



The Unequal State of Public Education in the United States

JUNE 25, 2020 - BRUCE BAKER



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Public schools in the United States often come under harsh criticism for failing to perform at the levels of other developed nations.¹ But unlike many nations, public education in the United States is provided through fifty-one distinct education systems (not including schools governed by U.S. territories, the Department of Defense, the Bureau of Indian Education, or Indian tribes), governed by fifty-one distinct state (including the District of Columbia) accountability and governance systems, and funded largely by state and local taxes.

The sheer size of the United States alone contributes to the heterogeneity of the country's student population, available resources and eventual outcomes. In a 2010 report from the Organization for Economic Cooperation and Development (OECD), for example, the U.S. education system is reported as serving by far the largest total number of 15-year-olds (at nearly 3.4 million) with Mexico second (at just over 1.3 million).² So, in the aggregate, the U.S. system is large and diverse. Frequently cited "high-performing" nations like Finland serve only 61,000 15-year-olds (1.8 percent of U.S. 15-year-olds); Korea enrolls 630,000 15-year-olds—18.7 percent of U.S. students that age.³ These other systems are much smaller in magnitude and tend to be more highly centralized. There are also significant differences in the

cultural, racial and linguistic diversity of different countries; arguably, the United States is more diverse than many "highperforming" nations,⁴ although determining the extent of these differences is a complex endeavor.⁵

The federal role in U.S. public schools remains small, on average, typically around 10 percent of total revenue for elementary and secondary education systems. But the national interest in providing a high-quality public education system is greater than ever. This policy paper explores interstate variation in investment in and outcomes from public schooling in U.S. states and includes comparisons to the U.S. position in international context.

United States Schools in International Comparisons

Figure 1 shows the 2015 national mean scale scores for OECD (Organization for Economic Cooperation and Development) nations on the Program for International Student Assessment (PISA). OECD nations are sorted from highest to lowest by the average of scale scores across reading, mathematics and science.

This report can be found online at: https://tcf.org/content/report/closing-americas-education-funding-gaps/

PERFORMANCE OF 15 YEAR OLDS IN 2015



SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2015 Mathematics, Reading, and Science Assessment.

U.S. STUDENT MATH SCORES AND ECONOMIC STATUS AMONG OECD COUNTRIES



SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2015 Mathematics, Reading, and Science Assessment.

In Figure 3, Massachusetts performs among the top nations in reading, and well above expectations with respect to socioeconomic and cultural context. The U.S. average and North Carolina are more in line with expectations, well below Massachusetts and Finland, but similar to Slovenia.

Massachusetts public education system is as large and as diverse—if not more so—than many of the nations in this mix. So, too, is North Carolina. And in both cases, the vast majority of resources come from state and local sources. Importantly, North Carolina performs slightly better than the U.S. average. This means that there are many states that are much worse off, in terms of student outcomes than North Carolina. There are many that are better, and roughly an equal number that are worse. Much worse.

Variations in Outcomes Across U.S. States and Over Time

A common critique of U.S. public schools is that spending has increased for decades yet outcomes as measured by standardized test scores have remained stagnant. Figure 4 shows that math and reading scale scores on the National Assessment of Educational Progress (NAEP) have largely trended upward for the past few decades, but did stagnate and even dip slightly following (2013 to 2017) significant recessionary cuts to school funding (2009 to 2011).

But the bigger story is the variation across states. Figure 5 shows the relationship between family income across states and mean scale scores for math on the National Assessment of Educational Progress. Figure 6 shows the reading scores and income. These figures help us to fill in the position of other states, compared to Massachusetts and North Carolina. Indeed, Massachusetts, which compares favorably internationally with Finland and Korea, is a high performer. But so too are New Jersey, New Hampshire, and Minnesota. Massachusetts punches above its weight on income, and New Jersey performs as expected for a high-income state.⁶ Connecticut, by contrast, underperforms for a high-income state. North Carolina scores are much lower, hitting expectations for math and falling below expectations for reading.

U.S. STUDENT READING SCORES AND ECONOMIC STATUS AMONG OECD COUNTRIES



SOURCE: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2015 Mathematics, Reading, and Science Assessment.

FIGURE 4





SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 1992, 1996, 2000, 2003, 2005, 2007, 2009, 2011, 2013, 2015, and 2017 Mathematics Assessments. National Assessment of Educational Progress (NAEP), 1992, 1994, 1998, 2002, 2003, 2005, 2007, 2009, 2011, 2013, 2015, and 2017 Reading Assessments.

