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Student Achievement Growth During the COVID-19 Pandemic

Spring 2022 Update

Tim R. Sass and Salma Mohammad Ali
Metro Atlanta Policy Lab for Education
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Introduction

The COVID-19 pandemic led to school closures throughout Georgia in March 2020 and an unplanned shift to remote learning for the final nine weeks of the spring 2020 semester. In the metro-Atlanta area, school districts began school year (SY) 2020–21 with remote learning and transitioned to in-person learning over the course of the year. By the start of SY 2021–22, all districts in the core metro area offered in-person learning to students in all grade levels—with only a small portion of students choosing to continue learning remotely.

This is the third report in a series of reports documenting pandemic-related trends in student achievement growth. Our [initial report](#), issued in May 2021, compared actual student performance in the fall and winter of SY 2020–21 to projected student performance using data from the fall and winter prior to public school closures in March 2020 (SY 2019–20).¹ In our [second report](#), released in May 2022, we extended the analysis to track student progress through SY 2020–21 and up to the beginning of SY 2021–22.² This current analysis extends our prior work to determine student progress during the first year of universal in-person instruction (SY 2021–22) and the net impact of the pandemic on student learning through the end of SY 2021–22.

Research Questions

We address the following key research questions:

1. What has been the effect of the pandemic on students' achievement growth in math and reading through spring 2022?
2. How have changes to student achievement growth varied by grade level?
3. How have changes to student achievement growth varied by geography, race and ethnicity, and economic disadvantage?

Measures and Samples

To analyze the effects of the pandemic on student learning, we use administrative data from three metro-Atlanta school districts: Clayton County Public Schools (“Clayton”), DeKalb County School District (“DeKalb”), and Fulton County Schools (“Fulton”). Our primary outcomes of interest are math

and reading scores on the i-Ready and MAP Growth formative assessments. These assessments are administered by the districts two or three times per school year.³ We also use data on students' enrollment, grade level, and demographic characteristics (including their race, ethnicity, gender, free or reduced-price meals status, English learner status, and identified disability status).

Our empirical approach uses national percentile rankings (NPR) on the i-Ready and MAP Growth assessments to measure student progress. National percentile rankings compare student achievement to that of students throughout the United States. We use the national student performance in SY 2016–17 (for MAP Growth) or SY 2018–19 (for i-Ready) as a benchmark, so our rankings in each school year are relative to national pre-pandemic achievement levels. Percentile rankings are on a scale from 1 to 99; a score of 50 represents the national average. These are relative rankings, not absolute scores. For example, moving from the 10th percentile to the 11th percentile is associated with a greater change in scale scores than is moving from the 50th to the 51st percentile.

We present two measures of the impact of the pandemic on student learning. The first measure, which captures the trend in student achievement over time, compares average national percentile rankings from fall 2017 through spring 2022.⁴ The analytical sample is restricted to students who were enrolled in the district in fall 2017 and took all available pandemic-era formative assessments (potentially including the fall, winter, and spring assessments in SY 2020–21 and the fall, winter and spring assessments in SY 2021–22).⁵ This restriction allows for consistent comparisons of student achievement over time but only for a sample of consistent test takers during the pandemic.

Our second measure of the pandemic's impact on student learning is the difference between a student's national percentile ranking in winter 2019 and their national percentile ranking in winter 2021. This measure captures the change in where students would rank among all U.S. students in the pre-pandemic distribution of test scores. A value of -10 means that a student who initially was ranked above half of students would now be ranked above only 40% of students in the pre-pandemic test-score distribution. The analytical sample includes only students with scores for both exams. This restriction is less stringent than the restriction of analyzing test takers for all available pandemic-era exams used in the first measure. Our second measure includes nearly all students in the tested grades; however, it only provides a one-time

difference in achievement and does not show progress at each point in time during the pandemic.

Finding 1: Achievement Trends in SY 2021–22

The return to near-universal in-person learning in SY 2021–22 did not yield substantial improvements in average math or reading achievement growth.

Figure 1 shows achievement trends over time for Clayton, DeKalb, and Fulton. Plotted points represent average scores on formative assessments in the fall, winter, or spring testing periods. As denoted by the vertical lines, DeKalb and Fulton returned to in-person learning for all students in SY 2020–21, but middle and high school students in Clayton did not return to in-person learning until the start of SY 2021–22.

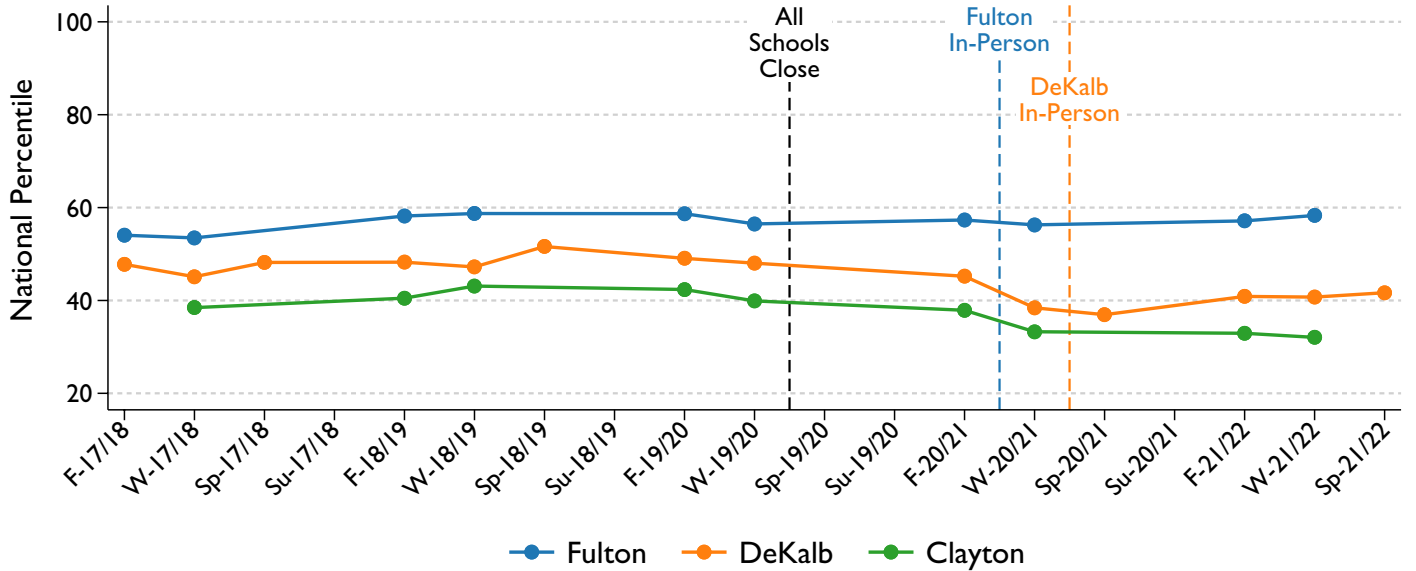
Clayton's national percentile rank in math trended slightly down over the course of SY 2021–22. The net result is that, on average, students in Clayton are 7.1 percentile points lower than their pre-pandemic levels in math. In reading, Clayton's average national percentile rank fell modestly during SY 2021–22. Over the two-year period between winter 2019–20 (just prior to the pandemic) and winter 2021–22, student reading test scores dropped 2.0 national percentile points on average.

