



Return on Educational Investment

A district-by-district evaluation of U.S. educational productivity

Ulrich Boser January 2011

Doing What Works Advisory Board

Andres Alonso

CEO, Baltimore Public School System

Yigal Arens

Professor, USC School of Engineering

Ian Ayres

Professor, Yale Law School

Gary D. Bass

Executive Director, OMB Watch

Larisa Benson

Washington State Director of Performance
Audit and Review

Anna Burger

Secretary-Treasurer, SEIU

Jack Dangermond

President, ESRI

Dan C. Esty

Professor, Yale Law School

Beverly Hall

Superintendent, Atlanta Public Schools

Elaine Kamarck

Lecturer in Public Policy, Harvard University

Sally Katzen

Executive Managing Director, The Podesta Group

Edward Kleinbard

Professor, USC School of Law

John Koskinen

Non-Executive Chairman, Freddie Mac

Richard Leone

President, The Century Foundation

Ellen Miller

Executive Director, Sunlight Foundation

Claire O'Connor

Former Director of Performance Management,
City of Los Angeles

Tim O'Reilly

Founder and CEO, O'Reilly Media

Ali Partovi

Senior Vice President of Business Development,
MySpace

Tony Scott

Chief Information Officer, Microsoft

Richard H. Thaler

Professor, University of Chicago School
of Business

Eric Toder

Fellow, Urban Institute

Margery Austin Turner

Vice President for Research, Urban Institute

Laura D. Tyson

Professor, University of California-Berkeley
School of Business



Return on Educational Investment

A district-by-district evaluation of U.S. educational productivity

Ulrich Boser January 2011

doing what works

CAP's Doing What Works project promotes government reform to efficiently allocate scarce resources and achieve greater results for the American people. This project specifically has three key objectives:

- Eliminating or redesigning misguided spending programs and tax expenditures, focused on priority areas such as health care, energy, and education
- Boosting government productivity by streamlining management and strengthening operations in the areas of human resources, information technology, and procurement
- Building a foundation for smarter decision-making by enhancing transparency and performance measurement and evaluation

This paper is one in a series of reports examining government accountability and efficiency.

Contents

- 1 Introduction and summary**
- 9 Background**
- 15 Methodology**
- 26 Findings**
- 32 A tale of two districts**
- 33 Wide variations in urban district productivity**
- 36 A closer look at the most productive school districts**
- 40 Recommendations**
- 43 Appendix A: Select tables and figures**
- 46 Appendix B: Frequently asked questions**
- 51 Endnotes**
- 53 About the author and acknowledgments**

Introduction and summary

This report is the culmination of a yearlong effort to study the efficiency of the nation's public education system and includes the first-ever attempt to evaluate the productivity of almost every major school district in the country. In the business world, the notion of productivity describes the benefit received in exchange for effort or money expended. Our project measures the academic achievement a school district produces relative to its educational spending, while controlling for factors outside a district's control, such as cost of living and students in poverty.

Our nation's school system has for too long failed to ensure that education funding consistently promotes strong student achievement. After adjusting for inflation, education spending per student has nearly tripled over the past four decades.¹ But while some states and districts have spent their additional dollars wisely—and thus shown significant increases in student outcomes—overall student achievement has largely remained flat.² And besides Luxembourg, the United States spends more per student than any of the 65 countries that participated in a recent international reading assessment, and while Estonia and Poland scored at the same level as the United States on the exam, the United States spent roughly \$60,000 more to educate each student to age 15 than either nation.³

Our aims for this project, then, are threefold. First, we hope to kick-start a national conversation about educational productivity. Second, we want to identify districts that generate higher-than-average achievement per dollar spent, demonstrate how productivity varies widely within states, and encourage efforts to study highly productive districts. Third—and most important—we want to encourage states and districts to embrace approaches that make it easier to create and sustain educational efficiencies.

This report comes at a pivotal time for schools and districts. Sagging revenues have forced more than 30 states to cut education spending since the recession began.⁴ The fiscal situation is likely to get worse before it gets better because the full impact of the housing market collapse has yet to hit many state and local budgets.⁵ At a time when states are projecting more than \$100 billion in budget shortfalls, educators need to be able to show that education dollars produce significant outcomes or taxpayers might

begin to see schools as a weak investment.⁶ If schools don't deliver maximum results for the dollar, public trust in education could erode and taxpayers may fund schools less generously.

While some forward-thinking education leaders have taken steps to promote better educational efficiency, most states and districts have not done nearly enough to measure or produce the productivity gains our education system so desperately needs. Some fear that a focus on efficiency might inspire policymakers to reduce already limited education budgets and further increase the inequitable distribution of school dollars. To be sure, our nation's system of financing schools is unfair. Low-income and minority students are far more likely to attend schools that don't receive their fair share of federal, state, and local dollars. But while the issue of fairness must be central to any conversation about education finance, efficiency should not be sacrificed on the altar of equity. Our nation must aspire to have a school system that's both fair and productive.