STATE NAEP GRADE 8 MATH SCORES, BY AVERAGE FAMILY INCOME



http://schoolfinancedata.org/download-data/

In these figures, we can also see those states which contribute to bringing down the national average. These states include Mississippi, New Mexico, Alabama, and Louisiana. To an extent, these low scores are a function of the high child poverty rates and low family income in these states. Because they lack capacity, many of these states are less able to invest in robust K–12 school systems. But many states simply choose not to invest in quality public schools and their children suffer the consequences.

Variations in Resources across U.S. States and over Time

Figure 7 shows trends in spending per pupil from 1993 to 2017 in nominal terms and then adjusted for changes to competitive wages over time. Education spending dipped slightly in the early nineties, but then climbed gradually from \$6,388 in 1996 to a peak of \$7,363 by 2009, or about \$1,000 per pupil or between 15 and 16 percent.

Figure 8 shows the share of national aggregate personal income spent on elementary and secondary education over time, since the late 1970s. This is a measure of "effort," per

se. During the period over which current spending per pupil climbed from 1996 to 2009, our national effort to fund schools climbed from around 4.2 percent in 1996 to 4.5 percent in the mid-2000s. When the economy tanked, and income levels dipped, the share of income spent on schools spiked to 4.8 percent, but this was only a temporary shock. Since that initial shock, the share of personal income spent on elementary and secondary education has declined sharply to levels not seen since the 1980s and has not yet begun to rebound.

Figure 9 shows that, during the period from around 1996 through about 2009, while current spending per pupil grew by about 15 percent, the number of teachers per 100 pupils climbed from 5.74 to 6.49, or about 13 percent. That is, much of the increase in current spending seems to have gone into increased staffing ratios. Again, throughout this period, NAEP scores were also climbing gradually.

Figure 10 shows the long-term trend in the gap between teachers' weekly wages and weekly wages of non-teachers. The "competitiveness" per se, of teachers' wages to other employment opportunities is a determinant of the quality of entrants into the teaching profession as well as who stays and how long. The competitiveness of teachers' wages has

STATE NAEP GRADE 8 READING SCORES, BY AVERAGE FAMILY INCOME



http://schoolfinancedata.org/download-data/

FIGURE 7





http://schoolfinancedata.org/download-data/

NATIONAL EDUCATIONAL SPENDING AS A SHARE OF PERSONAL INCOME, OVER TIME



State & Local Government Finance Data Query System. http://www.taxpolicycenter.org/slf-dqs/pages.cfm. The Urban Institute-Brookings Institution Tax Policy Center. Data from U.S. Census Bureau, Annual Survey of State and Local Government Finances, Government Finances, Volume 4, and Census of Governments (Years). Date of Access: (03-Sep-19 11:55 AM)

FIGURE 9

TEACHERS PER 100 PUPILS NATIONWIDE, OVER TIME





WAGE GAP BETWEEN TEACHERS AND OTHER WAGE EARNERS, OVER TIME

Note: Figure shows regression-adjusted weekly wages of elementary, middle, and secondary public school teachers. Non-imputed data are not available for 1994 and 1995; data points for these years have been extrapolated and are represented by dotted lines (see Appendix A for more detail). Source: Authors' analysis of Current Population Survey Outgoing Rotation Group data (<u>https://www.epi.org/oublication/teacher-pay-epa-2018/</u>)

FIGURE 11





TEACHERS' WAGES, BY PERCENTAGE OF STATE INCOME SPENT ON EDUCATION



FIGURE 13

CURRENT SPENDING AS A PERCENTAGE OF COST OF ACHIEVING NATIONAL AVERAGE OUTCOME



CURRENT OUTCOMES WITH RESPECT TO NATIONAL AVERAGE OUTCOME



FIGURE 15



STATE SPENDING EFFORT VERSUS FUNDING GAP



been an issue of concern raised by Democratic primary candidates on the campaign trail. There are two moving pieces here. Teachers' wages and non-teachers' wages. What we see in Figure 10 is that, during the 1990s when the economy was booming and private sector wages were climbing, teacher wages lost ground, even though education spending was gradually climbing. When the economy went into recession and non-teacher wages stagnated and eventually dipped (2009 to 2011), teacher wages gained some ground, or at least didn't lose any more ground. But, as the economy has rebounded, teacher wages have continued falling further and further behind to an all-time low.