DeKalb's national percentile rank in math displays a modest upward trend during SY 2021–22; however, average math performance remains 7.3 percentile points lower than pre-pandemic levels. In reading, DeKalb's national percentile rank fell modestly during SY 2021–22. Over the two-year period between the winter of SY 2019–20 and winter 2021–22, student test scores dropped 3.2 national percentile points in reading on average.

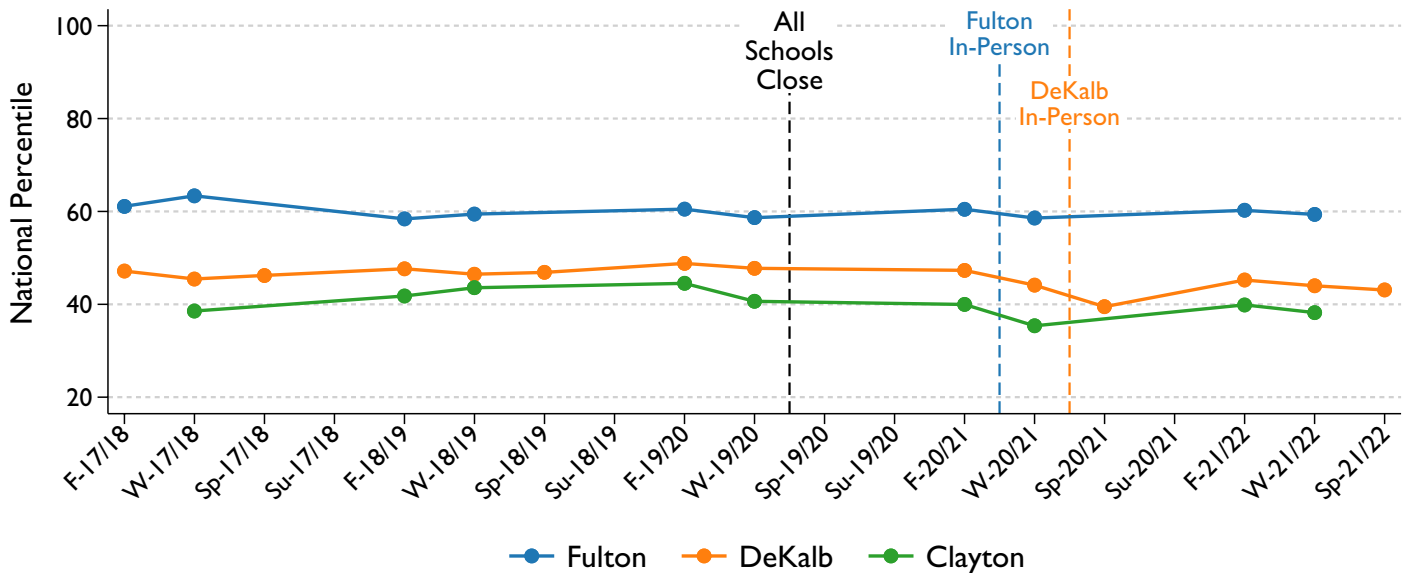
Fulton showed a modest upward trend in national percentile rankings in math over the course of SY 2021–22. Students in Fulton remain at or near pre-pandemic national percentile ranks in math. Fulton's average national percentile rank in reading fell slightly during SY 2021–22. Over the two-year period between the winter of SY 2019–20 and winter 2021–22, student test scores dropped 1.7 national percentile points on average.

