

# NEPC REVIEW: THE ECONOMIC COST OF THE PANDEMIC: STATE BY STATE (HOOVER INSTITUTION, JANUARY 2023)



Reviewed by:

Clive Belfield

Queens College, City University of New York

March 2023

**National Education Policy Center**

School of Education  
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## Acknowledgements

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**Suggested Citation:** Belfield, C. (2023). *The economic cost of the pandemic: State by state*. Boulder, CO: National Education Policy Center. Retrieved [date] from <http://nepc.colorado.edu/thinktank/pandemic>

**Funding:** This review was made possible in part by funding from the Great Lakes Center for Educational Research and Practice.



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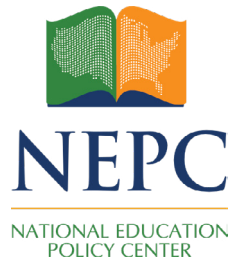
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### Summary

A recent Hoover Institution report calculates the future economic burden that the pandemic has imposed through reduced student achievement levels. Under a set of assumptions about the link between achievement and earnings, this economic burden is projected to be very large, persistent, and variable across states. From there, the report contends that—to offset this achievement gap—schools need to be “made better” even as the report is silent on how schools can improve or if more funding is needed. Setting aside this exhortation, however, the report actually falls short of a full accounting of the total loss in children’s human capital from the pandemic. It focuses only on achievement deficits, failing to consider the other dimensions of human—and social—capital. It also neglects the toll on families and, most significantly, it fails to consider how school productivity may have been permanently shocked. Almost certainly, the educational consequences of the pandemic are understated in this report. Finally, the report claims with no evidence or justification that schools “contributed to” these losses. Unfortunately, without a full reckoning or understanding of the damage the pandemic imposed on schoolchildren, it is unlikely that any policy responses will be adequate, efficient, or equitable.



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## I. Introduction

The COVID-19 pandemic provoked one of the biggest economic shocks in recent U.S. history. As well as causing over 1.1 million deaths, the pandemic has affected the lives of everyone, from young children to seniors. In economic terms, it has distorted every sector, radically altered the labor market, and changed household consumption patterns.<sup>1</sup> These are the immediate damages as of 2023.

However, the long-term “scars” of the pandemic may be more economically significant. In the report, *The Economic Cost of the Pandemic: State by State*, Professor Eric Hanushek models one such pandemic scar: the long-run economic burden arising from students’ lower academic skills.<sup>2</sup> Over the course of the pandemic, school systems have been disrupted in many ways. In the early period, most schools closed and learning switched to almost entirely online. As schools reopened, they introduced new protocols and practices both to manage the transmission of COVID-19 and to support students. Unquestionably, these disruptions impaired students’ ability to learn and to acquire skills that would help them be economically productive in adulthood.

The report should be commended for looking over this longer horizon. Education is an investment in future productivity: Less (or poor) investment means lower productivity, lower earnings, and greater financial insecurity. For schoolchildren, these burdens will not begin to be felt for a few years and for some children, they may persist over their entire working life. These burdens need to be fully understood and calculated so that policy responses can be implemented.

## II. Findings and Conclusions of the Report

The report finds that students' test scores fell significantly between 2019 and 2022. Specifically, eighth grade math and reading scores from National Assessment of Educational Progress (NAEP) tests showed average declines of eight and three points respectively. These declines effectively erased the overall NAEP achievement gains made over the past two decades. Declines in math scores were identified for every state (with reading deficits in all but three states).

The report emphasizes the variation by state: Math scores fell dramatically in some states (e.g., Delaware and Oklahoma) and those states also experienced sharper declines in reading scores. There was no link between a state's 2019 scores and the amount of loss by 2022: Some high-scoring states had large losses (e.g., Massachusetts), as did some low-scoring states (e.g., New Mexico). The effect of the pandemic on test scores was different across states.

The report links achievement in school, used as a proxy for the formation of human capital, to lifetime earnings. Logically, when achievement falls, so do lifetime earnings. The report states that lifetime earnings will be 5.6% lower as a result of being a student during the pandemic. Applying this uniform relationship to the decline in math test scores across each state, the report calculates per-state economic losses attributable to the pandemic. Thus, lifetime incomes in Oklahoma and Delaware will be 9% lower; for students in Utah and Idaho, where the decline in math scores was small, lifetime incomes will be 2-3% lower.

