HOOVER EDUCATION SUCCESS INITIATIVE

The Pandemic in Perspective

US Learning Losses in the Twenty-First Century

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Abstract

The pandemic undeniably disrupted student learning, but the decline in educational outcomes began well before COVID-19 and has persisted afterward. In fact, the achievement losses in the years before and after the pandemic match those that occurred during it. Restoring achievement to 2013 levels would raise the lifetime earnings of today's average student by an estimated 8 percent and would produce dramatic and sustained gains for the national economy.

Over the past half century, US education policy has been characterized by continual, incremental adjustments within the same institutional framework—introducing new programs, altering regulations, and significantly increasing resources—yet average performance has stagnated and large disparities have persisted. This record underscores the need for fundamental institutional change. Shifting to a system that prioritizes measurable outcomes and ties rewards to demonstrated effectiveness—rather than treating all schools and educators alike—is essential to reversing the decline and securing the nation's economic future.

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Everybody is now aware of the learning losses that are attributed to the pandemic. On average, achievement of students in school during the pandemic was significantly below that of similarly aged students before the pandemic, suggesting a straightforward way to calculate the impact of the pandemic and an easy way to judge progress toward recovery. But the pattern of achievement through the pandemic is best put into a larger picture of prepandemic declines in achievement and of continuing declines after the pandemic. Within this larger picture, the policy discussion needs to be much broader and go beyond simple discussions of short-run remedial programs.

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ACHIEVEMENT IN THE TWENTY-FIRST CENTURY

Simple observation and complicated research both show that the skills produced by our educational system have a direct impact on the functioning of our democracy, on the economic outcomes of individuals, and on the power and prestige of the nation. Thus, the scores of students on assessments of basic cognitive skills such as the National Assessment of Educational Progress (NAEP) offer a preview of what the future will look like.[1] Specifically, the average scores on such assessments provide an overview of this broad future, while the distribution of such scores across individuals identifies future disparities in outcomes with the potential need for governmental support. Because of the value that results from improving overall student achievement and from reducing the variations in outcomes, a variety of governmental programs and actions are aimed at improving educational outcomes, and the pattern of these scores over time also provides a useful way of assessing how the programs are working.

No single event over the postwar period has had an impact on our educational system that comes close to that of the pandemic. A wide range of policies were initiated in response to the pandemic in an attempt to remediate the potential harm to students in the COVID cohort and to forestall any impending economic declines from a fall in their skills. Assessing the impact of these policies, however, requires placing pandemic-era learning losses in the context of broader trends in student outcomes. Therefore, the pattern of achievement on NAEP over the last two decades provides a foundation for policy discussions around the pandemic.

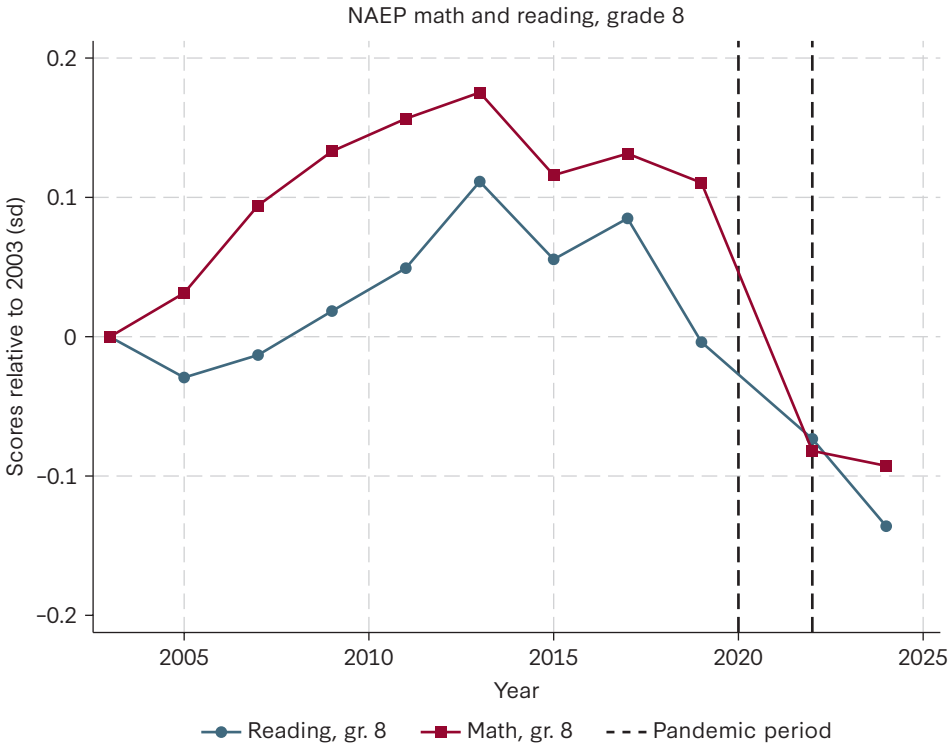
NAEP provides regular assessments of reading and math for state-representative samples of fourth- and eighth-graders. A crude way to judge the impact of the pandemic is to assume that a cohort—say, the eighth-graders in school during the pandemic—would have achieved what those in the same grade before the pandemic achieved. Based on the fall in NAEP assessments between 2019 and 2022, a variety of analyses have used this approach to estimate significant impacts that can be attributed to the closing of schools and the added disruption of the pandemic.[2] But to gain a more comprehensive picture of the performance of the educational system, it is useful to look also at performance before and after the pandemic. NAEP testing from 2003 to 2024 provides this wider lens on performance not only for the nation but also for each of the states.