Figure 1. Percentile Rank Trends by Metro-Atlanta District

Panel A. Math

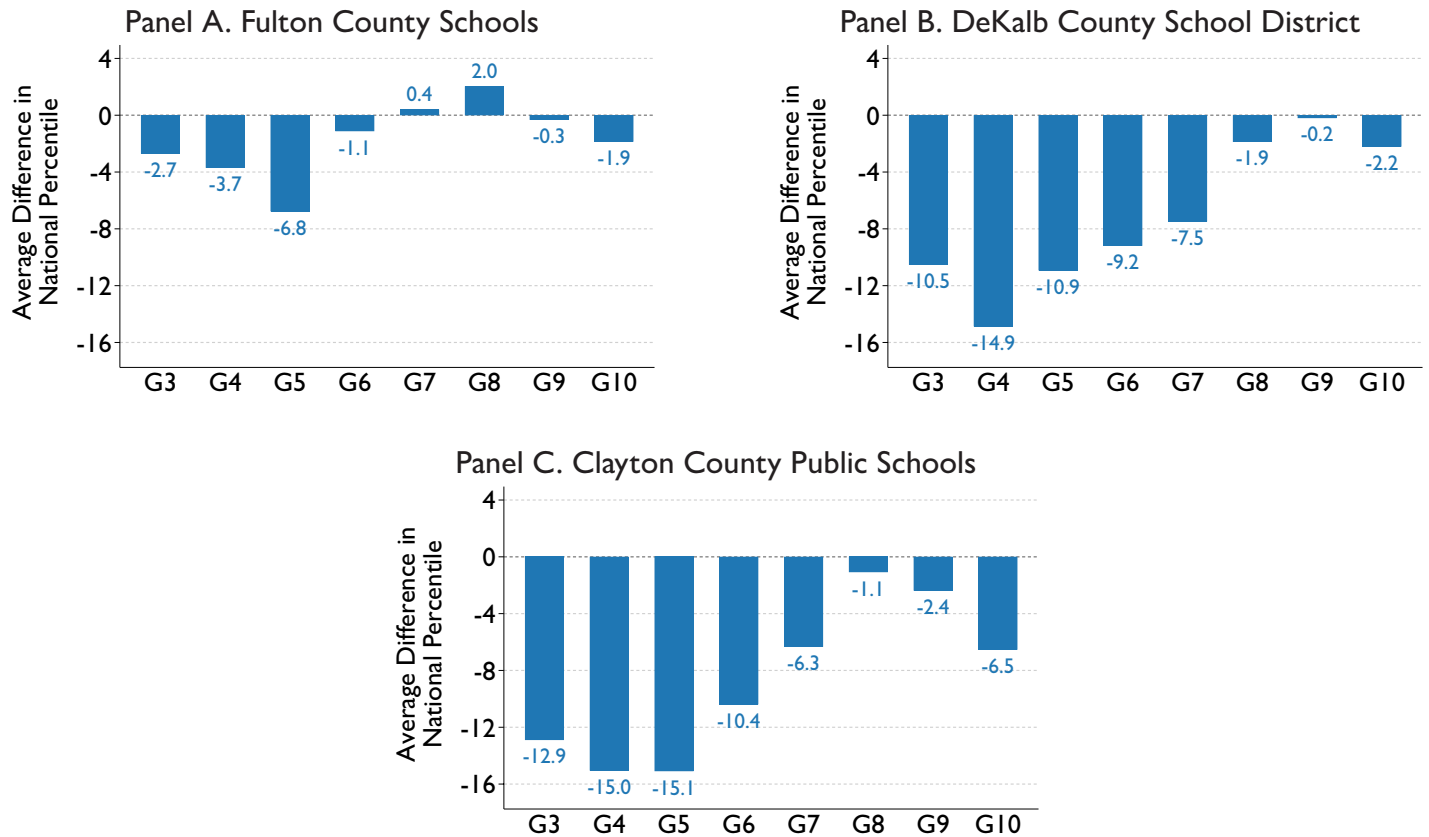


Panel B. Reading



Notes. National percentile rank is calculated using formative assessment scores relative to the national student performance in SY 2016–17 (MAP Growth) or SY 2018–19 (i-Ready). Semesters refer to the formative assessments administered during the given testing period and school year (e.g., “F-17/18” refers to the fall testing period of SY 2017–18; “Sp” refers to the spring testing period; and “Su” refers to the summer). Clayton is Clayton County Public Schools; Fulton is Fulton County Schools; and DeKalb is the DeKalb County School District. In Clayton, elementary school students returned to in-person learning in April 2021, while middle and high school students returned to physical classrooms at the start of SY 2021–22. As a result, a specific date is not shown on the graphs.

Figure 2. Change in Math NPR from the Winter of SY 2019–20 to Winter 2021–22 (Students in Grades 3–10 in SY 2021–22)



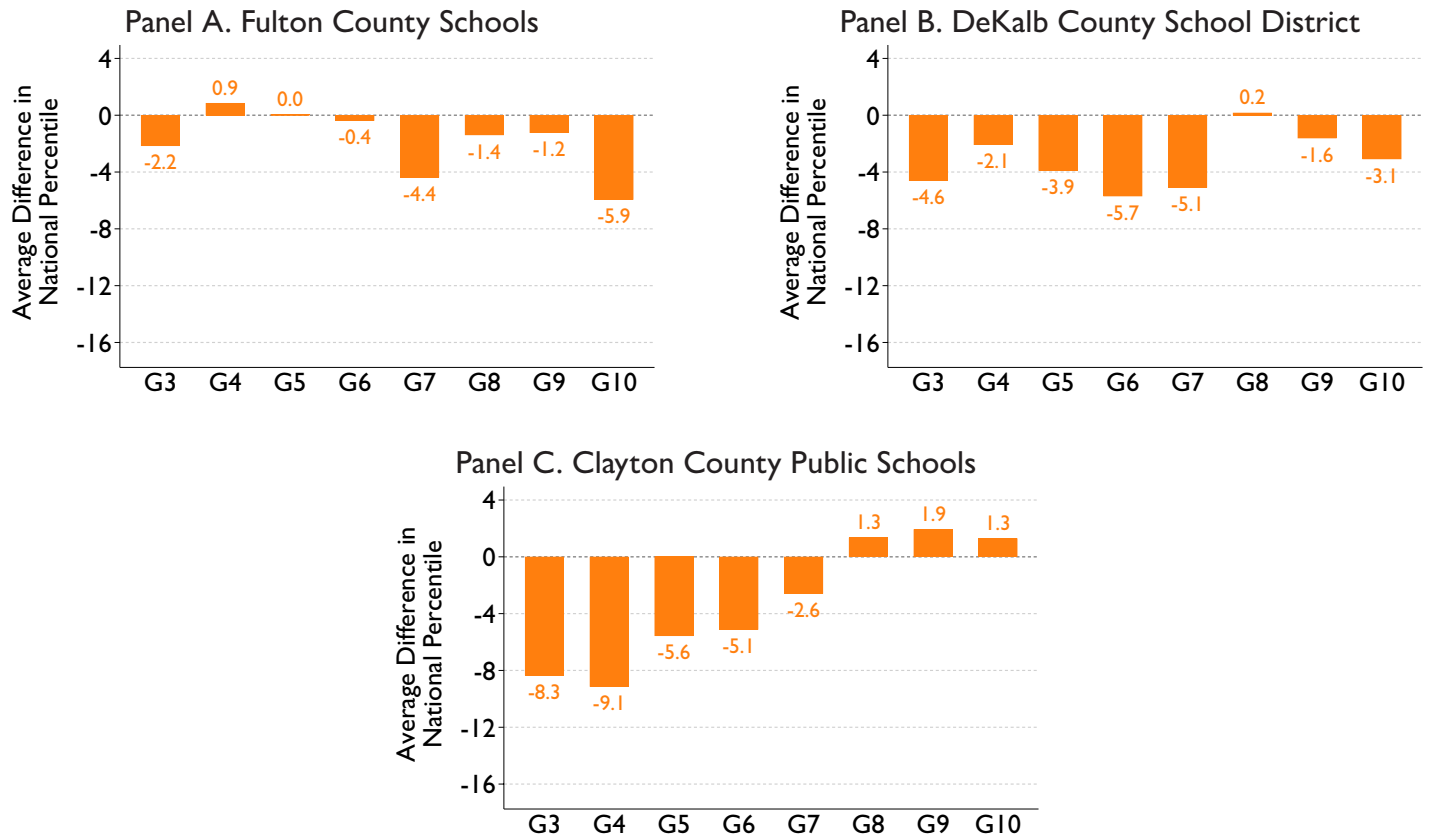
Notes. National percentile rank (NPR) is calculated using formative assessment scores relative to the national student performance in SY 2016–17 (MAP Growth) or SY 2018–19 (i-Ready). The figure shows the average difference between students' national percentile rank in winter 2019 and winter 2021. Grade levels are abbreviated (e.g., G3 is Grade 3) and refer to students' grade in SY 2021–22.