Finally, the report correlates losses in lifetime income to losses in Gross Domestic Product (GDP) over the remainder of this century. Again, these losses are calculated for each state based on the variation in test scores, so Oklahoma and Delaware experience the biggest loss in GDP (almost 3%) and Utah and Idaho the smallest loss (less than 1%). These percentage losses in GDP are translated into dollar amounts. With this translation, the biggest losses in dollars over the remainder of the century accrue to the largest states: California will lose over \$1.3 trillion; Texas will lose almost \$1 trillion; and New York will lose almost \$800 billion.

The report contends that, even as families may be aware of the achievement deficit, they will be unable to counteract it. Absent changes in school practices, the report argues that the pandemic losses are irredeemable: Once lost, these skills cannot be regained, and economic burdens are inevitable.

In its Conclusion section, the report attributes some of the achievement loss to school practices and places responsibility on schools—across all U.S. states—to recover from the pandemic to prevent further long-term economic damage.

## III. The Report's Rationale for Its Findings and Conclusions

The report extrapolates achievement during the pandemic to future earnings and then to

Gross Domestic Product over the century. It assumes that a state-level analysis is valid. As well, it assumes that the achievement/earnings relationships are fixed over time and that the only source of variation across states is the amount of learning loss.

#### **IV. The Report's Use of Research Literature**

The report relies on NAEP data to establish that the pandemic has caused a significant learning deficit. More narrowly, the report relies on one variable: eighth grade math scores. Reading scores in eighth grade are also available; and both math and reading scores in fourth grade are available. There is no clear justification for relying only on math scores (and only in eighth grade) to represent the entire skills deficit from the pandemic. It is plausible that the deficit could be smaller or larger for other subjects, depending on factors such as how readily the curriculum can be taught online or at home. In addition, a deficit in fourth grade may be more (or less) damaging to overall skills. The report does not provide much justification for the use of eighth grade math scores.

The rationale for choosing eighth grade math scores to make between-state comparisons is also questionable. The correlation between pandemic math deficits in fourth grade and eighth grade is only .5 (not strong): looking at fourth grade math deficits, Oklahoma ranks 10<sup>th</sup> (not first) and Utah ranks 38<sup>th</sup> (not last).<sup>3</sup> In a very thorough study<sup>4</sup> of pandemic-related declines in test scores across 12 states, Virginia experienced the biggest decline; this report places Virginia 26<sup>th</sup>. States rank differently depending on which achievement measure is used.

The report links NAEP test scores with future earnings. There is considerable literature affirming this linkage but there is also much debate about whether achievement is the best proxy for future earnings. In theory, earnings are determined by productivity, which is primarily driven by workers' human capital. But human capital is defined as the "knowledge, skills and experiences" that workers apply in their jobs. This construct may be very poorly proxied using eighth grade math scores. Few workers use math skills directly in their jobs and many jobs require "soft skills."<sup>5</sup> The report does not discuss the broader literature that links human capital to earnings.<sup>6</sup>

The report relies on only two empirical studies of the relationship between test scores and earnings, and the author of this report is a co-author on both studies. There are a number of other studies that yield different estimates of this relationship, including some that find the relationship to be weak or unstable.<sup>7</sup> Also, the report includes no studies or economic models on the relationship between earnings and GDP.<sup>8</sup>

Overall, the report does not provide a thorough review of the available research and evidence on the validity of test scores as proxies for human capital or their link to earnings and GDP.<sup>9</sup> Such research does not contradict the relationships analyzed in the report. But its inclusion would help establish how robust these relationships are to alternative data sources and research methods.