THE PATTERN OF AVERAGE ACHIEVEMENT

The pandemic is bracketed by NAEP assessments in 2019 and 2022, and the national average scores for eighth-graders (figure 1) show significant declines over the pandemic period: 0.20 standard deviations (sd) in math and 0.07 sd in reading. These are important changes that have very large implications for the students' future earnings in the labor market. They also imply a lower quality of the nation's future labor force, something that has direct implications for economic growth and the well-being of society.

These observed learning losses are, however, likely to be very bad estimates of the impact of the pandemic itself. Scores were not constant before the pandemic but had been declining

FIGURE 1 NAEP math and reading scores before, during, and after the pandemic



Source: National Assessment of Educational Progress (NAEP), https://www.nationsreportcard.gov.

in both reading and math since 2013.[3] This prior decline is most evident for reading but also clear for math. This declining performance path suggests that some of the fall in scores during the pandemic might well have occurred even without a pandemic.

The same questions about interpretation of the pattern of student achievement come up again when we look at the "pandemic recovery period" from 2022 to 2024. The federal government put $190 billion of funding into schools, most of which went directly to the schools themselves. Instead of scores holding constant or rising as increasing funds and programs were deployed to address pandemic learning losses, the score declines continued. This further decay was particularly significant for reading performance.

While 72 percent of the decline in math performance since 2013 occurred during the pandemic period, only a quarter of reading decline is found during the pandemic (table 1). In fact, the reading decline over the postpandemic period is almost as large as that for the pandemic period.

The pattern of NAEP scores for grade four is the same as for grade eight. Scores peak in 2013 and fall through the pandemic and the postpandemic period. The relative drop in math scores during the pandemic is larger than for reading, where the pre- and postpandemic losses assume a relatively larger portion of the losses since 2013.

TABLE 1 CHANGE IN NAEP GRADE EIGHT PERFORMANCE FOR THE US (STANDARD DEVIATIONS)

	Test dates	Math	Reading	Composite
Prepandemic	2013–2019	–0.07	–0.13	–0.10
Pandemic	2019–2022	–0.21	–0.07	–0.14
Postpandemic	2022–2024	–0.01	–0.06	–0.04
TOTAL	2013–2024	–0.29	–0.27	–0.28

Note: Composite equals math plus reading scores.

Source: Author calculations from NAEP data at https://www.nationsreportcard.gov.

THE FALLING BOTTOM

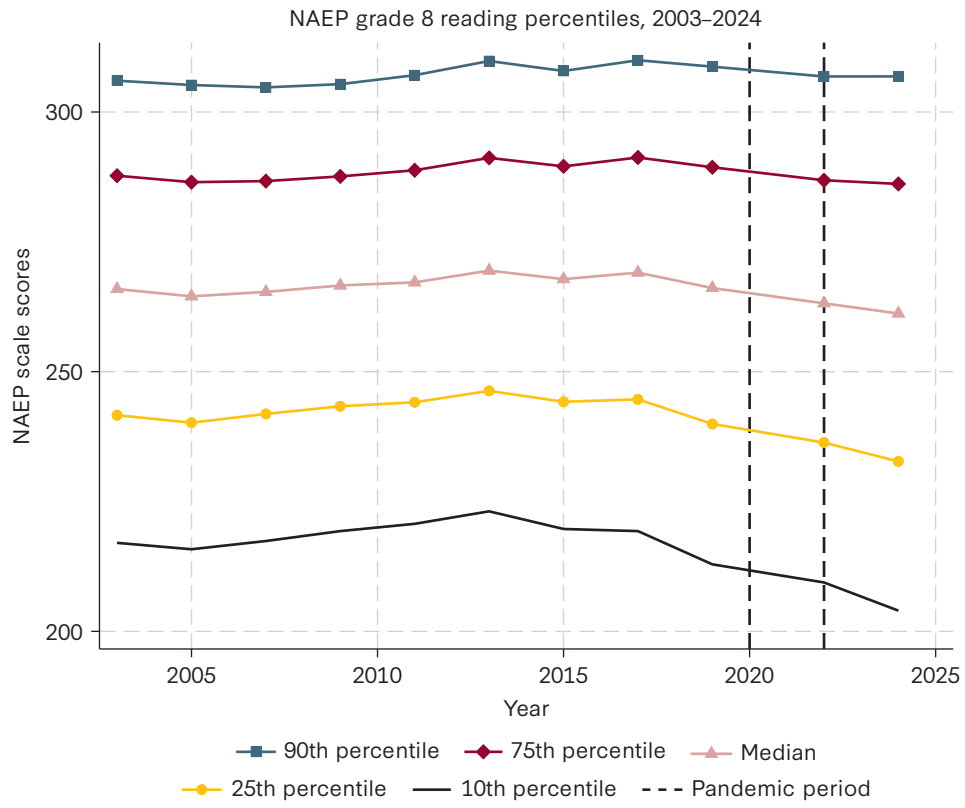
The second achievement goal is to promote mobility by providing quality education to all, a strong federal objective since the War on Poverty in the 1960s. To assess progress on these distributional issues, we can look at the time pattern of variations in student performance over time.

At the same time that achievement was falling, the "gap" between high-achieving and low-achieving students widened. As seen in figure 2, scores across the distribution fell during the pandemic period. Beginning in 2013, however, scores in the bottom portion of the distribution fell compared to those at the top of the distribution, reflecting increased variance in performance and suggesting significant impacts on the future economic possibilities for the most disadvantaged students. For both math and reading in grades four and eight, the variance of the NAEP scores in 2024 is larger than in any prior year of testing.