Finding 2: Differential Impacts by Grade Level

Students who were in Grades 1–3 when the pandemic hit (i.e., in Grades 3–5 in SY 2021–22) have fared worse in math than students who were in middle school at the start of the pandemic. Variation by grade level is much less pronounced in reading.

Figure 2 shows the average change in math national percentile rankings between winter 2019 and winter 2021 by grade level and district. Across all three districts, a consistent pattern is that elementary school students, especially those in lower-elementary (Grades 1–3) at the start of the pandemic in March 2020 (i.e., students in Grades 3–5 in SY 2021–22), have fared worse than

Figure 3. Change in Reading NPR from the Winter of 2019–20 to Winter 2021–22 (Students in Grades 3–10 in SY 2021-22)



Notes. National percentile rank (NPR) is calculated using formative assessment scores relative to the national student performance in SY 2016–17 (MAP Growth) or SY 2018–19 (i-Ready). The figure shows the average difference between students’ national percentile rank in winter 2019 and winter 2021. Grade levels are abbreviated (e.g., G3 is Grade 3) and refer to students’ grade in SY 2021–22.

students who were in middle school. The reductions in national percentile rankings are particularly stark in Clayton and DeKalb, where drops ranged from 10–15 percentile points for students in Grades 3–5 in SY 2021–22. A similar relationship between grade level and reductions in reading national percentiles emerges for Clayton (as shown in Figure 3). In DeKalb and Fulton, no clear trend in achievement by grade is apparent for reading.

Finding 3: Place-Based Differences

In SY 2021–22, national percentile rankings were trending upward in math and reading for students in south Fulton, which led to a narrowing in average achievement differences between students in north and south Fulton.

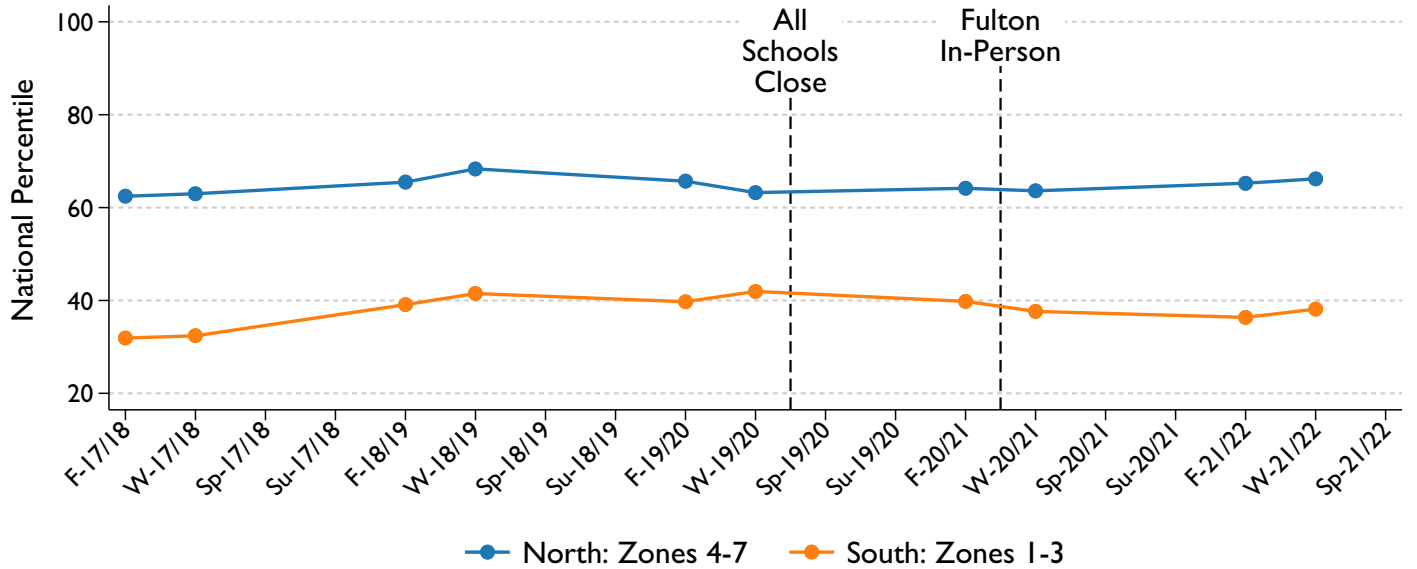
Fulton is a diverse district that is essentially bisected by the City of Atlanta.⁶ Students in north Fulton are more likely to be White and less likely to be from families experiencing low income than students in south Fulton.⁷ As shown in Figure 4, average national percentile rankings in math and reading for students in north Fulton were roughly 20 percentile points above those in south Fulton prior to the pandemic.