## V. Review of the Report's Methods

The report's method yields an analysis that is far from a comprehensive understanding of the economic "cost" of the pandemic.<sup>10</sup>

Fundamentally, by focusing only on test scores, the report has neglected to calculate many other economically significant educational burdens. As discussed above, test scores do not fully equate to human capital. More importantly, the pandemic affected many other domains that also affect productivity. For example, researchers have identified pandemic-related declines in student mental health and students' social capital is also likely to have deteriorated when schools were closed.<sup>11</sup> Family capacity was also affected: Research has found that parents worked much less when their children were home; parental resources to help students learn may be very different post-pandemic.<sup>12</sup> Lastly, the entire school system was disrupted and this is likely to affect school productivity for many years. For example, schools have had to expend significant resources when they closed (e.g., by purchasing student laptops) and on becoming COVID-safe as they reopened. Moreover, teachers have been exposed to COVID in the classroom. None of these factors—all of which could reduce student learning—are discussed in the report. At best, the report's method provides a very partial enumeration of the losses from the pandemic.

The report's model of the link between earnings and GDP is straightforward: It assumes a uniform linkage across states and time. But the macroeconomy is complex and organic and long-term predictions are fraught. For example, if all future workers are less skilled, they may be substituted for by capital (e.g., robots); or if skills are in short supply across the economy, firms may have to pay higher wages (and so encourage more persons to enroll in college). The model assumes state economies are separable and that workers will not migrate to high-wage states. Yet, if there are fewer skilled workers in California, it is likely that the state will attract skilled workers from other states.

The report claims that learning losses are going to be permanent unless schooling practices are changed. This claim is based primarily on international research on school disruptions and their long-run impacts. However, the disruptions in the international research took the form of "missed school" (e.g., because of strikes); missing school is not the same disruption as "moving to online schooling at home." The pandemic was a much bigger shock to the education system and schools were forced to adopt new pedagogies and/or instructional practices. Evidence on truncated schooling is not fully persuasive of the report's claim.

## VI. Review of the Validity of the Findings and Conclusions

The overall finding—students learned less during the pandemic and future economic output will be lower—is plausible. However, given the empirical and methodological issues discussed above, it is unclear what the scale of these learning gaps is and how much economic output will be reduced.

It seems likely that the economic consequences of the pandemic will vary by state: There is significant variation across states in terms of demography, labor markets, and economic sectors. It is unclear, however, if the rankings proposed in this report are valid.

The report says that “prior school practices” will not be enough.<sup>13</sup> Ironically, schools are repeatedly encouraged to adopt online learning, which is often promoted as superior to in-person learning.<sup>14</sup> It is hard to reconcile the promotion of online learning with the claim of substantial losses in learning during the pandemic when schooling was online. Moreover, the report does not clearly explain how traditional school practices caused learning losses during the pandemic.

## **VII. Usefulness of the Report for Guidance of Policy and Practice**

The report’s contention that long-run economic growth across all U.S. states will be lower because of the pandemic is important and compelling. One logical inference for policy is that investments in human capital need to be increased, and quickly (before children of the pandemic age out of school). The report does not draw this inference and indeed does not propose any policies. Also, in underestimating the losses, the report may give policymakers a false sense of what resources might be needed to address the learning gaps.

The report is similarly vague about the practical implications of the learning deficit. Instead, it makes a highly controversial claim that schools “contributed to these losses” and bear “responsibility for recovery from these losses.” This seems to imply that schools decided by themselves to close, that their decision was wrong, and that the alternative education offered to students could have been more effective or efficient. No evidence is provided for this accusation and there is no discussion of how schools should have responded to the pandemic. Blithely, the report declares that schools should be “made better;” i.e., reformed in some unspecified way to produce more outcomes with the same amount of money after a highly disruptive shock to inputs and technology.<sup>15</sup> In the end, therefore, this report offers policymakers little to help them respond to the concerns it raises. Without a full reckoning or understanding of the damage the pandemic imposed on schoolchildren, it is unlikely that policy responses will be adequate, efficient, or equitable.



