

POLICY BRIEF

The Path of Student Learning Delay During the COVID-19 Pandemic: Evidence from Michigan

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May 2023

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ACKNOWLEDGMENTS

The authors wish to acknowledge the many people who graciously gave of their time in support of this effort. We are especially grateful to our partners for their collaboration and thoughtful feedback.

In particular, we would like to thank Tom Howell and Lauren Paluta from the Center for Educational Performance and Information and Delsa Chapman, Tyler Foley, Dave Judd, Ann-Marie Mapes, Andy Middlestead, Gerry Polverento, and Carol Skillings from the Michigan Department of Education; Kyle Kwaiser and Nicole Wagner from the Michigan Education Data Center at the University of Michigan; and Kevin Bullard and Don Dailey from the Michigan Data Hub. At Michigan State University, we thank Emily Mohr and Meg Turner for coordinating and facilitating the project. We also thank Michelle Huhn for her support developing graphics for and formatting the report. Finally, we thank Bridgette Redman for her excellent copy-editing.

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Introduction

The COVID-19 pandemic has severely affected student achievement across the United States. For example, spring 2022 end-of-year testing outcomes from multiple states show that student achievement continues to trail pre-pandemic levels.¹ Similarly, National Assessment of Education Progress outcomes from spring 2022 show historically large decreases in student achievement between 2019 and 2022.² COVID-19 pandemic effects have been particularly acute for certain student subgroups, including students of color and those receiving additional services, as well as students attending high-poverty schools, elementary schools, those who learned remotely, and those with lower baseline achievement.³ In light of these findings, it is imperative that research continues to document achievement trends so that educators, policymakers, and the public can better understand how the COVID-19 pandemic and associated school disruptions affected and continue to affect students' academic development.

This study uses student achievement measures from Michigan's summative end-of-year tests (the Michigan Student Test of Educational Progress, M-STEP) and formative fall and spring NWEA MAP Growth and Curriculum Associates i-Ready benchmark assessments to assess achievement

growth and trajectories during the COVID-19 pandemic. By combining these two data sources, we are able to examine both the total effect of the COVID-19 pandemic through spring 2022 and how achievement progressed during the pandemic-affected school years. We also examine heterogeneity in performance across students with different demographic characteristics and those who participated in different modes of instruction (e.g., fully in-person, fully remote, or hybrid instruction).

The full discussion of our data, methods, and results can be found [here](#).

DATA & METHODS

To investigate M-STEP achievement growth, we compare three-year growth outcomes for a “pre-pandemic” cohort that completed either the math or ELA assessment three years apart before the school closures that occurred at the start of the COVID-19 pandemic (i.e., 3rd and 4th grade students in spring 2016 who progressed to 6th and 7th grade in spring 2019) and a “pandemic” cohort that completed the M-STEP before the COVID-19 pandemic and in the most recent test administration (i.e., 3rd and 4th grade students in spring 2019 who progressed to 6th and 7th grade in spring 2022).

We also examine changes in achievement on nationally normed benchmark assessments between the fall 2020 and spring 2022 testing periods. These analyses provide additional insight into students’ achievement trajectories by capturing more granular changes during the school years that were directly affected by the COVID-19 pandemic. To align with the sample of students in our M-STEP analyses, we focus on middle school students (i.e., students who were in 5th through 7th grade in 2020-21 and in 6th through 8th grade in 2021-22). This allows for a more consistent comparison of students and outcomes across assessments.

For both analyses, we use multiple regression models to understand changes in achievement growth and achievement trends during the COVID-19 pandemic. Multiple regression is a statistical technique used to predict an outcome variable (i.e., three-year growth on the M-STEP or benchmark achievement in a particular semester) and two or more explanatory variables (e.g., a specific student characteristic or the percentage of students in a district with a specific characteristic). This technique allows us to estimate the unique relationships between academic achievement or growth and each explanatory variable, when all else is equal between students or districts.