Until the start of SY 2021–22, differences in average achievement between students in north and south Fulton had grown during the pandemic. However, the differences narrowed between the fall and winter of SY 2021–22, due in part to improvements in math and reading for students in south Fulton. If this improvement continued into the spring, students in south Fulton would be approaching pre-pandemic national percentile rankings—though the large pre-pandemic difference in achievement between students in north and south Fulton would remain.

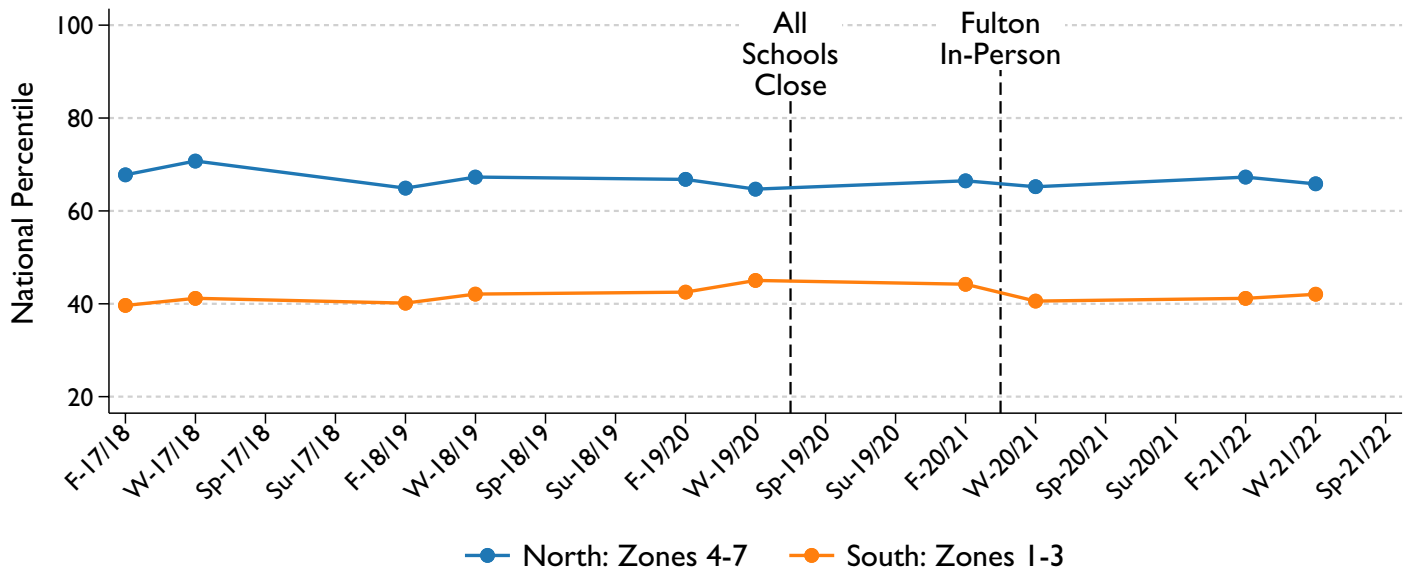
For DeKalb, differences in achievement across the seven designated regions within the district have, for the most part, remained relatively constant throughout the pandemic. In math, the average reduction in national percentile rankings between winter 2019 and winter 2021 varies between -6 and -8 percentile points in all but one region (see Appendix Figure 15).⁸ In reading, the reduction in national percentile rankings range from -2 to -5 in all but one region (see Appendix Figure 16). Clayton does not identify students by the area of the county in which they reside.

Figure 4. Percentile Rank Trends by Geographic Zones in Fulton County Schools

Panel A. Math

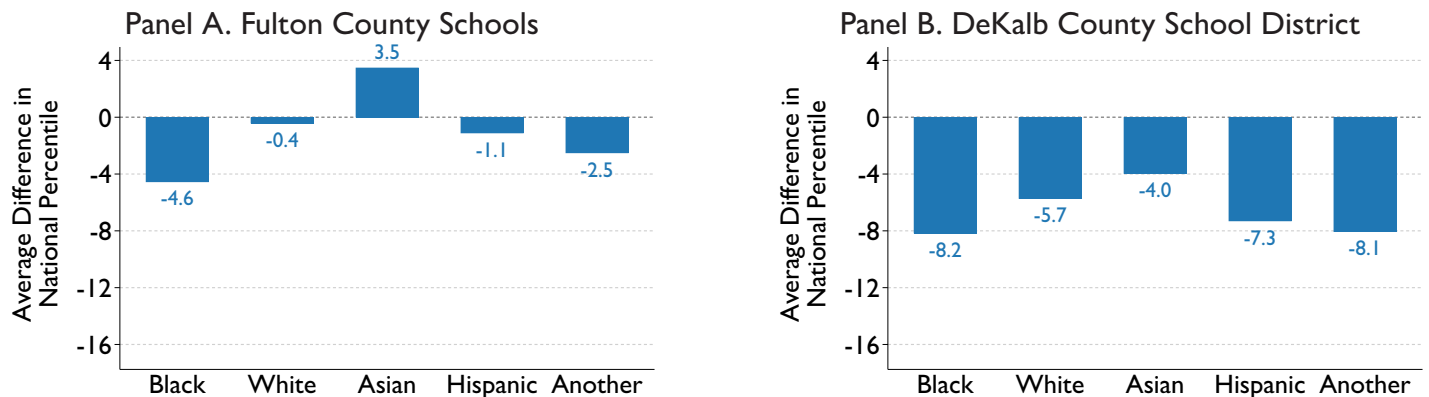


Panel B. Reading



Notes. National percentile rank is calculated using formative assessment scores relative to the national student performance in SY 2016–17 (MAP Growth) or SY 2018–19 (i-Ready). Semesters refer to the formative assessments administered during the given testing period and school year (e.g., “F-17/18” refers to the fall testing period of SY 2017–18; “Sp” refers to the spring testing period; and “Su” refers to the summer).

