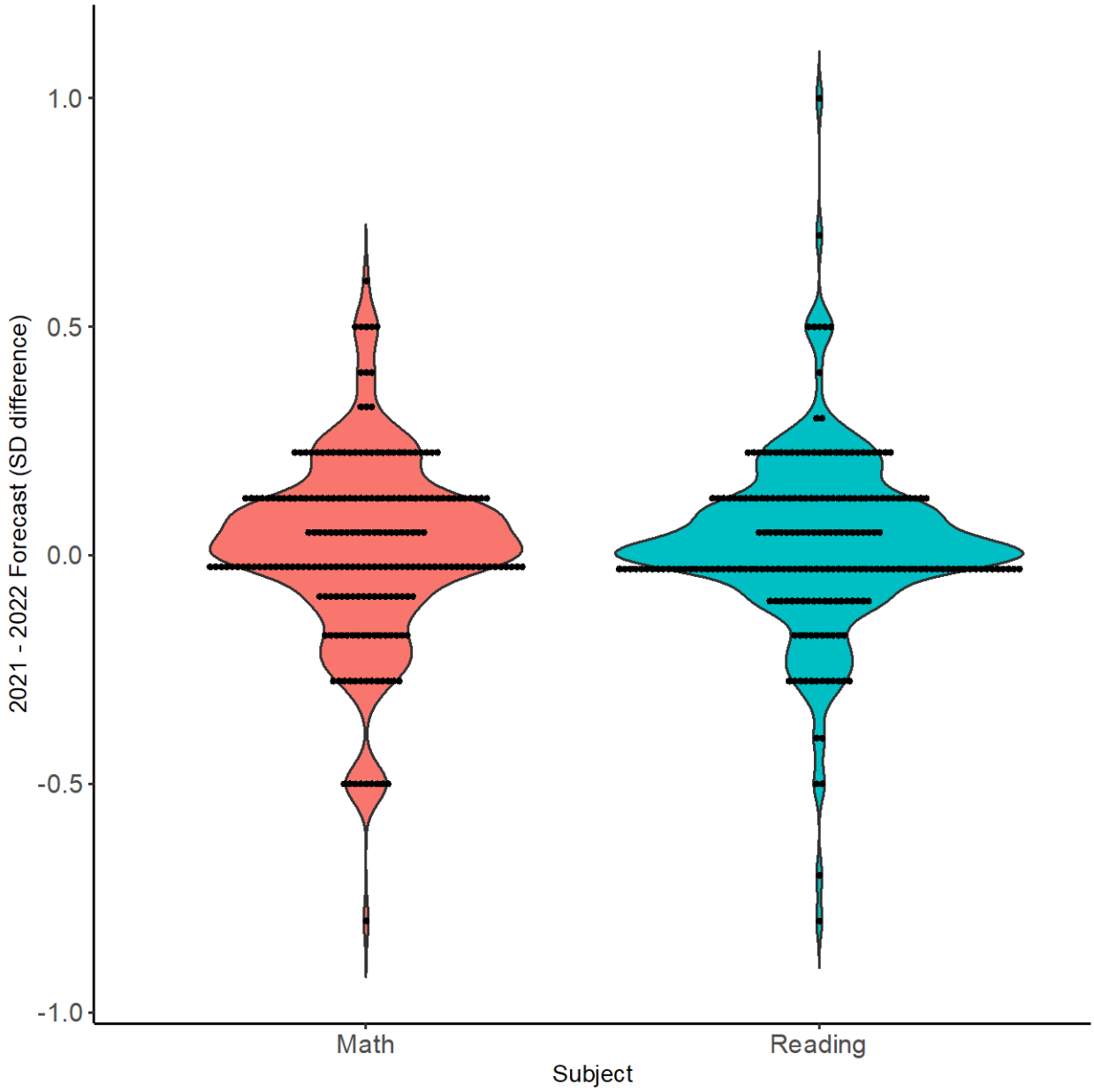
Source: Authors' survey of education researchers conducted in November, 2020

