

NEPC Review: A State-Level Perspective on School Spending and Educational Outcomes (Brookings Institution, September 2025)



Reviewed by:

Mark Weber

Rutgers, The State University of New Jersey
New Jersey Policy Perspective

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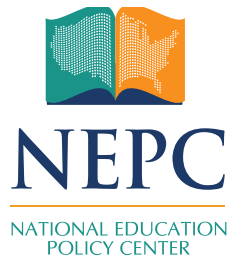
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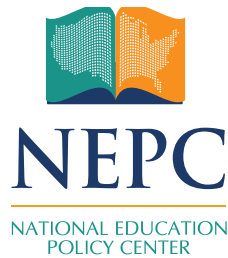
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Summary

A large and growing body of high-quality research shows that increased school funding positively affects student outcomes. A new Brookings Institute report examines this relationship, finding a much smaller effect of school funding than that found by a recent, widely cited meta-analysis. The report, however, relies on comparisons of statewide averages for spending and outcomes (comparing states to states), masking substantial variations *within* states. In addition—and unlike the studies synthesized in the meta-analysis—its reliance on simplistic methods prevents it from credibly estimating the true relationship between school spending and student outcomes. Consequently, the report offers little meaningful guidance for policymakers seeking to reform school funding policies.



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I. Introduction

In the past two decades, a research consensus has emerged regarding the role of funding in education: Money matters. Specifically, more spending in schools generally leads to better outcomes, including higher test scores, better high school graduation rates, and increased college enrollment.¹ As in any field of research, however, different studies yield different effect sizes. Therefore, while the overall relationship between school spending and student outcomes is positive, the size of the effect of increased spending varies from study to study. This makes it difficult to estimate how much of an increase in outcomes policymakers should expect from any given increase in school spending. In 2024, C. Kirabo Jackson and Claire L. Mackevicius approached this problem with a meta-analysis that synthesized 31 studies on school spending effects.² The studies used a variety of data sources, methodologies, and outcome measures; this variety is useful as it helps confirm an effect is genuine and not simply a byproduct of a particular dataset and methodology. The meta-analysis found that that increasing spending by \$1,000 per pupil per year over four years will, on average, raise test scores by 0.03 standard deviations, and college enrollment by 2.8 percentage points

To provide further insight into this issue, the Brookings Institution published a new report that analyzes statewide averages in spending and outcomes. *A State-Level Perspective on School Spending and Educational Outcomes*, by Sarah Reber and Gabriela Goodman,³ finds much smaller effects than those found by Jackson and

Mackevicius. Unfortunately, the report's methods—particularly its choice of data sources and unit of analysis—severely limit its usefulness to policymakers, especially when considering more rigorous work already available.

II. Findings and Conclusions of the Report

While not explicitly a rebuttal, it is fair to say the report makes a counterargument to Jackson and Mackevicius's meta-analysis.⁴ The report finds that, when analyzing average statewide test scores and average statewide spending, test scores rise 0.0154 standard deviations for every additional \$1,000 per pupil spent. Further, when accounting for outliers and labor cost differences across states, the effect shrinks to about one-third of the size of the causal effect found by Jackson and Mackevicius. In addition, after controlling for student economic disadvantage or per-capita income, the report finds no correlation between spending and test scores.

The report finds a similar weak link between per-pupil spending and high school graduation. It then notes the correlation between outcomes and spending was stronger in previous years but has diminished over time. After a brief analysis of how different states spend education dollars, it speculates on why its findings differ from causal effects described by Jackson and Mackevicius.

Finally, the report discusses policy implications of its findings. It argues that, because most of the variation in spending is between states, not within them, its analysis has national policy relevancy.⁵ While not explicitly suggesting that states should turn away from school funding reforms, it implies that policies focused on productivity should be considered first.

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

The report argues that its findings, which are based on statewide averages for school spending and outcomes, are important in part because spending varies substantially between states. Therefore, if money matters, higher-spending states should have better outcomes. Its conclusion that the relationship is weak, particularly when controlling for poverty or income, supports its argument that Jackson and Mackevicius's effect is likely overstated. Because of this, it argues that school funding reforms should be weighed against other policies designed to make schools more productive.

IV. The Report's Use of Research Literature

The report cites a variety of papers from academic journals and policy briefs. Its list of references, however, contains little research on education cost modeling, a rigorous analysis that uses outcome, fiscal, and student population data to estimate the cost of students achieving a particular educational goal.⁶ Because cost modeling refines our understanding of the costs of achieving a particular educational goal, it is particularly impactful in the policymaking decision process.

The report explicitly rejects (in an endnote) the “challenging task” of cost modeling and, instead, adopts its “simpler approach,” implying that its correlational findings are not hampered by cost modeling’s “conceptual and practical limitations.”⁷ The choice to adopt a “simple approach” is assessed more extensively in this review’s coverage of the methods below. The point here is that the report glosses over a well-developed body of literature directly on point to the issue.