## Notes and References

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- 1 Centers for Disease Control and Prevention. (n.d.). *Covid-19 mortality rate*. Retrieved January 31, 2023, from <https://www.cdc.gov/nchs/covid19/mortality-overview.htm>
- 2 Hanushek, E.A. (2023, January 4). *The economic cost of the pandemic: State by state*. Hoover Institution. Retrieved January 15, 2023, from [https://www.hoover.org/sites/default/files/research/docs/Hanushek\\_EconomicCost\\_web.pdf](https://www.hoover.org/sites/default/files/research/docs/Hanushek_EconomicCost_web.pdf)
- 3 Author's calculations from difference in NAEP math scores 2019-22 for 4<sup>th</sup> grade math and 8<sup>th</sup> grade math. Data retrieved January 31, 2023, from <https://www.nationsreportcard.gov/ndecore/landing>
- 4 Halloran, C., Rebecca, J., Okun, J.C, & Oster, E. (2021). *Pandemic schooling mode and student test scores: Evidence from US states*. NBER Working Paper. Retrieved February 1, 2023, from <http://www.nber.org/papers/w29497>
- 5 See, respectively, Handel, M.J. (2016). What do people do at work? *Journal of Labor Market Research*, 49(2), 177-197; and Deming, D.J. (2017). The growing importance of social skills in the labor market. *Quarterly Journal of Economics*, 132(4), 1593-1640.
- 6 Autor, D.H & Mitchell, D.A. (2022). *The work of the future: Building better jobs in an age of intelligent machines*. MIT Press: Cambridge, US.
- 7 Chetty, R. Friedman, J.N., Hilger, N., Saez, E., Whitmore Schanzenbach, D., & Yagan, D. (2011). How does your kindergarten classroom affect your earnings? Evidence from Project Star. *The Quarterly Journal of Economics*, 126(4), 1593-1660.  
  
Breton, T.R. (2015). Higher test scores or more schooling? (Another) look at the evidence. *Journal of Human Capital*, 9(2), 239-263.
- 8 Examples include: Kane, T., Doty E., Patterson, & T., Staiger, D. (2022) *What do changes in state test scores imply for later life outcomes?* Cambridge, MA: Center for Education Policy Research, Harvard University.  
  
Watts, T.W. (2020). Academic achievement and economic attainment: Reexamining associations between test scores and long-run earnings. *AERA Open*, 6(2). Retrieved February 22, 2023, from <https://doi.org/10.1177/2332858420928985>
- 9 Earnings and GDP growth are not equivalent or in a fixed relation. See Karabarbounis, L. & Neiman, B. (2014). The global decline of the labor share. *The Quarterly Journal of Economics*, 129(1), 61-103.
- 10 The term “cost” is a misnomer: the pandemic was not a cost (in the sense of using resources to produce something), it was an economic burden (waste of resources). Costs can be reduced by policymakers; for burdens to be reduced, policymakers need to more resources (actual costs).
- 11 Gassman-Pines, A., Ananat, E., Fitz-Henley, J., & Leer, J. (2022). *Effects of daily school and care disruptions during the COVID-19 pandemic on child mental health*. NBER Working Paper. Retrieved February 1, 2023, from <www.nber.org/papers/w29659>
- 12 Garcia, K.S. & Cowan, B.W. (2022). *The impact of U.S. school closures on labor market outcomes during the COVID-19 pandemic*. NBER Working Paper. Retrieved February 1, 2023, from <www.nber.org/papers/w29641>
- 13 Hanushek, E.A. (2023, January 4). *The economic cost of the pandemic: State by state* (p. 9). Hoover Institution. Retrieved January 15, 2023, from [https://www.hoover.org/sites/default/files/research/docs/Hanushek\\_EconomicCost\\_web.pdf](https://www.hoover.org/sites/default/files/research/docs/Hanushek_EconomicCost_web.pdf)
- 14 These claims were much more prevalent before the pandemic exposed large populations to online learning.

Here are three examples from 2019 from the Harvard Business Review, Forbes magazine, and Education Next, retrieved February 6, 2022, from <https://hbr.org/2019/10/where-online-learning-goes-next>, <https://www.forbes.com/sites/bernhardschroeder/2019/08/14/disrupting-education-the-rise-of-k-12-online-and-the-entrepreneurial-opportunities/>, and <https://www.educationnext.org/digital-path-to-diploma-online-credit-recovery-classes/>

- 15 Hanushek, E.A. (2023, January 4). *The economic cost of the pandemic: State by state* (p. 9). Hoover Institution. Retrieved January 15, 2023, from [https://www.hoover.org/sites/default/files/research/docs/Hanushek\\_EconomicCost\\_web.pdf](https://www.hoover.org/sites/default/files/research/docs/Hanushek_EconomicCost_web.pdf)