An alternate way to view the problem of low-level performance is to plot the portion of students unable to reach the lowest identified learner category on NAEP. Student performance is rated against expectations of performance for each grade level, with cutoffs established for *basic*, *proficient*, and *advanced* levels.[4] In reading for grade eight, a student at the basic level should demonstrate a literal understanding of what they read and be able to make some interpretations. In math for grade eight, students at the basic level can demonstrate understanding of foundational math concepts and apply them in simple situations. Basic performance levels are best interpreted as the minimum skills that will be commonly needed to participate fully in an information-based economy.

The percentage of students failing to reach the basic level of math and reading rose substantially during the pandemic (figure 3). As seen previously, however, the deterioration of skills during the pandemic followed a substantial deterioration that began after 2013 and did not end with the pandemic.

FIGURE 2 Scores of students at different percentiles of the NAEP achievement distribution, reading, grade eight



Source: NAEP, https://www.nationsreportcard.gov.

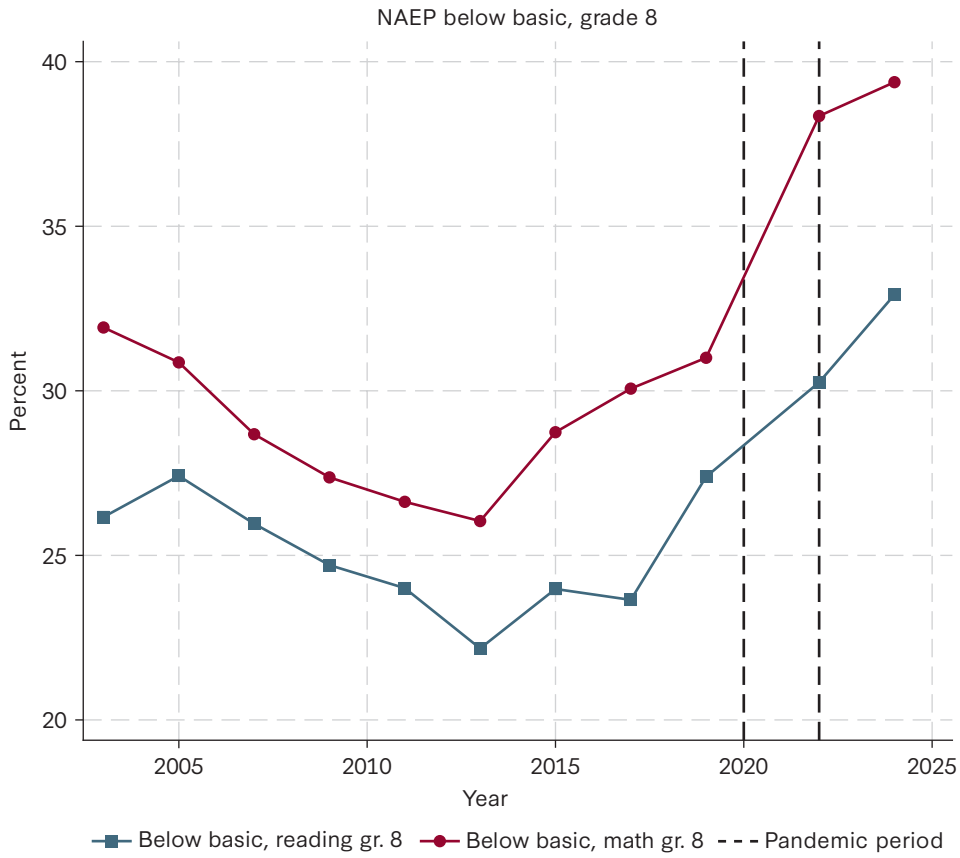
OTHER EVIDENCE ABOUT ACHIEVEMENT PATTERNS

These declines in achievement are not an artifact of the NAEP testing. They appear consistently across alternative assessments that permit longitudinal comparisons for representative samples of US students.

An alternate version of NAEP, Long-Term Trends (LTT), has assessed math and reading scores for the nation since the 1970s.[5] While the testing framework of the Main NAEP (discussed earlier) has been adjusted over time to match curricular changes, LTT NAEP has kept the same framework, thus providing a different perspective on comparisons over time. The pattern of average US performance is repeated for both nine- and thirteen-year-olds in the LTT version of NAEP. Scores reached their highest level in both math and reading in 2012 and then declined until the most recent testing in 2022. These declines continued during the pandemic period but began almost a decade earlier.

The US scores on the Trends in International Mathematics and Science Study (TIMSS) also follow the NAEP pattern. TIMSS is an international assessment conducted by the International Association for the Evaluation of Educational Achievement (IEA). It is designed to compare

FIGURE 3 Percent of students failing to achieve the basic level on NAEP grade eight assessments



Source: NAEP, https://www.nationsreportcard.gov.

performance across countries but provides data for a representative sample of US students. TIMSS has provided results for comparable assessments in math and science at grades four and eight every four years since 1995 except for the most recent five-year span from 2019 to 2024.

TIMSS scores in all subjects and grades fell significantly during the combined pandemic and recovery period of 2019–2024. But their decline began earlier. In grade eight, math scores peaked in 2015 and science scores in 2011. Grade four math peaked in 2011 and grade four science in 2015.