Figure 5. Change in Math NPR from Winter 2019–20 to Winter 2021–22 by Race and Ethnicity (Students in Grades 3–10 in SY 2021–22)



Notes. National percentile rank is calculated using formative assessment scores relative to the national student performance in SY 2016–17 (MAP Growth) or SY 2018–19 (i-Ready). The figure shows the average difference between students’ national percentile rank in fall 2019 and fall 2021. Race categories (Black, White, Asian, another) are non-Hispanic. “Another” refers to a race or ethnicity not explicitly shown on the graph. Data for Clayton County Public Schools are not broken out by race and ethnicity because over 90% of students identified as Black or Hispanic, and only 2% identified as White.

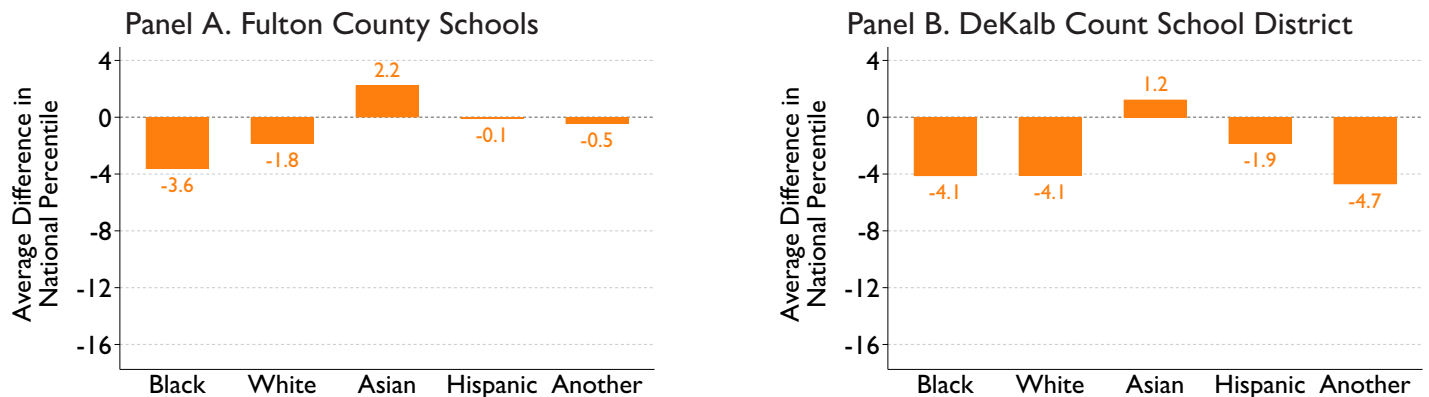
Finding 4: Differences by Student Characteristics

Through the course of the pandemic, differences in achievement by race and ethnicity and economic status have grown in some districts but not in others. English learners and students with identified disabilities do not appear to have lost significant ground relative to English-proficient students and students without an identified disability.

As shown in Figure 5, on average, Black students in Fulton have experienced larger reductions in math national percentile rankings (-4.6) than either White students (-0.4) or Hispanic students (-1.1). Asian students in Fulton improved their average national ranking by 3.5 percentile points. In contrast, racial and ethnic differences in math achievement changes during the pandemic in DeKalb are more modest: ranging from -6 to -8 among non-Asian students and equal to -4 for Asian students.⁹

For district-wide achievement changes, differences across racial and ethnic groups are much more modest in reading (Figure 6). Among non-Asian student

Figure 6. Change in Reading NPR from Winter 2019–20 to Winter 2021–22 by Race and Ethnicity (Students in Grades 3–10 in SY 2021–22)



Notes. National percentile rank is calculated using formative assessment scores relative to the national student performance in SY 2016–17 (MAP Growth) or SY 2018–19 (i-Ready). The figure shows the average difference between students’ national percentile rank in fall 2019 and fall 2021. Race categories (Black, White, Asian, another) are non-Hispanic. “Another” refers to a race or ethnicity not explicitly shown on the graph. Data for Clayton County Public Schools are not broken out by race and ethnicity because over 90% of students identified as Black or Hispanic, and only 2% identified as White.

groups, reductions in reading achievement between winter 2019 and winter 2021 range from -0.1 to -3.6 in Fulton and from -1.9 to -4.7 in DeKalb.

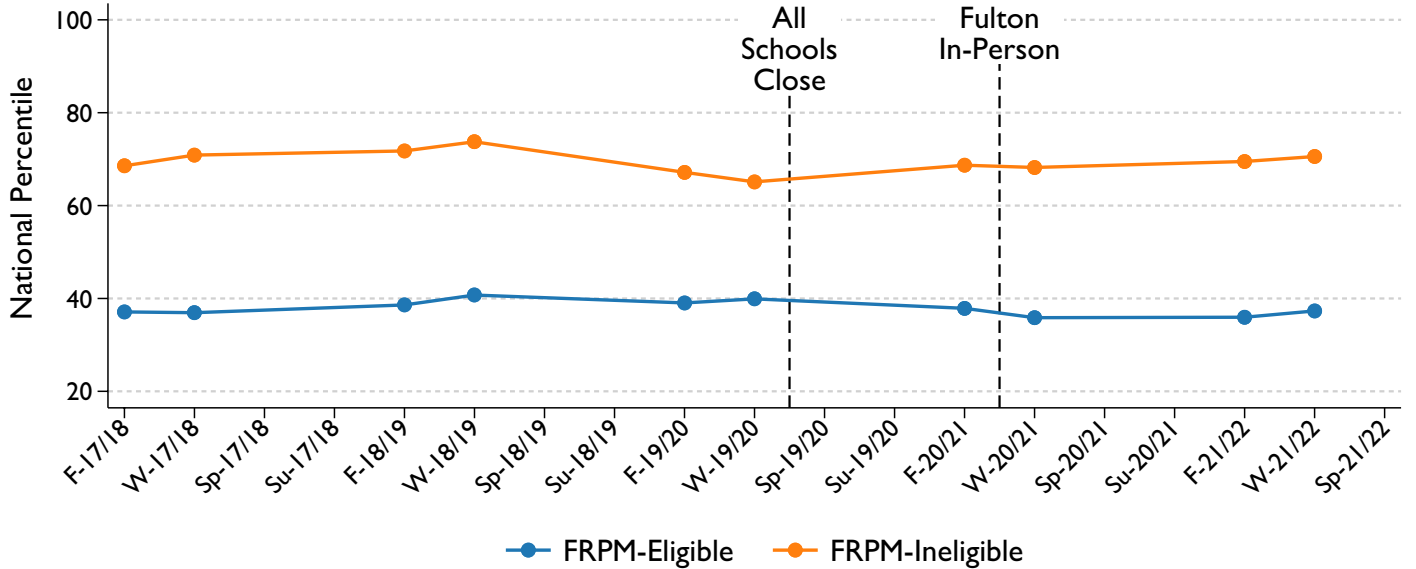
Appendix Figure 2 show trends in national percentile rankings by race and ethnicity for DeKalb and Fulton in math, and Appendix Figure 3 shows trends for reading. Similar disparities are visible in the trend-line graphs, although it is harder to visually detect the disparities over time.

