Student achievement gaps and the pandemic: A new review of evidence from 2021–2022

Panel of Experts

Sarah Cohodes, Columbia University
Dan Goldhaber, American Institutes of Research/University of Washington
Paul Hill, CRPE, Arizona State University, Chair
Andrew Ho, Harvard University
Vladimir Kogan, Ohio State University
Morgan Polikoff, University of Southern California
Carrie Sampson, Arizona State University
Martin West, Harvard University

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About this series

This report begins the second round of an updated series of papers that aim to provide a definitive account of the best available evidence on how the Covid-19 pandemic has affected America’s students.

The Center on Reinventing Public Education compiled hundreds of studies and convened panels of education research experts to interpret the data. Three initial reports released in 2021 assessed what we knew to date about the pandemic’s effects on students’ academic progress, its effects on their mental health and social-emotional well-being, and its impact on students with disabilities. This report is an update to the 2021 report on student academics.

In 2022 as in 2021, we aim to present a coherent baseline of what we know, don’t know, and need to know at this stage of the pandemic — and the beginning of a recovery from the pandemic. These reports are designed to help system leaders, community leaders, policymakers, researchers, philanthropies, the media, and others to define ambitious goals and clear metrics that ensure our education system meets every student’s needs over the coming years.

I. Overview

America is emerging from two years of highly interrupted schooling due to Covid-19. Schools reopened during the 2021–22 academic year, but many did so late and were forced to close intermittently as the Omicron wave and other new virus outbreaks occurred. Children experienced different degrees of school disruption depending on where they lived.

Determining how the pandemic and associated disruptions to schooling have affected the development of students’ foundational academic skills is critical. Measures of literacy and numeracy knowledge indicate the acquisition of important skills, but they also strongly predict students’ future educational and labor-market success. Designing effective strategies to support students who have fallen behind academically due to Covid-19 requires educators and policymakers to have a clear understanding of the current state of students’ learning. Yet gauging the academic impacts of the pandemic is hard, as the disruptions to schooling included disruptions to the assessment systems used to monitor students’ progress. Annual state tests required by the federal Department of Education were canceled in spring 2020, and most districts paused administering tests normally used to determine whether students have mastered grade-level standards. Though state testing was technically required in 2020–21, most states and districts did not obtain consecutive fall and spring measures for students until spring 2022. Analyses of those results won’t be widely available until late 2022 or early 2023. Moreover, even as schools have resumed testing, some students have not participated, and these are likely to be the very ones who were out of school the longest and still have not returned consistently.
Despite these challenges, a growing body of evidence sheds light on what’s happened to student achievement overall and for important demographic subgroups. In March 2022, the Center on Reinventing Public Education (CRPE) gathered a panel of eight experts in education policy and assessment to review this evidence. In this report, we summarize the most relevant and rigorous studies released since summer 2021 that analyze how schooling disruptions prompted by the pandemic and related social and political events have affected K–12 students’ academic progress. We also highlight uncertainties about the long-term consequences of learning delay evident today and frame questions that still need to be answered.

This is CRPE’s second consensus panel report on the pandemic and delays in students’ learning. Based on the evidence available a year ago, we reported the average K–12 student in America mastered less academic content due to the pandemic and associated disruptions to schooling. Negative impacts were generally larger in math than in reading, substantial across all grade levels, larger where students had less access to in-person instruction, and larger for Black, Hispanic, and low-income students.

This year’s report, based on 23 studies published since last July, offers even stronger evidence of the pandemic’s negative consequences for student growth and development. The pauses to in-person schooling and related changes in family and community life over the past year continued to interrupt most children’s academic growth, but the consequences are not evenly distributed. Children whose schools were closed the longest had their learning interrupted the most—and most often, that affected low-income children and children of color in big cities. With one exception, we still await test results from the exams states and national testing companies and curriculum providers administered in spring 2022. But we can examine some state testing results from the 2020–21 school year and some other measures of progress from fall 2021.