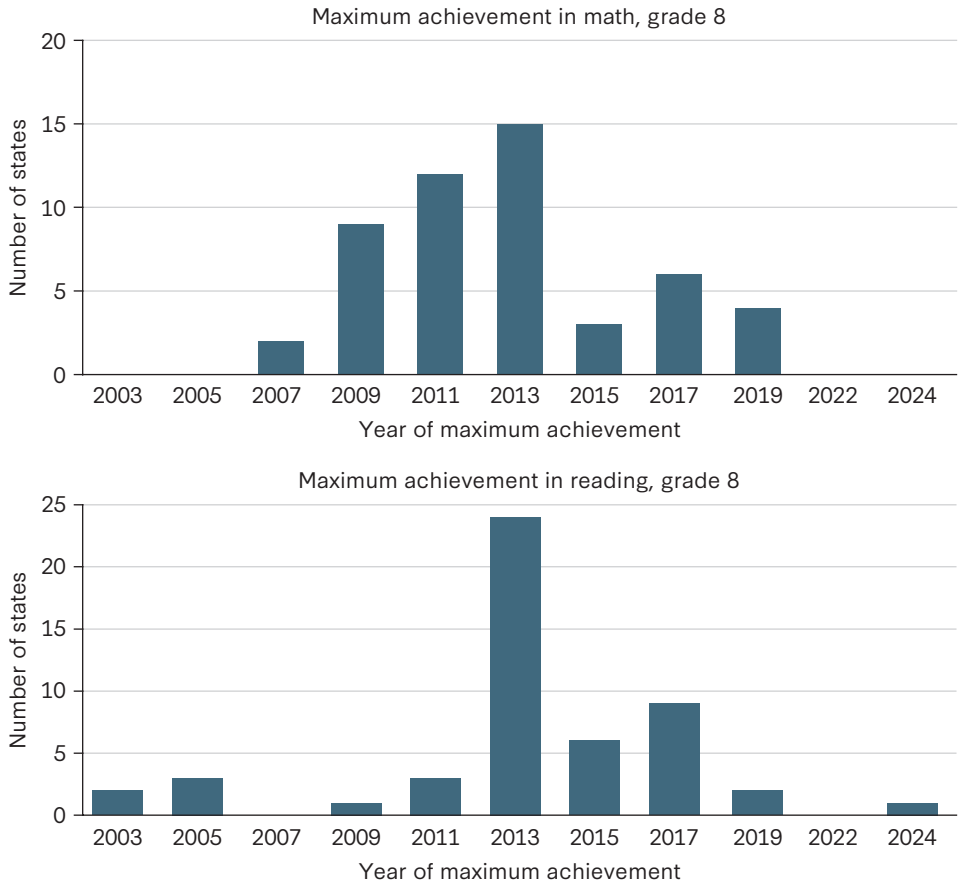
The US scores on the Programme for International Student Assessment (PISA) follow a slightly different pattern. PISA, conducted by the Organisation for Economic Co-operation and Development (OECD), is again designed for international comparisons, this time of representative samples of fifteen-year-olds. Testing has followed a three-year cycle beginning in 2000, with a delay of the 2021 testing until 2022 because of the pandemic. Each of the separate tested domains shows lower scores over the pandemic (measured in 2018 and 2022), but the magnitude of the fall is less than that for NAEP. The math assessment peaks in 2009, while the reading and science assessments peak in 2018.

PATTERNS OF STATE ACHIEVEMENT

The clear pattern of achievement for the nation masks substantial heterogeneity among the states. To be sure, the educational outcomes over the twenty-first century reflect not only school factors but also demographic changes (particularly at the state level) and other societal factors. Nonetheless, the burden of ameliorating the declines in learning falls squarely on schools in the states, not only because of the states' constitutional responsibility for schooling but also because schools are where government policy has its greatest potential leverage.

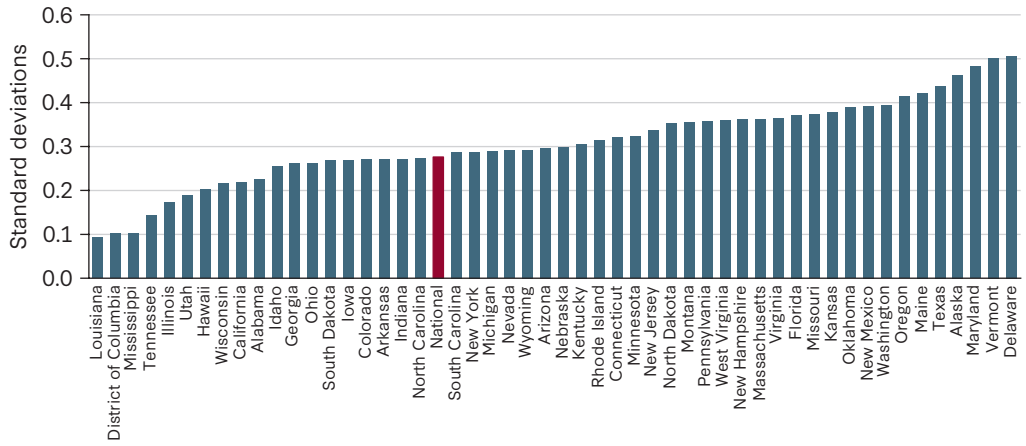
State performance shows some important differences in patterns over the twenty-first century. Almost three-quarters of the states reached their highest level of eighth-grade NAEP student math achievement by 2013, and 45 percent reached peak math performance by 2011 (figure 4). Two-thirds of the states reached their reading peak by 2013. Only four states were at their math peak and three states at their reading peak going into the pandemic.[6] And where does performance stand across the past quarter century? Performance postpandemic in both math and reading was above that at the beginning of the century in just four states (California, District of Columbia, Hawaii, and Mississippi).[7]

FIGURE 4 Distribution of year of maximum state achievement, grade eight



Source: Author calculations from NAEP data at https://www.nationsreportcard.gov.