Our emphasis on productivity does not mean we endorse unfettered market-based reforms, such as vouchers allowing parents to direct public funds to private schools. Nor do we argue that policymakers should spend less on education. Indeed, we believe neither of these approaches can solve the nation's pressing education challenges. Transforming our schools will demand both real resources and real reform. As Education Secretary Arne Duncan recently said: "It's time to stop treating the problem of educational productivity as a grinding, eat-your-broccoli exercise. It's time to start treating it as an opportunity for innovation and accelerating progress."⁷

Productivity 101: Embracing transformational change

When successful businesses want to improve performance and boost efficiencies, they focus on creating the conditions for organizational change. They use data to identify problem areas, create short and long-term goals, and engage their employees to sustain transformations and nurture further innovation. Such approaches have long worked for the private sector, and there's clear evidence that the techniques can help drive better performance in large, public organizations as well.⁸

But schools and districts have long been effective at deflecting or watering down meaningful change in order to protect entrenched bureaucracies and interests. And even reform-minded school administrators often confuse merely novel techniques with successful

ones and dash from one educational fad to the next without tracking their efficacy.⁹ To increase productivity, school leaders will need to fundamentally reinvent the way that they do business and create an outcomes-based school culture that sets high goals—and gives employees the strategies to achieve them.

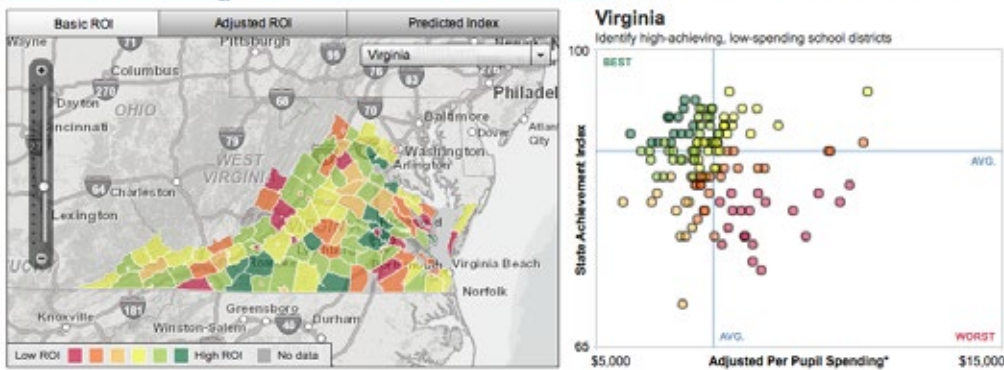
That will entail doing away with obsolete traditions and ineffective programs, to be sure. But it will also require schools and districts to embrace transformational ways of delivering a cost-effective education that reduces spending while boosting performance. The goal must be nothing short of a breakthrough in performance that guarantees that every dollar produces high achievement for all students.

Accompanying this report is an interactive website that allows anyone to compare the relative productivity of thousands of school districts and find out more about their spending and achievement. Because we cannot control for everything outside a district's control when calculating its productivity evaluation, the site makes it easy to compare similar districts based on their demographics and enrollment. It also allows users to see how districts fare under different approaches to measuring productivity. The site was created in partnership with the nonprofit advocacy organization OMB Watch and the geo-information services company Esri.

The Wisconsin school systems of Oshkosh and Eau Claire are about the same size and serve similar student populations. They also get largely similar results on state exams—but Eau Claire spends an extra \$8 million to run its school system.

Return on Educational Investment: A district-by-district evaluation of educational productivity

To spark a national dialogue about educational productivity, we've attempted to evaluate the return on investment (ROI) of almost every major school district in the country. By productivity, we mean how much learning a district produces for every dollar spent, after controlling for factors such as cost of living and students in poverty. Use the map to see how each district performs and click on the tabs to toggle between our three different approaches. We call them **Basic ROI**, **Adjusted ROI**, and **Predicted Index**. [Click here for our methodology](#) and [here for additional instructions on how best to use the site](#).