As before, the combination of studies we examined has limitations. Though many reports use rigorous methods and innovative approaches—and two include a very large number of students from 49 states—none are fully representative of the whole country. The one exam that captures
a nationally representative sample of students, the National Assessment of Educational Progress (NAEP), was suspended until 2022. Studies available now provide good information on some states and on samples of students whose schools or districts purchased a common curriculum or administered common tests. These studies, including the latest one from testing group NWEA, support a mosaic with some definite patterns but also blank and blurry spaces. Our report can help local education leaders ask the right questions, but there is no substitute for local evidence about the progress and recovery of individual schools and their students.

II. What the latest studies\(^1\) show

On average, children at all grade levels have suffered significant delays in learning. Though many studies report hard-to-interpret statistics such as standard deviations of difference in test scores before and during the pandemic, all the estimates of learning delay are large. In general, students fell farther below grade level for every month they were not attending school in person. Most studies continue to find greater delays in mathematics than in reading. Individuals can be far above or below the average. One report drawn from a large national database estimates that fall 2021 test scores for grades 3–8 were 0.27 standard deviations (approximately a year’s learning) lower in reading and 0.14 standard deviations lower in mathematics than in fall 2019. Another report that slightly overrepresents children in big-city schools estimates that the proportion of third graders reading on grade level fell to 51% in the middle of the 2020–21 school year, from 59% in the middle of 2019–20. The share of students reading at grade level rebounded to 54% by the middle of 2021–22. If those results hold nationally, they could imply that as many as 360,000 additional third-grade students were reading below grade level in the first year of the pandemic, falling to 200,000 in the second. Results are similar for other grades.

Learning delays occurred at every grade level, but it’s unclear which age group has been most negatively affected. Some studies show that very young children, who did not experience normal kindergarten or first grade, were behind by mid-2021 relative to demographically similar children assessed prepandemic. Others reveal delays for children at times when crucial skills are taught (e.g., third- and fourth-grade reading and sixth-grade math). Results from Ohio and North Carolina show substantial learning delays for high school students, particularly in math. Assessing the progress of high school students is often difficult, due to the diversity of courses taken, differences in when students take particular subjects, and the fact that students are usually given broad performance tests for state reporting purposes only once in high school. The ACT and SAT college entrance exam results provide less detail than usual because a smaller and less representative group of students took the exams during the pandemic. However, low rates of high school attendance and course completion suggest serious holes in their learning. Though graduation rates rose slightly in spring 2020 when states waived senior-year course completion requirements, they fell below prepandemic levels in spring 2021. College-going rates, a partial result of high school learning, declined overall during the pandemic. Enrollment declines were greatest in colleges disproportionately serving Black and Hispanic students.

\(^1\) In the Appendix, we list all the studies reviewed, their data sources, and what their reports covered. In this review, we back up conclusions with links to sources but do not mention every report that might be relevant to every point.
Learning delays were greatest in 2019–20, but many students also lost ground in 2021–22.
The newest available study, from Ohio, shows that third graders were four to six months behind normal progress in reading in fall 2020, but only one and a half months behind when tested in fall 2021. A national study based on data from one curriculum provider also found that, on average, learning delays continued but were smaller in 2020–2021.

Learning delays are closely related to the amount of time students spent out of school or in remote instruction. In the 2020–21 school year, math test score passing rates dropped 14.2% on average but 10 percentage points more in districts whose schooling was mostly remote. In Ohio, each additional week of remote learning had measurable costs in student test scores in some subjects and grade levels. In that state, the overall decline in third-grade reading correlated with remote learning was approximately a third of typical achievement growth between fall 2000 and spring 2001. Even after schools reopened in person, children who had spent the most time in remote instruction during 2019–20 remained behind others who had more in-person schooling time.

Low-income students and students of color, who on average spent the most time in remote instruction, experienced the greatest learning delays and fell even farther behind their white, advantaged peers. Children whose schools were closed for the longest time, children whose schools were likeliest to close temporarily due to outbreaks of infection, and children with irregular attendance (due, for example, to locally high rates of Covid-19 infection and family fears) have lost the most ground. These delays are relative both to low-income and minority children’s own normal rates of learning and to higher-income white and Asian students, who spent less time out of school or in remote instruction. A national study and one focused on Michigan both conclude that differences in percentages of children far below grade level widened between students who are advantaged, white, and Asian and students who are low income, Black, and Hispanic and with disabilities during the 2020–21 school year. Another reports that the preexisting gap of one standard deviation between low-poverty and high-poverty elementary schools increased by 20% in reading and 15% in mathematics.