FIGURE 5 Decline in combined performance from state peak (standard deviations)



Source: Author calculations from NAEP data at https://www.nationsreportcard.gov.

States have shown dramatically different performance pattern, which are easiest to see from the amount of decline in student achievement from each state's peak achievement level. The median math decline across states is over one-third standard deviations (sd), but declines range from 0.11 sd (Tennessee) to 0.56 sd (Texas). For reading, the range is from 0 in the District of Columbia, where performance peaked in 2024, to 0.48 sd in Vermont. The change in average math and reading performance can be seen in figure 5. Only three states have declines of less than 0.1 standard deviations (Louisiana, District of Columbia, and Mississippi).

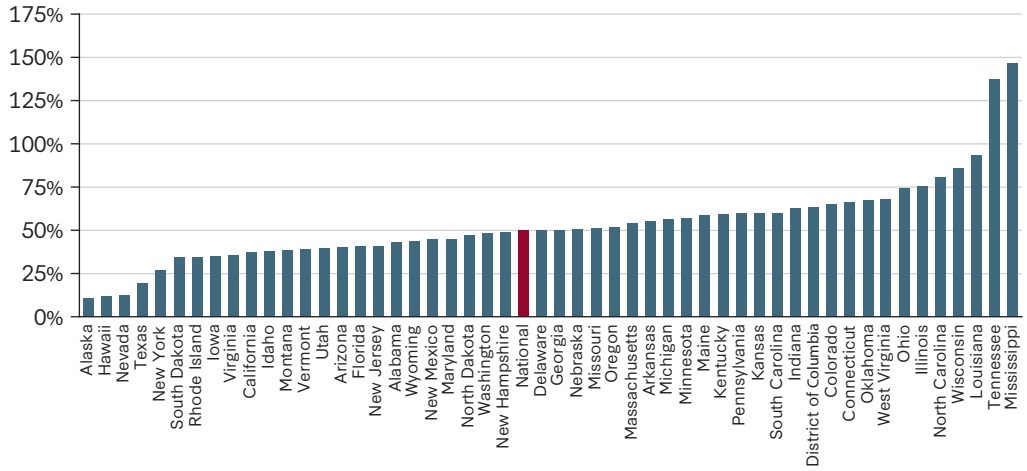
As foretold in the national picture, the combined math and science losses during the pandemic period for the median state were half of the total decline in scores from the state's peak performance. For reading, the median pandemic period decline stood at just 37 percent of the total. The differences across the states, however, are dramatic. Less than one-quarter of Alaska's decline of a half standard deviation from peak occurred during the pandemic period (figure 6). On the other hand, a few states had performance similar to that of Tennessee, where the recovery during the 2022–2024 period erased much of the decline in scores from the peak, leaving the COVID period losses looking particularly large.

State losses are quite consistent across math and science. State score declines are similar in magnitude for the two domains (figure 7). In other words, the observed drop in performance is not something specific to tests, curriculum, or anything subject specific but instead highlights significant overall performance differences across states.

ECONOMIC COSTS OF LEARNING DECLINES

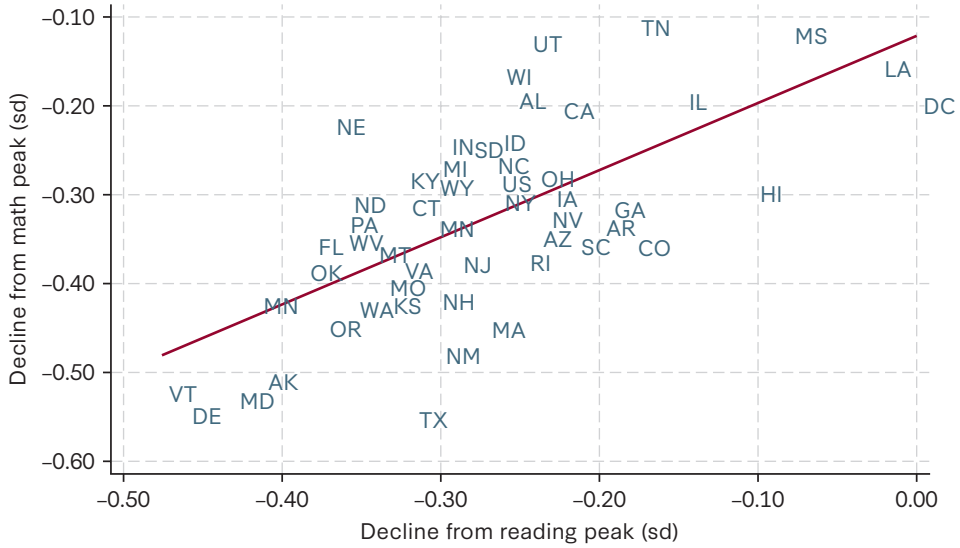
The economic costs of the falloff in learning are huge. While the importance of changes in standard deviations is difficult to grasp, it is considerably less difficult to understand the economic implications of changes in the skills measured by the tests. Past research makes it clear that on average individuals who know more earn more.[8] It also shows that nations with a more skilled

FIGURE 6 Percentage of total score decline occurring during pandemic, math, grade eight



Source: Author calculations from NAEP data at https://www.nationsreportcard.gov.