Finally, Figure 7 shows math national percentile ranking trends by free or reduced-price meals (FRPM) eligibility (a crude proxy measure for economic disadvantage). In Fulton, a substantial narrowing of the math achievement difference between FRPM-eligible and ineligible students that occurred from winter 2018 to winter 2019 has largely been reversed during the pandemic. The difference increased from around 25 percentile points in winter 2019 to about 32 percentile points in winter 2021. In DeKalb, FRPM-eligible and FRPM-ineligible students have experienced similar achievement trends over the course of the pandemic. As a result, differences in national percentile rankings have remained relatively constant. The difference in achievement levels between FRPM-eligible and FRPM-ineligible students remains large, however.

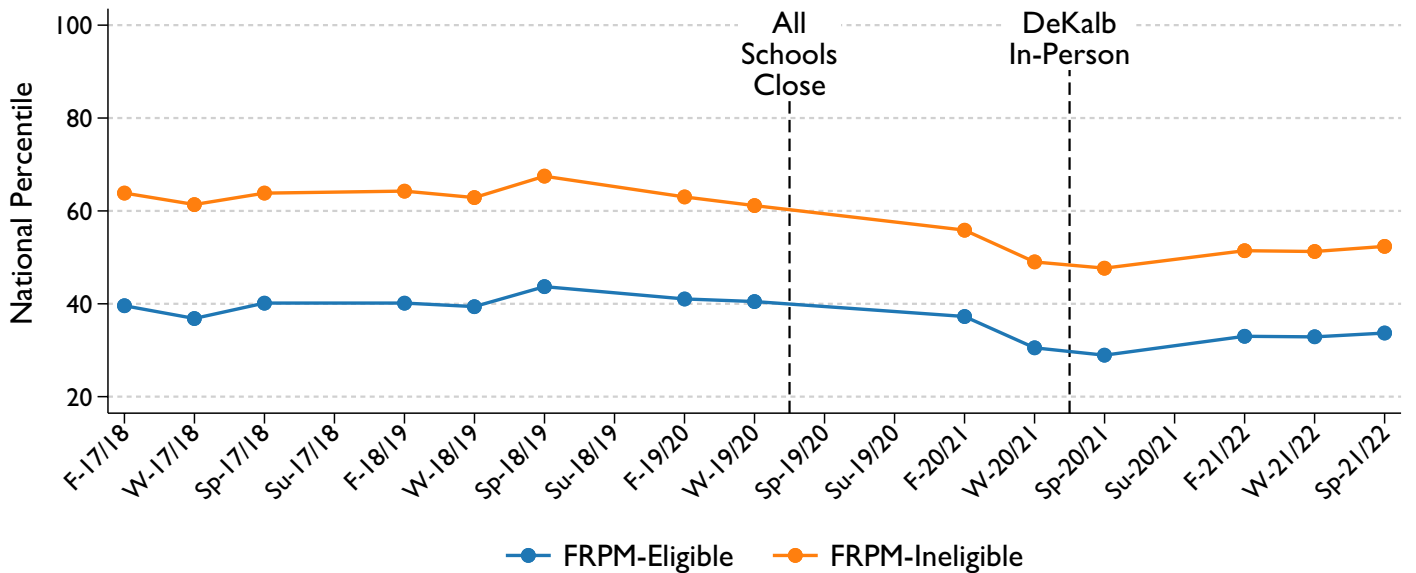
Appendix Figure 4 shows the equivalent trends for reading achievement growth by FRPM eligibility. The achievement differences widened in Fulton (though not

Figure 7. Percentile Rank Trends in Math by Economic-Disadvantage Status

Panel A. Fulton County Schools



Panel B. DeKalb County School District



Notes. National percentile rank is calculated using formative assessment scores relative to the national student performance in SY 2016–17 (MAP Growth) or SY 2018–19 (i-Ready). Semesters refer to the formative assessments administered during the given testing period and school year (e.g., “F-17/18” refers to the fall testing period of SY 2017–18; “Sp” refers to the spring testing period; and “Su” refers to the summer). FRPM-eligible refers to eligibility for free or reduced-price meals and is a crude proxy measure for economic disadvantage. Data for Clayton County Public Schools are not broken out by eligibility for FRPM because over 90% of students were eligible for FRPM in fall 2021.

as much as in math) and narrowed somewhat over the course of the pandemic in DeKalb.

Summary and Recommendations

The pandemic brought many challenges to public schools and the students they serve in the metro-Atlanta area and nationwide. Schools had to rapidly switch to remote learning, and teachers and students faced the challenge of a whole new delivery model with new technology. Further, for many students and teachers, the pandemic disrupted their life outside of school.

In SY 2021–22, all metro-area schools returned to full-time in-person instruction. This return, however, brought on a new set of challenges, including increases in the incidence of student misbehavior (likely due to the difficulty of adjusting to in-person learning after the long isolation students experienced learning remotely).¹⁰

In this report, we show the pandemic and associated switch to remote learning has had long-term effects on student achievement trajectories. While some students have returned to their pre-pandemic national percentile rankings, many remain below their pre-pandemic national rank. Some students, particularly those currently in upper elementary and middle school grades, are substantially behind their pre-pandemic rank in math. These reductions in national percentile ranks could have long-term consequences for students, as prior research finds that academic achievement has a statistically significant negative effect on the likelihood of dropout.¹¹

It is not too late to help those students most affected by the pandemic, but time is running short. Federal aid related to the pandemic runs out at the end of SY 2023–24. Further, students in grade levels most impacted by the pandemic will be reaching Grade 9—the grade where dropout is typically the highest—within two years.