Based on a national analysis of school-level averages (which are less precise than individual-level data) a third study estimates that before the pandemic, students in majority-Black schools were nine months behind their peers in majority-white schools. But as of Spring 2021, students in majority Black schools trailed their peers in majority white schools by 12 months in reading and math.

Consistent exposure to instruction mattered more than students’ race and income when it comes to learning delays. Black children who attended schools that reopened swiftly did not suffer any greater delays in learning than white students attending the same schools. However, Black children in schools that were closed for long periods and relied more on remote learning experienced major learning delays. The Black students who lost the fewest days’ worth of instruction disproportionately attended racially mixed schools, while the Black students who lost the most days of instruction generally attended racially isolated schools.

Inconsistent school attendance continued to limit recovery of learning delays even when schools were open. Chronic student absences plagued districts last year, resulting in enrollment declines that were especially acute in certain major cities. Students missed class for all kinds of
reasons: Some rarely logged on from home. Some parents who were afraid of infection kept their students home for long spells. Attendance was often spotty—or nonexistent—after districts delayed the date for opening buildings or closed classrooms or schools for virus outbreaks.

Other factors contributing to attendance declines included teacher absences and student disengagement. In Ohio, local unemployment rates, an indicator of family and community stress, were negatively correlated with student attendance rates, but researchers cannot yet parse how much certain factors contributed to lost time in school. For a complex combination of the reasons named above, Black and Hispanic children were twice as likely to have been out of school (whether in person or online) in 2020–21 as white children. These results combine both days missed because schools were closed and days students were absent. Absenteeism, whatever its cause, matters: In Tennessee, chronic absenteeism rose by more than 80% for Black children as compared to less than 31% for white children. Nationally, an estimated 6.3 million high school students of all demographic groups were chronically absent in the 2020–21 school year, a dramatic rise from the estimated 2.3 million the year before. Because the expectations for grade-level work become more ambitious as a student gets older, a child who neither gains nor loses learning in a year can fall below normal levels of learning for their age and grade. For example, almost half of high school students in Cleveland Public Schools in Ohio were chronically absent at the beginning of 2021–22, according to the district, which put them at risk of not advancing.

Detailed absenteeism numbers for 2021–22 are not yet available, but district leaders interviewed by CRPE for a joint report with the RAND Corporation confirm that the problem remains serious. As in 2020–21, absences were driven by fears of infection, work and family responsibilities, discouragement about learning progress, and general loss of interest in school, but there are no definitive studies on the relative importance of such factors.

Despite widespread learning delay, some students thrived. Some groups of low-income, minority, or disabled children learned at or above the normal rate of progress for their age during the pandemic. Reports from North Carolina, Illinois, and Ohio identify grade levels and subjects where learning delays are smaller for low-income or minority children than for white children. Results are unusually positive for special education students in North Carolina, where some districts maintained academic growth rates during remote learning that were comparable to rates of student progress before the pandemic. As testing becomes more systematic again, studies that capture the variation in school, state, and district results are going to be essential to understanding exceptions like these and making policies to reproduce them.
III. Many questions remain unanswered

In the near future, NAEP and state testing results from the 2021–22 school year should provide a more comprehensive picture of student achievement. Researchers will ultimately exploit these data sources, but government leaders and private funders should encourage them to do so quickly so educators and policymakers can act on good information. For now, because of data limitations, many important questions about student progress can't be answered, including the following:

- How much did learning delays vary across states, and how much did learning delays vary based on students’ prior achievement?
- How much have children learned in content areas that are not widely tested, such as history and civics?
- How many children with disabilities, many of whom were out of school longer than other students, fell behind in learning and life skills?
- How did the pandemic affect the progress of smaller minority groups of students not fully identified in the data available, such as English learners, low-income students, or students of other racial subgroups, such as Indigenous, American Indian, Alaskan Native, or Pacific Islander students?
- What were the differences in learning progress or loss between children whose remote learning was live and fully synchronous compared to children who experienced other forms of remote learning?
- What were the differences in learning between children enrolled in charter and private schools compared to those enrolled in traditional public schools?
- What skills and knowledge did children acquire during school closures and remote learning that they may not have otherwise gained in traditional classrooms?