FIGURE 7 Comparison of total score declines in reading and math



Source: Author calculations from NAEP data at https://www.nationsreportcard.gov.

workforce, what has been labeled the "knowledge capital" of nations, grow faster in the long run.[9] The lower achievement identified previously means that earnings for many students when they enter the labor force will be lower, and these lower earnings will follow them throughout their working lives. It also means that the nation will grow more slowly than it would have if higher achievement levels had been sustained until now.

Students in school over the past decade will, according to historical evidence, suffer worse labor market outcomes than those attending school earlier in the century. Using the historical pattern of rewards to skills, expected future earnings of recent students will on average be

TABLE 2 INDIVIDUAL LOSSES IN LIFETIME EARNINGS (COMBINED MATH AND READING)

	Average (standard deviations)	Lifetime earnings losses		
		Average	State minimum	State maximum
Prepandemic	–0.10	–2.8%	0.0%	–7.0%
Pandemic	–0.14	–3.9%	–1.4%	–7.2%
Postpandemic	–0.04	–1.1%	2.0%	–4.3%
TOTAL	–0.28	–7.7%	–2.6%	–13.9%

Note: State minimum and maximum pertain to each period, and thus the cells refer to different states.

Source: Author calculations using NAEP data at https://www.nationsreportcard.gov and using returns in Eric A. Hanushek, Guido Schwerdt, Simon Wiederhold, and Ludger Woessmann, "Returns to Skills Around the World: Evidence from PIAAC," *European Economic Review* 73 (2015): 103–30. The state differences mean that the average students in some states will fare much better than those in other states. While the total expected earnings declines in Louisiana are less than 3 percent, the earnings declines elsewhere approach 14 percent. These are not one-time losses but declines in lifetime earnings.

lower by almost *8 percent* (table 2). Importantly, the pandemic achievement declines represent just half of this. This average also understates the much larger costs for our most disadvantaged students, whose average achievement declines were larger.

For the nation, the expected costs of the learning declines make much of the current economic and budget discussions appear inconsequential.[10] We can use historical growth relationships to compare where the US economy would be had we stayed at the previous peak achievement levels as opposed to staying at the 2024 levels. The present value of future lost growth would be approximately three times current GDP (which is $30 trillion). GDP on average would be 6 percent higher for all years in the remainder of the century if we were able to stay at the achievement levels of 2013. These losses are many multiples of the combined GDP losses due to the 2008 recession and the COVID recession.

Importantly, we can still avoid much of the economic losses associated with current and future achievement declines. While prior recessions have already occurred, and their economic costs can no longer be changed, this is not so for the learning losses that can be addressed for students still in school. The economic estimates of the resulting costs come from projecting the implications of the currently measured skills. These skills can still be changed for many before they become locked into the labor market outcomes that are projected. Satisfactorily addressing skills deficits for students who have left the K–12 schools is very unlikely, because neither postsecondary schools nor businesses have proved to be very good at remediation. The 21 million pandemic-era students who have left secondary schools most likely face the prior estimated individual losses. On the other hand, current (and future) students have the possibility of returning to the previously seen levels of achievement—thus erasing the losses that were estimated before they occur.

Because achievement declines began well before the pandemic, simply returning to immediate prepandemic achievement levels would only halve the projected economic losses. That would leave enormous losses that have dramatic implications for individual well-being, for government fiscal capacity, and for the world position of the United States. Interestingly, in the early months after the beginning of the pandemic, much of the discussion revolved around the need not just to return to the prepandemic schools but also to make them better. Indeed, if students just returned to their prior pace of learning, many would be unable to recover unless the length of schooling were dramatically extended.[11]

RETURNING TO THE PAST

Today's concerns about US educational performance are not new, just made more real by the pandemic. There have been waves of public calls for improvement. Perhaps none has been as strong (and long-lasting) as the 1983 publication of *A Nation at Risk: The Imperative for Educational Reform*. This report, commissioned by the US Department of Education during the Reagan presidency and filled with hyperbolic language, was built on an observation that sounds remarkably apt for today:

> The time is long past when American's [*sic*] destiny was assured simply by an abundance of natural resources and inexhaustible human enthusiasm, and by our relative isolation from the malignant problems of older civilizations.[12]

Few have argued that this observation is incorrect and that reform of our schools is not needed.

Over the four decades since the report, we have seen a wide range of approaches to meet its challenges. These efforts have to a fair extent covered all aspects of our schools. The many reform actions include expanded graduation requirements, increased pay for teachers, reduced class sizes, consequential school accountability, expanded preschool opportunities, new curricula and new technologies, alternative governance structures, charter schools and other choice options, wraparound services for students, and substantially increased funding. Most recently, efforts shifted to partial remediation of the lost time from the pandemic.

The record of results is underwhelming. A few things stand out from a broad review of these policy approaches since *A Nation at Risk*.[13] First, a majority of the reforms are incremental and isolated, moving one part of the existing system with little concern about other parts or other reforms. Second, even if a policy approach shows effectiveness, it fails to be implemented broadly and generally dies or is pushed to the side by new reforms.

Third, and most importantly, the collection of reforms has failed to meet the challenges. If we look at student performance from *A Nation at Risk* until 2020, math performance of thirteen-year-olds (using LTT NAEP data) increased by 0.3 sd—but this is almost entirely reversed by the decline since 2012. Comparable thirteen-year-old reading scores grew until 2012 by 0.2 sd but fell back to 1975 scores by 2023.[14] Four decades of broad reform efforts find us still confronting the challenges cited in 1983.