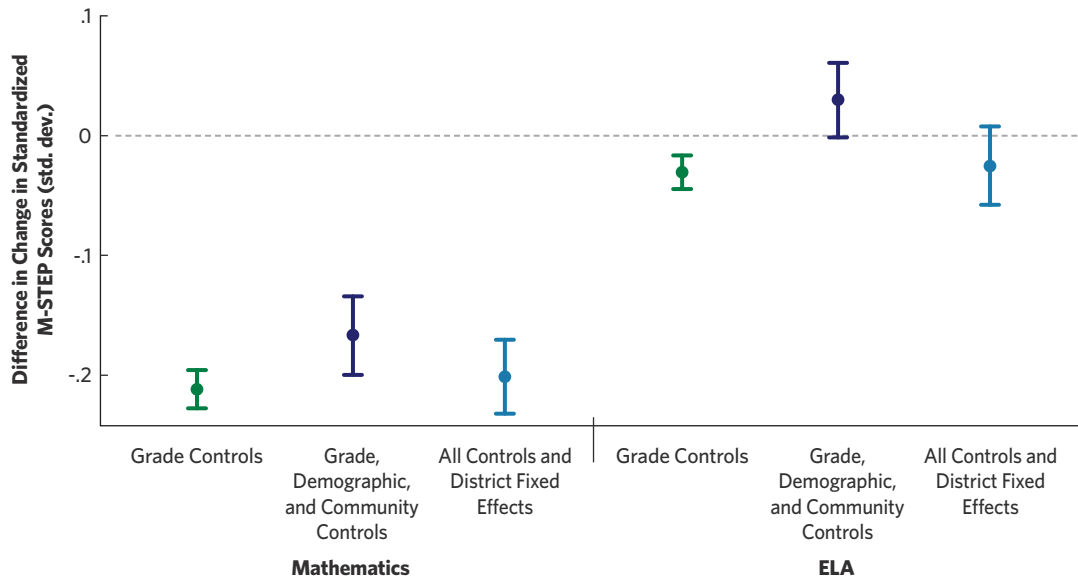
FINDINGS

Students in the COVID-19 Pandemic Cohort Had Significantly Lower Math Gains Than Those in the Pre-Pandemic Cohort

Figures 1 through 3 examine differences in achievement growth between students in the pre-pandemic and pandemic M-STEP cohorts. Figure 1 shows that students in the pandemic cohort grew between 0.167 and 0.201 standard deviations less in math over the three pandemic-affected years than did students in the pre-pandemic cohort. ELA growth for students in the pandemic cohort was generally similar to those in the pre-pandemic cohort; students who completed an

ELA M-STEP assessment in 2019 and 2022 grew by approximately 0.025 standard deviations less than similar students who completed assessments in 2016 and 2019, however, this estimate is not statistically significant.

FIGURE 1. Differences in M-STEP Learning Trajectories Between Pre-Pandemic and Pandemic Cohorts