IV. Implications for the future

Though learning delays are more severe for some children than others, they are larger and more widespread than anything we’ve seen in the history of American education. New Orleans schools were closed for more than a year after Hurricane Katrina in 2005, but most of those students enrolled in new schools in the cities and states where their families sought refuge. Their learning delays, though significant, were smaller than the initial results visible in the waning days of the Covid-19 pandemic.

The full effect of pandemic-associated learning delays can’t be known immediately. Some researchers predict they’ll lead to consequent declines in high school completion, college persistence, student employability, and even future GNP. These reflect the trends witnessed
in other developed countries that suffered long schooling disruptions due to war or natural disasters. Consequences might, however, be hidden for a while by policies such as relaxed graduation requirements.

Predictions aside, America’s educational recovery will depend on how well educators, parents, and students respond over the next few years. Will schools intensify teaching core academic subjects and change their methods and budgets accordingly? One study suggested federal pandemic grants provided enough money to mount effective catch-up programs, but one year in, few districts had specifically detailed how they spent the money on academic recovery. In many cases, district leaders’ plans to swiftly address learning delays as students returned to school in 2021–22 were stymied by developments that could not be ignored, including school and classroom closures because of virus exposures, student and teacher absences, staff shortages, inconsistent attendance, school transportation challenges, and community conflicts over politics, public health, culture, and curriculum.

More challenges lie ahead. For school systems that intend to mount intensive academic interventions, labor shortages and finite federal relief money might thwart the ability to implement them fully. Declining enrollment in some districts may also reduce funding and, by extension, the capacity to pay for individualized, high-quality recovery programs. Families have an important role to play, but many whose children are the most in need of help have historically been the hardest for schools to reach and keep engaged—a condition that likely did not improve over the course of the pandemic. The extent to which students can fully recover depends on parents and guardians sending them to school regularly and supporting the extra time commitments required for tutoring, homework, longer school days, and summer learning opportunities.

Nearly two and a half years after the pandemic began, it’s clear school closures broadened already serious opportunity gaps based on income and race. Low-income students and students of color also disproportionately attend schools in big cities, which suffered from high rates of Covid-19 infections and deaths and lengthier school closures, on top of decades of economic distress. Even if national income and prosperity don’t diminish in the years to come, general inequality in America could get much, much worse. Avoiding that fate will require much more complete—and regularly updated—data on student progress and well-being, as well as more coordinated efforts from schools, teachers, families, students, government leaders, philanthropic organizations, and community organizations to build a tighter net of educational and social support for American students.
## Appendix

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<th>Citation</th>
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<th>Outcome Measures</th>
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### Citation | Student Sample | Outcome Measures | Report Summary
---|---|---|---
Vladimir Kogan (April 2022). Academic Achievement and Pandemic Recovery in Ohio: An Update from Fall Third Grade English Language Arts Assessments. The Ohio State University. | Ohio, grade 3 | Fall 2021 Ohio English language arts exams. | Assessing the performance of Ohio students in grade 3 on English language arts assessments since the beginning of the pandemic. |
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<td>Regional Educational Laboratory Midwest (December 2021). Estimating Changes to Student Learning in Illinois Following Extended School Building Closures due to the COVID-19 Pandemic. NCES.</td>
<td>Illinois, grades 3–8</td>
<td>NWEA MAP math and reading data from fall 2016 to fall 2020.</td>
<td>Examining math and reading achievement data of Illinois students from 17 school districts across five years, including five years before the pandemic.</td>
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About the Center on Reinventing Public Education

CRPE is a nonpartisan research and policy analysis center affiliated with Arizona State University’s Mary Lou Fulton Teachers College. We develop, test, and support bold, evidence-based, systemwide solutions to address the most urgent problems in K-12 public education across the country. Our mission is to reinvent the education delivery model, in partnership with education leaders, to prepare all American students to solve tomorrow’s challenges. Since 1993 CRPE’s research, analysis, and insights have informed public debates and innovative policies that enable schools to thrive.