Nor can it be argued that the policy efforts were successful at ameliorating the performance gaps of disadvantaged students. Even before *A Nation at Risk*, President Lyndon Johnson had launched his War on Poverty, where he had singled out education as the long-term solution—dealing with the underlying causes of poverty and not just symptoms. Achievement gaps by socioeconomic status, when traced from the War on Poverty to the beginning of the pandemic, show no closing.[15] We have also seen the postpandemic widening of achievement gaps.

The response to the pandemic is noteworthy because it has focused almost exclusively on the achievement declines during the pandemic with the implicit assumption that the real policy challenge is getting us back to the prepandemic achievement levels. Thus, much attention has focused on simply reversing the lost time during the pandemic and on the disproportionate impacts on low-achieving and disadvantaged students. But the performance data indicate quite clearly that these efforts have been insufficient. The headline policies of added time (lengthened days and school years, summer school), tutoring, added technological support, and more have either been implemented ineffectively or, when effective, have not been broadly employed. Performance has declined since 2022 despite these efforts.

A DIFFERENT PERSPECTIVE

The underlying theme of reform efforts over the past half century has been to enhance particular features of the educational system but to retain the essence of the institutional structure. Thus, there are add-ons of various types, regulatory constraints designed to prevent poor outcomes, and expansions of existing operations that, even though viewed as very promising, have failed to yield the expected or hoped-for results.

While the specifics of each new reform differ, the repeated failure of the broad set of reforms to deal with the achievement challenges of the nation is remarkably consistent and indicates that we need to look at the problem differently. Instead of enhancing the current structure, it is likely time to rethink how we operate our schools.

Perhaps the most critical observation comes from the dynamics of school policy development. Even when there is a successful school policy put into place at scale with validated performance outcomes, there is not a rush by other schools to adopt it. Good examples are the incentive-based personnel changes in Washington, DC, and Dallas, Texas.[16] When teachers are evaluated and paid based on their classroom effectiveness, student scores respond significantly. Yet, because these districts use incentive systems that are alien to most district contracts and operations, these systems have been largely ignored and not copied.

The general lack of incentives aligned to higher student achievement leads to a system that may or may not adopt programs, policies, and operations that support better performance. It is not that current school personnel do not want higher achievement, but that other things are also valued and appear to take priority over any quest for higher achievement.

Introducing significant incentives into schools is clearly difficult, a task that faces strong headwinds but that can be done. The attempt to do so under the US Department of Education's Race to the Top program led to strong backlash and was explicitly prohibited under subsequent congressional legislation.[17] But change is possible. The fight to introduce performance pay in Washington, DC, was intense but it succeeded, leading to strong student achievement gains, and has remained in effect across new superintendents.[18] The introduction of altered evaluation and pay systems in Dallas took years of planning and preparation but has also survived multiple new superintendents.[19] Dallas-like systems have in fact expanded in Texas because of grants enabled by the Texas legislature that can go to districts willing to change their systems; 542 districts were receiving funds in 2025.[20] Following state takeover, Houston is moving rapidly to follow.

Putting together a structure that promotes higher achievement takes educational policy into new realms and requires different roles for both state and federal policymakers. Some thought has been given to this. One model is available from the Education Futures Council and provides a thoughtful example of how the system might change.[21] This report picks up on some of the prior observations—maintaining a focus on student outcomes, incorporating incentives for the desired outcomes, and recognizing that local capacity and local demands vary so much that broad-based mandates and regulations thwart innovation. Because schooling is local, federal roles should be confined to support, not control, including efforts such as data collection and research and using incentive-based approaches instead of mandates and regulations. States are central to enabling local implementation without treating all districts the same. For example, districts that perform well should be given wide operational latitude in actions, while districts that do not perform well should be more closely constrained and guided to more successful outcomes.

There are, of course, many alternatives to the current structure of our educational system, but history suggests that we should look more to an outcome-based design than to small tweaks of our current stagnant system.

LOOKING FORWARD

The pandemic has absorbed all of the attention afforded to school policy, drawing attention away from declining student performance that began earlier but less dramatically. The United States ranks thirty-fourth among participants on the 2022 PISA math assessment. This places the US below the OECD average, edging out the Slovak Republic but falling behind Malta. The US economy has performed well for reasons other than education. The basic structure of the US economy has been a great advantage, and the ability to attract and employ highly educated immigrants, particularly in the STEM fields (science, technology, engineering, mathematics), has significantly strengthened our labor force. But it is unclear whether we will be able to count on these advantages in the future, leaving us dependent on the quality of the labor force that we produce through our system of public schools.

Improving the performance of our educational system will require fundamental changes. A half century's collection of highly touted marginal changes simply has not worked. We are now in a decade-long decline that, while exacerbated by the pandemic, has been driven by more systemic issues.

It is time that we learn from the consistent results of a half century of failed add-ons to a resistant system. Do we really believe that the next one will work?

NOTES

1. NAEP includes a wide range of assessments by subject, grade level, and underlying testing structure. This analysis focuses on Main NAEP, the congressionally mandated testing of fourth- and eighth-grade reading and math that relies on representative samples of students in each state. While the assessments began with voluntary state participation in 1990, all states have been required to participate since 2003. An alternative described below is Long-Term Trend (LTT); it has tested students since the 1970s for national samples but by age instead of grade as in Main NAEP.