By far, the most impactful strategy with the greatest level of evidence to support its use is high-dosage tutoring. When properly implemented, a year of in-person high-dosage tutoring could eliminate one-third to two-thirds of the largest deficits we currently observe.¹² While it is the most effective strategy, in-person high-dosage tutoring is also expensive, and it can cost as much as \$3,800 per student per year.¹³ Recent studies of virtual high-dosage tutoring, however, indicate it may be easier to implement and produce substantial learning gains

at a much lower cost.¹⁴ Nevertheless, even with the available federal recovery funds, districts employing evidence-based recovery strategies will have to prioritize their application to those students in the greatest need of support.

Endnotes

1. Sass, T. & Goldring, T. (2021). *Student Achievement Growth During the COVID-19 Pandemic: Insights from Metro-Atlanta School Districts*. Georgia Policy Labs.
2. Sass, T. & Goldring, T. (2022). *Student Achievement Growth During the COVID-19 Pandemic: Fall 2021 Update*. Georgia Policy Labs.
3. Formative assessments are low-stakes exams that provide a measure of student achievement at multiple points during the school year. They have been administered by metro-Atlanta districts before and during the pandemic. Prior to the pandemic, all testing was conducted at schools. However, when schools were closed and only virtual learning was offered, most testing was conducted remotely. Remote testing is hard to monitor, and there is substantial evidence that test scores in the early elementary grades were inflated as a result. See Sass and Goldring (2021) for further details.
4. Fall 2017 refers to the formative assessment administered during the fall of SY 2017–18. Likewise, winter 2017 and spring 2018 refer to the formative assessments administered during the winter and spring of the same school year.
5. Only DeKalb tested all students in spring 2021. Fulton tested a select group of students, and Clayton did not administer formative assessments in the spring.
6. The city of Atlanta, which is served by Atlanta Public Schools, lies between the two regions in Fulton. The northern Learning Zones are largely north of Atlanta, and the southern zones are south of Atlanta. See fultonschools.org/learningzones
7. North and south Fulton have different levels of economic disadvantage and student mobility. See ajc.com/news/local-education/schools-tale-two-fultons/wKdUFX2cYqPsUVgl6Gah7O
8. Please see the appendix for more supplemental results that the main report does not reference.
9. Data for Clayton are not broken out by race and ethnicity because over 90% of students identified as Black or Hispanic, and only 2% identified as White.
10. Belsha, K. (2022). *Pandemic effect: More fights and Class Disruptions, New Data Show*. Chalkbeat. Retrieved from chalkbeat.org/2022/7/6/23197094/student-fights-classroom-disruptions-suspensions-discipline-pandemic

11. Rumberger, R. & Lim, S.A. (2008). *Why Students Drop Out of School: A Review of 25 Years of Research*. California Dropout Research Project Report #15.

12. Kraft, M. (2020). Interpreting Effect Sizes of Education Interventions. *Educational Researcher*, 49(4):251–253.

13. Pan, W. & Sass, T. (2020). *Potential Remediation Strategies in the Wake of COVID-19 School Closures: A Review of the Literature*. Georgia Policy Labs.

14. Carlana, M. & La Ferrara, E. (2021). *Apart but Connected: Online Tutoring and Student Outcomes during the COVID-19 Pandemic*. EdWorkingPaper 21-350. Retrieved from Annenberg Institute at Brown University: doi.org/10.26300/0azm-cf65

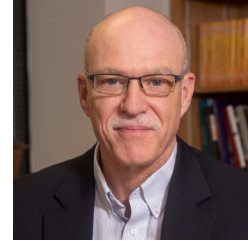
Gortazar, L., Hukau, C. & Roldan, A. (2022). *Online Tutoring Works: Experimental Evidence from a Program with Vulnerable Children*. EsadeEcPol – Center for Economic Policy, Working Paper #2.

Kraft, M., List, J., Livingston, J. & Sadoff, S.. (2022). *Online Tutoring by College Volunteers: Experimental Evidence from a Pilot Program*. EdWorkingPaper: 22-568. Retrieved from Annenberg Institute at Brown University: doi.org/10.26300/b1ch-0g29

About the Authors

Tim R. Sass

Tim R. Sass is a Distinguished University Professor in the department of economics at Georgia State University and the W.J. Usery Chair of the American Workplace in the Andrew Young School of Policy Studies. He is also the faculty director of the Metro Atlanta Policy Lab for Education (MAPLE). His research interests include the teacher labor supply, the measurement of teacher quality, and school choice. His work has been published in numerous academic journals and has been supported by several federal and philanthropic grants. He has acted as a consultant to school systems across the country. He is also a senior researcher at the Center for Analysis of Longitudinal Data in Education Research (CALDER).



Salma Mohammad Ali

Salma Ali is a graduate research assistant with the Georgia Policy Labs. She is currently pursuing a Ph.D. in economics at Georgia State University. She holds a bachelor's degree in economics and mathematics from Beloit College. Her research interests lie broadly in the economics of education, public economics, and experimental economics.



About the Georgia Policy Labs

The Georgia Policy Labs is an interdisciplinary research center that drives policy and programmatic decisions that lift children, students, and families—especially those experiencing vulnerabilities. We produce evidence and actionable insights to realize the safety, capability, and economic security of every child, young adult, and family in Georgia by leveraging the power of data. We work alongside our school district and state agency partners to magnify their research capabilities and focus on their greatest areas of need. Our work reveals how policies and programs can be modified so that every child, student, and family can thrive.

Housed in the Andrew Young School of Policy Studies at Georgia State University, we have three components: the Metro Atlanta Policy Lab for Education (metro-Atlanta K-12 public education), the Child & Family Policy Lab (supporting children, families, and students through a cross-agency approach), and the Career & Technical Education Policy Exchange (a multi-state consortium exploring high-school based career and technical education).

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