Figure 2: Distributions of 2022 Forecasts



Source: Authors' survey of education researchers conducted in November, 2020

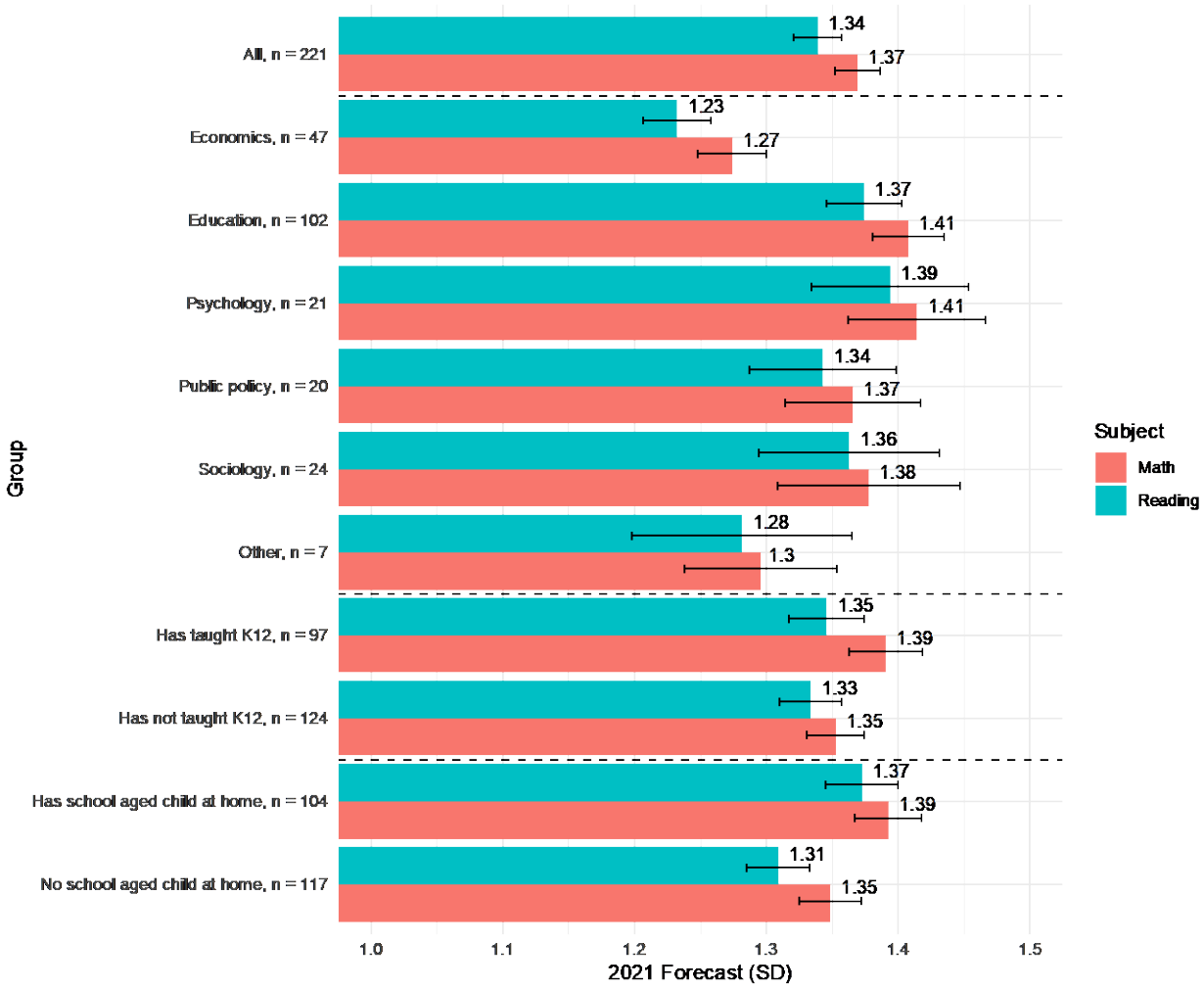
Figure 3: Distributions of Fadeout Forecasts



Source: Authors' survey of education researchers conducted in November, 2020.

Note: The figure shows the distributions of differences in forecasts between 2021 and 2022. The y-axis is scaled to indicate fade out – i.e., shrinking gaps between the springs of 2021 and 2022.

Figure 4: Estimated 2021 Gaps by Respondent Subgroup



Source: Authors' survey of education researchers conducted in November, 2020.

Appendix 1: Qualtrics Survey

Predictions About COVID-related Achievement Gaps

Can you help us understand predictions by education researchers about short- and longer-run changes in achievement gaps caused by the COVID pandemic? Please take our 7-question survey and pass the link to the survey on to other education researchers. We intend to report results in a few weeks and then report comparisons between survey results and actual changes in achievement test scores as they become available. If you want a copy of our results, please provide your email address at the end of the survey. Thanks!

Drew Bailey[1], Greg Duncan[2] and Richard Murnane[3]

[1]dhbailey@uci.edu [2]gduncan@uci.edu [3]Richard_Murnane@harvard.edu

Please contact UCI's Office of Research by phone, (949) 824-6662, by e-mail at IRB@research.uci.edu or at 141 Innovation Drive, Suite 250, Irvine, CA 92697 if you are unable to reach the researchers listed at the top of the form and have general questions; have concerns or complaints about the research; have questions about your rights as a research subject; or have general comments or suggestions.

Survey questions

Suppose that, in early 2020 before the pandemic hit, the achievement gap on a NAEP-type **math** test for children attending elementary school was +1.00 standard deviations when children in the top income quintile are compared with children in the bottom income quintile (in other words, roughly what Sean Reardon and others have found).

1. Suppose that those same children were all somehow able to take comparable math achievement tests **this coming spring (i.e., Spring, 2021)**. What is your best estimate of the gap estimated from those data?

[ ] *sd*

2. Suppose that all of those same children were somehow able to take comparable math

achievement tests **a year from this coming spring (i.e., Spring, 2022).** What is your best estimate of the gap estimated from those data?

[ ] *sd*

Would your two answers differ if it were a reading test rather than a math test (assuming a similar pre-COVID gap of approximately 1.00 standard deviations)? If so:

3. What is your best estimate of the Spring, 2021 reading gap estimated from those data?

○ New estimate

[ ] *sd*

○ Same as my answer for math on question (1) above

4. What is your best estimate of the Spring, 2022 reading gap estimated from those data?

○ New estimate

[ ] *sd*

○ Same as my answer for math on question (2) above.

5. What is your primary disciplinary affiliation?

○ Education
○ Sociology
○ Economics
○ Psychology
○ Public policy
○ Other

6. Have you ever taught in a K-12 classroom?

○ Yes
○ No

7. Do you have school-age children at home at this time?

- ◯ Yes
- ◯ No

We welcome your comments