But again, the real story in the United States is the variation across states—the variation in effort put up by states to fund their education systems, how that variation translates to vastly different per pupil spending and vastly different teacher wages, and ultimately, how those differences contribute to gaps in student outcomes.

Figure 11 shows the relationship between the share of aggregate personal income spent on elementary and secondary education and the expected per pupil spending

for a school district serving a student population with 20 percent children in poverty. The per pupil spending figure here is from a national model (School Finance Indicators Database) in which we compare each state's per pupil spending for a hypothetical district facing average labor costs, with 2,000 or more students and a fixed child poverty rate. The main point in Figure 11, though, is that states that put a larger share of their income into school spending are able to spend more on schools. Some states, such as Massachusetts and Connecticut, for example, are able to contribute average to below average shares of income and still generate substantial school spending. This is because residents of these states have such high incomes. Other states must make a significant effort—that is, a larger share of income-to produce high per pupil spending, including Vermont and New Jersey. Other states, however, such as Arizona, Tennessee, North Carolina, Idaho, and Florida, put up very little effort, and spend very little as a result.

Figure 12—which expresses teachers' hourly wages as a percent of the hourly wages of non-teachers (at the same age and degree level, for individuals holding a bachelors or masters' degree), and maps those wage levels against percentage of state income spent on education—shows



EDUCATION REVENUE PER PUPIL FOR MASSACHUSETTS AND NORTH CAROLINA, BY SOURCE, ACROSS POVERTY QUINTILES

that the low effort that leads to low spending also leads to non-competitive teacher wages. Teacher wages in Massachusetts, for example, are far more competitive than in North Carolina, despite the high earnings of non-teachers in Massachusetts and relatively low earnings of non-teachers in North Carolina. On average, states that put up more effort to fund their schools have more competitive wages for their teachers, a finding which should come as no surprise.

The Connection between Investment and Outcomes

In the winter of 2018, I released with several coauthors a first-ever report in which we were able to estimate the per pupil *costs* for every district nationwide to achieve national average outcomes on reading and math assessments.⁷ *Cost* is different from *spending* in that cost represents the amount that must be spent to achieve a specific outcome goal. Spending is merely what was spent. Spending varies widely, and so too do outcomes. Further, the costs of achieving any given outcome differ by context and by the children being served. A significant problem with our system of financing

schools in the United States is that, often, those children for whom the costs are highest to achieve any given outcome, have the fewest resources spent on them. We estimated costs using a statistical model based on seven years (2009 to 2015) of data on (a) normalized student assessments in reading and math, (b) student demographics, (c) district characteristics, (d) regional labor costs, and (e) per pupil spending.

Figures 13 and 14 provide perhaps the most visually compelling representation of our findings from that study. Figure 13 shows the districts that spend more than would be needed to merely achieve existing (2013 to 2015) national average outcomes and districts that spend less than needed to achieve existing national average outcomes. Figure 14 shows districts with higher than average current outcomes and districts with lower than average current outcomes. On average, districts spending more than enough to achieve average outcomes are achieving or exceeding average outcomes. That is, those districts in Figure 13 that spend more tend to have better outcomes in Figure 14, and those districts in Figure 13 that spend less tend to have worse outcomes in

Figure 14. We propose to extend this analysis to provide a new basis for increasing the total amount of federal aid allocated to U.S. public schools and to guide the distribution of that aid.

Figure 15 takes us back to the cases of Massachusetts and North Carolina, placed in the context of all other states. Figure 15 shows the relationship between spending gaps and outcome gaps, with districts in each state clustered into quintiles according to the percentage of students in households below the federal poverty line. That is, there are five dots for each state, from high-poverty to low-poverty districts. The lowest-poverty Massachusetts districts spend almost \$10,000 more per pupil than they would need to in order to achieve national average outcomes. And, they achieve higher than national average outcomes—among the highest in the nation. Only the highest poverty quintile in Massachusetts spends less than needed to achieve national average outcomes, but it still performs at about the national average, somewhat exceeding expectations.

North Carolina districts also exceed expectations, with the lowest-poverty districts spending slightly less than needed to achieve national average outcomes, but still exceeding national average outcomes. That said, even North Carolina's lowest-poverty districts achieve less than Massachusetts's high-poverty districts (quintile 4). The second (low poverty) and third (median poverty) North Carolina districts are approximately average, and higher-poverty districts spend less than needed, and achieve less than average.