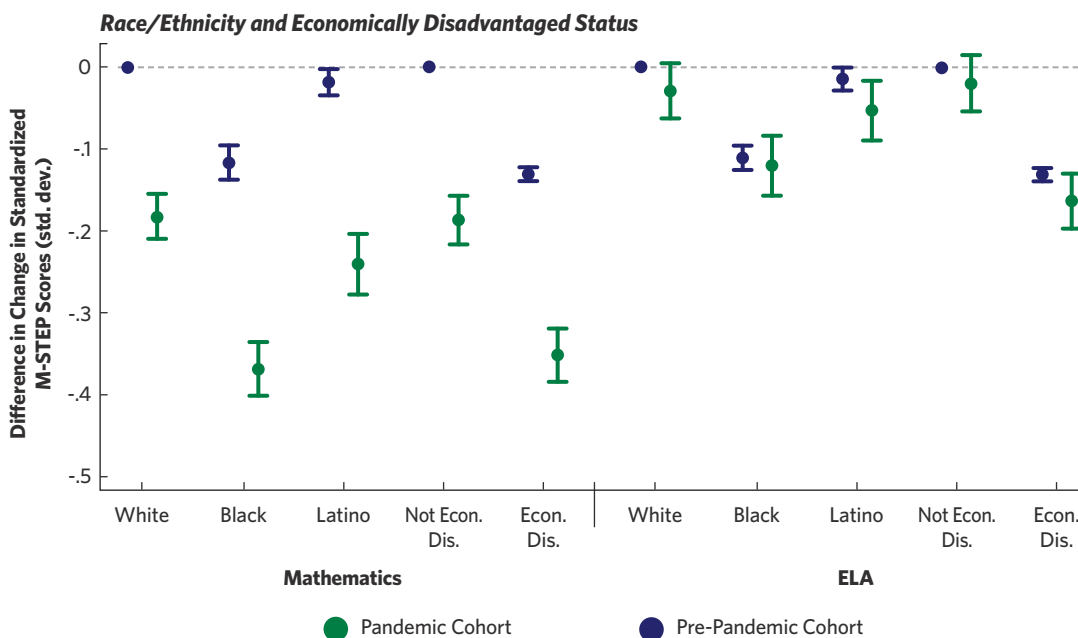


Notes: The zero-line represents the average three-year M-STEP growth for students in the pre-pandemic cohort. We show results from models that sequentially add controls for students' grade level, demographic/community characteristics, and district fixed effects.

Growth Disparities Between Non-White and White Students, as Well as Economically Disadvantaged Students and Their Wealthier Peers, Intensified During the COVID-19 Pandemic

Figure 2 provides results examining heterogeneity by race/ethnicity and economically disadvantaged status. Even prior to the COVID-19 pandemic, disparities in achievement growth existed such that Black, Latino, and economically disadvantaged students experienced slower achievement growth than their White and higher-income peers. However, we find that growth disparities across these groups of students intensified during the COVID-19 pandemic, particularly in math. Specifically, in the three years before the pandemic, Black and Latino students experienced math achievement growth that was 0.112 and 0.018 standard deviations lower than White students during the same period, respectively. In the three years encompassing the pandemic, Black and Latino achievement growth fell even further behind (-0.368 and -0.240 standard deviations, respectively). Similarly, math achievement growth for economically disadvantaged students in the pre-pandemic cohort was 0.130 standard deviations behind their more advantaged peers and this disparity increased for students in the pandemic cohort (-0.351 standard deviations). In ELA, achievement growth for Black, Latino, and economically disadvantaged students in the pre-pandemic cohort trailed their respective peers. However, these differences changed little for students in the pandemic cohort.

FIGURE 2. Differences in M-STEP Learning Trajectories Between Pre-Pandemic and Pandemic Cohorts by Student Demographics

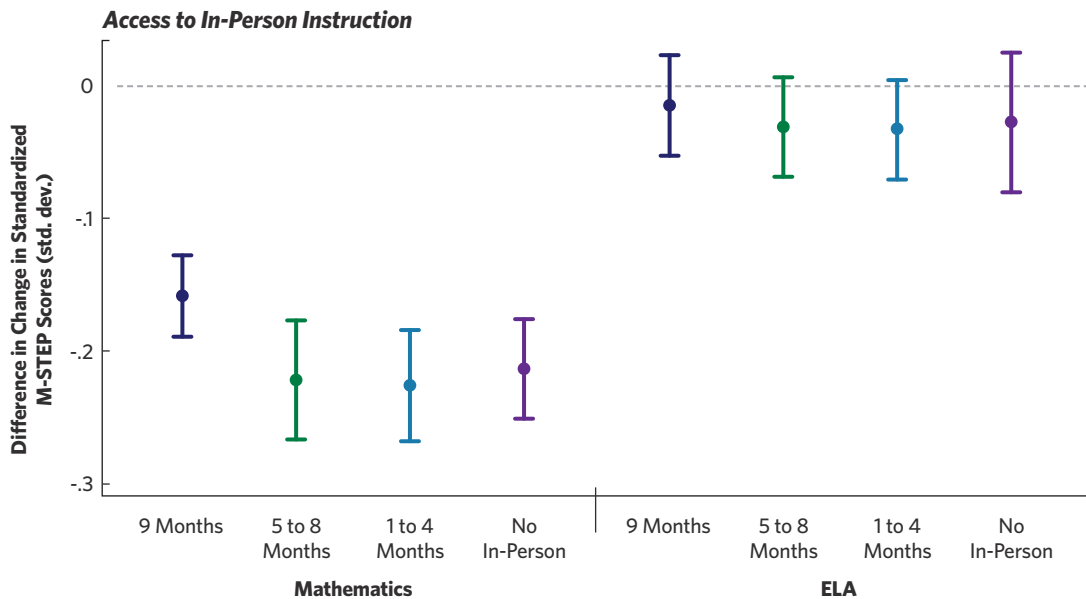


Notes: All estimates control for grade-level, student demographics and community characteristics, and district fixed effects. The zero-line represents the average three-year M-STEP growth for pre-pandemic cohort students in the specific reference group for each comparison (i.e., White or non-economically disadvantaged students).