V. Review of the Report's Methods

While the report’s “simpler approach”⁸ may be easier for a layperson to understand than rigorous causal studies, meta-analyses, or cost modeling, its basic methods have at least three serious drawbacks.

Simplistic and Descriptive Analyses Have Limited Usefulness

The bulk of the report’s findings are based on simple correlations between per-pupil spending and outcomes across states: sometimes with the total student population, and sometimes with subgroups (by race and economic disadvantage status). It claims that in its approach, “. . . potential omitted variables in a cross-state analysis are easier to assess.”⁹ In fact, the opposite is true.

All the studies included in Jackson and Mackevicius’s meta-analysis use some form of exogenous variation—variation independent of the other variables in a model—to create quasi-experiments. Because assignment to treatment (higher spending) varies independently from other factors in these studies, a plausible argument can be made that these studies successfully isolate the effects of changes in spending on student outcomes. This approach, in effect, resolves the important methodological conundrum of “omitted variable bias.” Omitted variable bias is the result of a study leaving out relevant variables, potentially causing inaccurate estimates. The cost modeling approach also employs exogenous variation,¹⁰ but uses a host of variables to isolate the effects of spending on outcomes.

Of course, both approaches have limitations. Quasi-experimental studies base causal

claims on the strength of their arguments that variations in spending are truly exogenous. On the other hand, cost modeling studies rely on a set of control variables that must be both relevant and specified correctly in the chosen model. But both approaches go far beyond the simple correlational analysis used in this report. Its simple scatterplots, showing the relationship between spending and outcomes, do not begin to provide the sophistication necessary to show the “true” effect of spending on outcomes, even when the correlation is limited to subpopulations or modeled with a single control variable.

This said, it is notable that the report *still* finds a correlation between spending and outcomes, even if it is weaker than the effect found by Jackson and Mackevicius. Readers should remember that any set of studies will vary in estimated effects. If we set aside any qualms about its methodology, the report is not out of line with Jackson and Mackevicius’s findings: There is, indeed, a positive relationship between spending and outcomes.

State Averages Hide Important Variation in Spending and Outcomes

All of the studies synthesized in Jackson and Mackevicius’s meta-analysis use data with observations at the school district, school, or student level. The report, however, uses state-level data; importantly, averaging out both spending and outcomes to the state level could hide significant variation that reveals a correlation between the two. The report, however, is unconcerned with this problem: “. . . most of the variation in spending across school districts occurs between, rather than within, states.”¹¹ As evidence, it points to a 27-year-old study that states: “In 1992, variation across the states represented 64.7 percent of the total variance in per-pupil spending.”¹²

In FY2019, however, only 46 percent of the variation in school district spending could be explained by state membership.¹³ If we restrict school districts to “regular” districts and adjust spending by the same method as the report, the variation explained by states drops to 37 percent.¹⁴

In any case, there is significant variation in spending unexplained by membership in states. The studies included in the meta-analysis, using more finely grained data (where observations are school districts or schools) either capture this variation or limit their observations within a single state. The report, in contrast, does not. It is possible, then, that the report is seeing a smaller correlation between spending and outcomes simply because it uses a more coarsely grained unit of analysis. Interestingly, it uses a statewide outcome data source—the Stanford Education Data Archive (SEDA)¹⁵—that has district-level data available. A district-level analysis could have been conducted, but was not.

Controlling for Poverty or Income Introduces Bias Into the Correlations Between Spending and Outcomes

After showing the weak correlation between spending and outcomes at the state level, the report attempts to control for student poverty or income.¹⁶ Doing so essentially wipes out the correlation between spending and outcomes. The report includes a table that shows this change: While there is a significant correlation between spending and outcomes (increasing spending \$1,000 increases outcomes 0.015 SD), that correlation is reduced to insignificance when a control is added for poverty (0.000) or income (-0.005).¹⁷

This does not, however, indicate no correlation between spending and outcomes. As the table below shows, spending is moderately correlated with childhood poverty and highly correlated with income. When two predictor variables are correlated, there is always a risk of bias; in other words, we cannot dismiss correlation between spending and outcomes simply on this basis.

Correlation Table, US States: Measures of Per-Pupil Spending, Childhood Poverty, Resident Household Income (Weighted School District Averages), and Student Outcomes

	Per-Pupil Total Current Spending, FY2019	Age 5-17 Poverty, FY2019	Mean Household Income, 2019	NAEP Scale Score, Gr. 8 Math, 2019
Per-Pupil Total Current Spending, FY2019	1.000			
Age 5-17 Poverty, FY2019	-0.332	1.000		
Mean Household Income, 2019	0.690	-0.569	1.000	
NAEP Scale Score, Gr. 8 Math, 2019	0.268	-0.729	0.490	1.000

Data sources: Current spending: US Census Bureau, *Annual Survey of School System Finances (F33)*: <https://www.census.gov/programs-surveys/school-finances.html>. Childhood poverty: US Census Bureau, *Small Area Income and Poverty Estimates (school district level)*: <https://www.census.gov/programs-surveys/saipe.html>. Mean household income: National Center for Education Statistics, *Education Demographic and Geographic Estimates (total population)*: <https://nces.ed.gov/programs/edge/Demographic/ACS>. NAEP scale scores: National Center for Education Statistics, *National Assessment of Educational Progress*: <https://nces.ed.gov/nationsreportcard/>. Data excludes Washington DC and US territories. Spending, poverty, and income measures are school district averages weighted by district enrollment.