Effort Matters

Figure 16 shows the relationship between each state's individual effort and the relative adequacy of school spending for the median poverty quintile in their state. Just as higher effort leads to higher spending and more competitive wages generally, as shown earlier, greater effort on the part of states leads to more adequate funding toward achieving common outcome goals. Again, highlighting North Carolina and Massachusetts, North Carolina's low overall effort is entirely responsible for that state spending less than needed to achieve national average outcomes (at average effort, North Carolina would have no spending qap). Massachusetts is

again lucky in its affluence and is able to put up relatively low effort to achieve reasonable spending levels and spend more than enough to achieve national average outcomes.

Other states, including New Mexico, Mississippi, and Georgia, aren't as lucky. Each puts up greater than average effort, but still falls well below needed funding levels to achieve national average outcomes. This is where federal aid might play a far more significant role, helping more substantially those states that simply lack the capacity to raise their education spending levels to achieve even modest outcome goals. Meanwhile, federal policy must place pressure on states such as North Carolina, Arizona, Florida, and California to increase their effort and close the spending gap.

Rethinking the Federal Role

Finally, Figure 17 illustrates just how small a role the federal government currently plays in closing interstate spending gaps. Figure 17 shows the regional cost and inflation-adjusted state, local, and federal revenue per pupil for Massachusetts and North Carolina school districts by poverty quintile. All quintiles of Massachusetts districts substantially outspend all quintiles of North Carolina districts. North Carolina districts, because they serve higher shares of children in poverty, do receive more federal aid, with the highest-poverty North Carolina districts receiving \$1,091 per pupil and the highest-poverty Massachusetts districts receiving \$729 per pupil. Notably, North Carolina is among those states that, if it simply put up effort at the national average rate, would spend enough to achieve national average outcomes. But federal aid does little to either shift the spending distribution from low-poverty to high-poverty districts within a state, or to close the gap between states. Federal aid does, to a small extent, provide for more progressive distributions of per pupil spending across districts by poverty within states in each of these states.

Guiding Principles for a New Federal Aid Program

A new, bolder federal aid program should consider the gaps in state spending with respect to estimated spending levels to achieve existing national average outcomes. Raising the floor of U.S. public schooling, as some states have done within their own boundaries, would provide for a more equitable and adequate system overall. A new, bolder federal aid program should be based on the following three guiding principles:

- allocating substantial, new federal resources through a program designed specifically to raise the floor for low-spending states and school districts, toward achieving common national outcome goals;
- ensuring that each state invests appropriately, based on measures of state capacity, toward providing a more adequate education system within their borders and in comparison with the rest of the nation; and
- guaranteeing that federal aid (and appropriate state support) are targeted to higher need children and higher cost settings within states, providing children equal opportunity to achieve common outcome goals regardless of where—within and across states—they live and attend school.

Author

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Notes

1 See, for example Baker, B. D. (2016). Does money matter in education? Albert Shanker Institute.

 2 Baker, B. D., and Weber, M. (2016). Deconstructing the Myth of American Public Schooling Inefficiency. Albert Shanker Institute; OECD (2010). Socio-economic indicators and the relationship with performance in reading, in PISA 2009 Results: What Students Know and Can Do, OECD Publishing, Paris.
3 Ibid.

4 Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S., and Romain Wacziarg, R. (2002). Discussion Paper Number 1959; Fractionalization. Harvard Institute of Economic Research: Cambridge, MA; Fearon, J. D. (2003). Ethnic and Cultural Diversity by Country. Journal of Economic Growth, 8(2), 195–222.

5 Some have argued that the United States is relatively less diverse than many other OECD countries; see: http://educationbythenumbers.org/content/top-us-students-fare-poorly-international-pisa-test-scores-shanghai-tops-world-finland-slips_693/ .Determining the relative diversity of different countries is, however, quite complicated, as our sources in this paragraph demonstrate. At the very least, any attempt to introduce diversity as a variable in a model of international comparisons on test scores should explain how diversity indices were calculated.

6 Connecticut is less equitable than Massachusetts or New Jersey, with many high need, larger districts significantly underfunded with respect to their needs.

7 Baker, B. D., Weber, M., Srikanth, A., Kim, R., & Atzbi, M. (2018). The real shame of the nation: The causes and consequences of interstate inequity in public school investments. Education Law Center.