Students in Districts That Offered In-Person Instruction for Some or None of the 2020-21 School Year Exhibited Lower Math Achievement Growth During the COVID-19 Pandemic

Figure 3 summarizes results estimating differences in math and ELA M-STEP three-year growth by the instructional modalities provided to students in 2020-21.⁴ We find that students in districts that offered in-person instruction all nine months of the 2020-21 school year still had lower math achievement growth over the course of the COVID-19 pandemic than students in the pre-pandemic cohort (-0.147 standard deviations). Students in districts that offered in-person instruction for only some or none of the 2020-21 school year experienced significantly slower math achievement growth than did students in districts that offered in-person instruction for all nine months, with achievement growth trailing their in-person peers by nearly 0.050 standard deviations. Moreover, achievement growth for these students trailed pre-pandemic students' math achievement growth by more than 0.200 standard deviation. However, there were no significant differences between students in districts that were remote for all of the year or only part (i.e., in person for 5-8 months or for 1-4 months). Again, the disparities in ELA growth across modalities were much smaller, and the disparities in growth rates were not significant compared to students in the pre-pandemic cohort.

FIGURE 3. Differences in M-STEP Learning Trajectories Between Pre-Pandemic and Pandemic Cohorts by 2020-21 Instructional Modality



Notes: All estimates control for grade-level, student demographics and community characteristics, and district fixed effects. The zero-line represents the average three-year M-STEP growth for pre-pandemic cohort students, and this is the reference group for all four modality categories.

Student Achievement Declined Substantially During the 2020-21 School Year With Some Recovery in 2021-22

There are several important takeaways from Figure 4. First, by fall 2020, average benchmark scores in Michigan were below the pre-pandemic norms for both reading and math (0.021 and 0.233 standard deviations below average, respectively). Although the spring 2019 M-STEP and fall 2020 data points are not directly comparable, it is clear that Michigan students in our sample were performing only slightly better in reading in fall 2020 than in spring 2019 but were substantially behind in math.

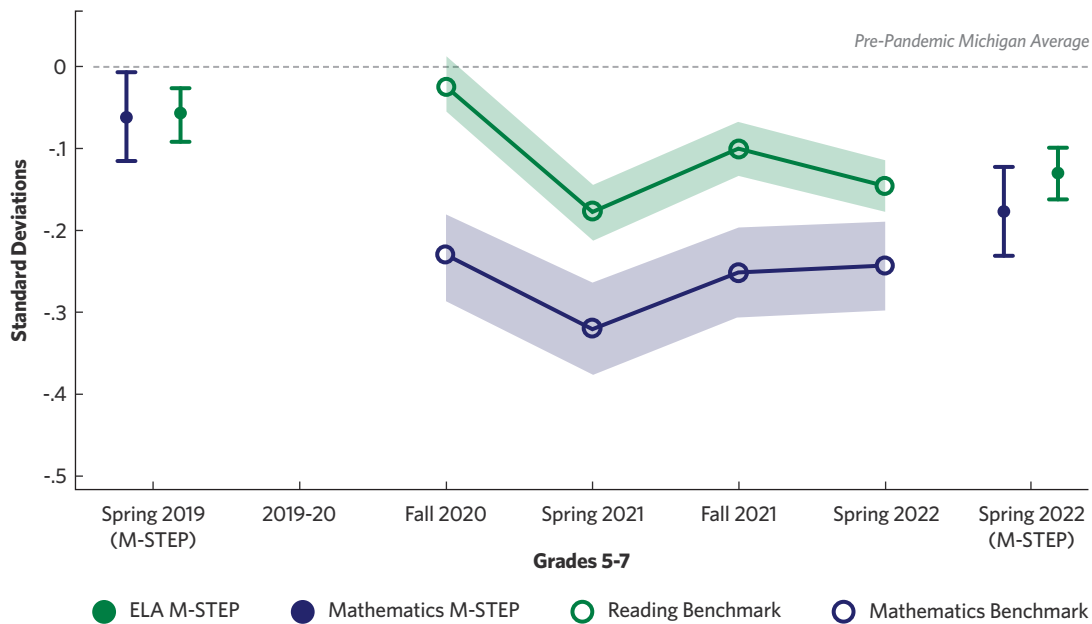
Second, we find that both math and reading benchmark scores dropped considerably during the 2020-21 school year, falling even farther behind the national pre-pandemic norm. Between spring and fall 2021, however, Michigan students experienced faster than expected growth, such that by fall 2021 they had almost caught up to where they had started the 2020-21 school year in math, but still trailed their fall 2020 average score in reading. Nonetheless, these scores both remained substantially behind the average standardized M-STEP scores from spring 2019.