The report also attempts to control for socioeconomic status by separately analyzing

the correlations between spending and outcomes for disadvantaged students. The problem with cross-state comparisons of these subgroups is that relative economic disadvantage varies greatly from state to state. Economic disadvantage in the data used by the report is measured by eligibility for free or reduced-price lunch; students are eligible if their family income is below 185 percent of the federal poverty line.

But the poverty line doesn't vary from state to state, even though the cost of living does. Students at the eligibility limit in high-cost states are relatively more disadvantaged than students at the same limit in low-cost states. This difference in student populations casts doubt on comparisons of these subgroups across states.

VI. Review of the Validity of the Findings and Conclusions

A large and growing body of research, using finely grained data and sophisticated methods, plausibly shows that increased school spending leads to substantial and positive gains in student outcomes. The report's simple correlations, using state-level data, mask substantial variation in spending and outcomes within states, and provide insufficient evidence to question the link between spending and outcomes. Consequently, the report's skepticism about Jackson and Mackevicius's results (and the studies their meta-analysis synthesizes) has little basis in actual evidence.

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

While the report avoids concluding that school funding doesn't matter, it questions the efficacy of funding reform as a policy for boosting student achievement: "Although we do not think our findings argue for turning away from school funding to improve quality altogether—especially in schools with high needs and little funding—they do suggest well-funded schools don't always perform better."¹⁸

This is a meaningless point. Research on school funding assesses the *average* effects of spending on outcomes. By definition, some studies will show a greater than average effect, some a lesser effect. The overall effect, however, is what counts. On this the consensus is clear: Money matters for schools, and on average more money leads to better outcomes.

This consensus, built on a foundation of high-quality evidence, can and should be tested regularly by ongoing research, using appropriate data and methodologies. It cannot, however, be credibly challenged by a few simplistic correlational analyses, like those applied here. For this reason, the report has little value for policymakers looking for guidance in reforming school funding.

Notes and References

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- 9 Reber, S. & Goodman, G. (2025, September 30). *A state-level perspective on school spending and educational outcomes* (p. 30). Washington, D.C.: Brookings Institute. Retrieved October 28, 2025 from: <https://www.brookings.edu/articles/a-state-level-perspective-on-school-spending-and-educational-outcomes/>
- 10 Cost models often use an instrumental variables strategy to address the endogenous relationship between spending and outcomes; see: Baker, B.D., Weber, M., & Srikanth, A. (2021). Informing

federal school finance policy with empirical evidence. *Journal of Education Finance*, 47(1), 1–25.

- 11 Reber, S. & Goodman, G. (2025, September 30). *A state-level perspective on school spending and educational outcomes* (p. 31). Washington, D.C.: Brookings Institute. Retrieved October 28, 2025, from <https://www.brookings.edu/articles/a-state-level-perspective-on-school-spending-and-educational-outcomes/>
- 12 Murray, S.E., Evans, W.N., & Schwab, R.M. (1998). Education-finance reform and the distribution of education resources. *The American Economic Review*, 88(4), 789–812, p. 798.
- 13 To determine the variation, I use data on schools' spending from FY2019 found here: US Census Bureau (2019). *Annual survey of school system finances*. (F33). Retrieved October 28, 2025, from <https://www.census.gov/programs-surveys/school-finances.html>. I use "Per Pupil - Total Current Spending, Elementary-Secondary (PPCSTOT)." To cull outliers, I remove all observations below \$5,000 and above \$50,000. I then employ a one-way ANOVA to determine the amount of school district spending variation explained by state membership.
- 14 I again use data found here: US Census Bureau (2019). *Annual survey of school system finances*. (F33). Retrieved October 28, 2025, from <https://www.census.gov/programs-surveys/school-finances.html>. I merge this to data found here: National Center for Education Statistics, Common Core of Data (2019). Local Education Agency (School District) Universe Survey Data. Retrieved October 28, 2025, from <https://nces.ed.gov/ccd/ccddata.asp>. Observations are restricted to districts of type 1, "Regular local school district." Spending is adjusted using National Center for Education Statistics (2019). Comparable Wage Index for Teachers (CWIFT). Retrieved October 28, 2025, from <https://nces.ed.gov/programs/edge/economic/teacherwage>. I cull all outliers spending more than 3 standard deviations from the mean.
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