2. See, for example, Eric A. Hanushek and Bradley Strauss, "United States: The Size and Variation of the Pandemic Learning Losses," in *Improving National Education Systems After COVID-19: Moving Forward After PIRLS 2021 and PISA 2022*, eds. Nuno Crato and Harry Anthony Patrinos (Springer, 2024): 189–203; Robin Donnelly and Harry Anthony Patrinos, "Learning Loss During Covid-19: An Early Systematic Review." *Prospects* 51, no. 4 (October 2022): 601–9; George Psacharopoulos, Victoria Collis, Harry Anthony Patrinos, and Emiliana Vegas, "The COVID-19 Cost of School Closures in Earnings and Income Across the World," *Comparative Education Review* 65, no. 2 (May 2021): 271–87; and May Bend, Yitong Hu, Yilin Pan, et al., *Education Finance Watch 2023* (World Bank Group, 2023). For a broader perspective, however, see James H. Wyckoff, "Puzzling Over Declining Academic Achievement," *EdWorkingPapers* (Annenberg Institute, Brown University May 2025): 25–1197.

3. The NAEP testing occurs at two-year intervals, so the peak score may be above the 2013 tests and may occur sometime in the 2013–2015 interval.

4. For a description of reading performance levels, see "The NAEP Reading Achievement Levels by Grade," National Assessment of Educational Progress, n.d., https://nces.ed.gov/nationsreportcard/reading/achieve.aspx.

5. NAEP has two different versions of its assessments, with each using somewhat different assessment frameworks. The long-term trends version has provided national assessment data since the early 1970s for students aged nine, thirteen, and seventeen, although the version for seventeen-year-olds has not been accomplished since 2012. The main NAEP testing was begun on a voluntary basis for states in 1990 and became mandatory for state representative sampling after 2001 when No Child Left Behind federal accountability became law. The availability of data for all states sets the period of this analysis at 2003–2024.

6. Math peak: District of Columbia, Michigan, Mississippi, and Tennessee; reading peak: District of Columbia, Louisiana, and Mississippi. District of Columbia differs from all states in that it reached its maximum in 2024 after a gain during the recovery period; its prepandemic maximum came in 2019.

7. Arkansas, Tennessee, and Utah remained above math performance at the beginning of the century, and Georgia, Louisiana, and Nevada also did so for reading.

8. Eric A. Hanushek, Guido Schwerdt, Simon Wiederhold, and Ludger Woessmann, "Returns to Skills Around the World: Evidence from PIAAC," *European Economic Review* 73 (2015): 103–30.

9. Eric A. Hanushek and Ludger Woessmann, *The Knowledge Capital of Nations: Education and the Economics of Growth* (MIT Press, 2015).

10. For an understanding of the methodology for estimating the losses, see Eric A. Hanushek and Ludger Woessmann, "How Much Do Educational Outcomes Matter in OECD Countries?" *Economic Policy* 26 (2011): 448–53.

11. Margaret E. Raymond, "The Pace of Recovery After COVID," Hoover Institution, Stanford University, 2023.

12. National Commission on Excellence in Education, *A Nation at Risk: The Imperative for Educational Reform* (US Government Printing Office, 1983), 8.

13. Stephen L. Bowen and Margaret E. Raymond, eds., *A Nation at Risk +40: A Review of Progress in US Public Education* (Hoover Institution Press, 2023).

14. Long-term scores for seventeen-year-olds are unavailable after 2012. Math scores for seventeen-year-olds from the time of *A Nation at Risk* grew by 0.25 sd, but reading scores fell by 0.05 sd by 2012.

15. Eric A. Hanushek, Jacob Light, Paul E. Peterson, Laura M. Talpey, and Ludger Woessmann, "Long-Run Trends in the US SES-Achievement Gap," *Education Finance and Policy* 17, no. 4 (2022): 608–40.

16. For Washington, DC, see Thomas S. Dee and James Wyckoff, "Incentives, Selection, and Teacher Performance: Evidence from IMPACT," *Journal of Policy Analysis and Management* 34, no. 2 (2015): 267–97; for Dallas, Texas, see Eric A. Hanushek, Minh Nguyen, Ben Ost, and Steven Rivkin, "The Power of Performance Pay: Smarter Teacher Retention and Accelerated Student Achievement in Dallas," *Education Next* 25, no. 2 (2025).

17. Joshua Bleiberg, Eric Brunner, Erica Harbatkin, Matthew A. Kraft, and Matthew G. Springer, "Taking Teacher Evaluation to Scale: The Effect of State Reforms on Achievement and Attainment," NBER Working Paper Series No. 30995, National Bureau of Economic Research, 2023; Arne Duncan, *How Schools Work: An Inside Account of Failure and Success from one of the Nation's Longest-Serving Secretaries of Education* (Simon and Schuster, 2018); and Patrick McGuinn, "From No Child Left Behind to the Every Student Succeeds Act: Federalism and the Education Legacy of the Obama Administration," *Publius: The Journal of Federalism* 46, no. 3 (2016): 392–415.

18. Michelle Rhee, *Radical: Fighting to Put Students First* (HarperCollins, 2013); and Thomas S. Dee and James Wyckoff, "A Lasting Impact: High-Stakes Teacher Evaluations Drive Student Success in Washington, DC," *Education Next* 17, no. 4 (2017): 58–66.

19. Hanushek et al., "The Power of Performance Pay."

20. Texas Education Agency, *Annual Report 2023*.

21. Education Futures Council, *Ours to Solve, Once—and for All: Securing the Outcomes Our Students Need* (Hoover Institution, Stanford University, 2024).

31 30 29 28 27 26 25 7 6 5 4 3 2 1

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