During the 2021-22 school year, students made slightly greater than expected progress in math relative to the pre-pandemic national norm, whereas reading achievement fell relative to the national norm once again, albeit at a much slower rate than the prior year. Spring 2022 benchmark and M-STEP scores were generally similar in both subjects.

Thus, overall, total achievement growth trends over the two years of the COVID-19 pandemic as measured by the benchmarks are consistent with our findings comparing pre- and post- pandemic

M-STEP cohorts — a substantial drop in math achievement and a smaller drop in reading. What the benchmark exams highlight, however, is that this path was non-linear with severe drops in the first fully-affected pandemic school year and some recovery in the time between spring 2021 and fall 2021 assessments. There is an indication, however, that recovery stalled in the 2021-22 school year, as a continued upward trend between fall 2021 and spring 2022 would be necessary to recover all of the losses from the early part of the COVID-19 pandemic. It is unclear at this time whether the recovery has accelerated into 2022-23.

FIGURE 4. Regression Adjusted Math and Reading Benchmark Scale Score Trends Between Fall 2020 and Spring 2022



Notes: These regression estimates include only students with benchmark or M-STEP assessment scores for every possible testing period. Each model includes controls for student demographics, community characteristics, and district fixed effects. Test scores have been standardized relative to NWEA's and Curriculum Associates' pre-pandemic national norms. Spring 2019 and 2022 M-STEP estimates have been standardized relative to national norms.

POLICY RECOMMENDATIONS

These results reinforce findings from other states and make clear that recovery is an ongoing process. With this in mind, we make the following suggestions to Michigan policymakers, and to policymakers across the United States:

1. **Acknowledge that for many — if not most — districts, the road to full recovery will be long.** This is particularly the case for students who have been traditionally disadvantaged in K-12 public schooling and those who were disproportionately affected by the COVID-19 pandemic.
2. **Continue to provide educators and students with extensive supports to assist in their recovery from the trauma of the COVID-19 pandemic.** Government at all levels must continue to prioritize both short- and longer-term investments into public education, both in Michigan and elsewhere.

3. **Continue collecting data that will enable stakeholders to understand and track student recovery.** The mandated use and reporting of benchmark assessments in Michigan makes it possible for state and local policymakers to understand where progress is (and is not) being made towards academic recovery. It will be critical to continue collecting data that allows policymakers, educators, and stakeholders to assess progress in the coming years. Any decisions to reduce monitoring of student learning progress may exacerbate longstanding achievement gaps.

ENDNOTES

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3. Goldhaber, D., Kane, T. J., McEachin, A., Morton, E., Patterson, T., & Staiger, D. O. (2022). *The consequences of remote and hybrid instruction during the pandemic* (NBER Working Paper No. w30010). National Bureau of Economic Research. <https://doi.org/10.3386/w30010>; Kilbride, T., Hopkins, B., Strunk, K.O., & Yu, D. (2022) *Michigan's 2020-21 and 2021-22 benchmark assessments*. Education Policy Innovation Collaborative. https://epicedpolicy.org/wp-content/uploads/2022/10/COVID_Benchmark_Assessments_Report_Oct2022.pdf
4. It is important to note that while we are considering three-year achievement growth covering 2019-20 through 2021-22 here, we only consider modality in 2020-21 as after the COVID-19 pandemic began in early 2020, all schools in the state were remote for the remainder of the school year and by fall 2021, almost every school district in the state had returned to in-person modality.



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