School District	Basic ROI	State Achievement Index	Adj. Per Pupil Spending	Percent Low Income	Enrollment	Urbanicity
Amelia County Public Schools	High ROI	85	\$6,732	40	1,880	Rural: Distant
Campbell County Public Schools	High ROI	88	\$7,493	29	8,613	Rural: Fringe
Floyd County Public Schools	High ROI	90	\$7,366	37	2,059	Rural: Distant
Amherst County Public Schools	Low ROI	85	\$7,731	42	4,764	Rural: Fringe
Grayson County Public Schools	Low ROI	81	\$8,430	54	2,109	Rural: Remote
Hanover County Public Schools	High ROI	94	\$7,239	8	19,100	Rural: Fringe
Accomack County Public Schools	Low ROI	89	\$7,718	61	5,206	Rural: Remote
Bland County Public Schools	Low ROI	88	\$8,114	36	906	Rural: Remote
Brunswick County Public Schools	Low ROI	78	\$7,998	76	2,256	Rural: Fringe
Charlotte County Public Schools	Low ROI	92	\$7,798	50	2,195	Rural: Remote

* Per pupil spending has been adjusted for differences in cost of living and students in special programs.
 Sources: For spending and demographic information, we relied on 2008 data compiled by the U.S. Department of Education's National Center for Education Statistics. For overall school district achievement results, we used 2008 data compiled by the New America Foundation's Federal Education Budget Project. Some states and districts were missing data for certain demographic indicators, necessitating the use of proxies. For more information on our sources, use of proxies, and our approach to calculating educational productivity, please consult our detailed methodology.

Summary of findings

- **Many school districts could boost student achievement without increasing spending if they used their money more productively.** An Arizona school district, for example, could see as much as a 36 percent boost in achievement if it increased its efficiency from the lowest level to the highest, all else being equal.
- **Low productivity costs the nation's school system billions of dollars each year.** This figure is an estimate; our study does not capture everything that goes into creating an efficient district. But the approximate loss in capacity is substantial.^{10 *}
- **Without controls on how additional school dollars are spent, more education spending will not automatically improve student outcomes.** In more than half of the states included in our study, there was no clear relationship between spending and achievement after adjusting for other variables, such as cost of living and students in poverty. These findings are consistent with existing research: How a school system spends its dollars can be just as important as how much it spends, at least above some threshold level.
- **Efficiency varies widely within states.** Some districts spent thousands more per student to obtain the same broad level of academic achievement. After adjusting for factors outside of a district's control, the range of spending among the districts scoring in the top third of achievement in California was nearly \$8,000 per student.
- **More than a million students are enrolled in highly inefficient districts.** Over 400 school districts around the country were rated highly inefficient on all three of our productivity metrics. These districts serve about 3 percent of the almost 43 million students covered by our study.
- **High-spending school systems are often inefficient.** Our analysis showed that after accounting for factors outside of a district's control, many high-spending districts posted middling productivity results. For example, only 17 percent of Florida's districts in the top third in spending were also in the top third in achievement.

- **Students from disadvantaged backgrounds are more likely to be enrolled in highly inefficient districts.** Students who participated in subsidized lunch programs were 12 percentage points more likely to be enrolled in the nation's least-productive districts, even after making allowances for the higher cost of educating lower-income students.¹¹
- **Highly productive districts are focused on improving student outcomes.** We surveyed a sample of highly productive districts to learn more about their principles and practices. The districts that performed well on our metrics shared a number of values and practices, including strong community support and a willingness to make tough choices.
- **States and districts fail to evaluate the productivity of schools and districts.** While the nation spends billions of dollars on education, only two states, Florida and Texas, currently provide annual school-level productivity evaluations, which report to the public how well funds are being spent at the local level.
- **The quality of state and local education data is often poor.** In many instances, key information on school spending and outcomes is not available or insufficiently rigorous, and this severely impedes the study of educational productivity. For instance, we did not have good enough data to control for certain cost factors, such as transportation. So a rural district with high busing costs might suffer in some of our metrics compared with a more densely populated district.
- **The nation's least-productive districts spend more on administration.** The most inefficient districts in the country devote an extra 3 percentage points of their budgets on average to administration, operations, and other noninstructional expenditures.
- **Some urban districts are far more productive than others.** While our main results are limited to within-state comparisons, we were able to conduct a special cross-state analysis of urban districts that recently participated in a national achievement test. After adjusting for certain factors outside a district's control, we found that some big-city school systems spend millions of dollars more than others—but get far lower results on math and reading tests.

Summary of recommendations

Policymakers should promote educational efficiency

We hope this report launches a broad dialogue about educational productivity. Education policymakers should encourage further research in this area, as well as convene a national panel to recommend how state and federal governments can better support policies and programs that promote efficiency.

States and districts must reform school management systems

Education policymakers should create performance-focused management systems that are flexible on inputs and strict on outcomes. State and federal governments should also provide educators with the tools, technology, and training required to succeed with limited school dollars.

Education leaders should encourage smarter, fairer approaches to school funding

Education policymakers should develop funding policies that direct money to students based on their needs, so that all schools and districts have an equal opportunity to succeed. Federal policymakers should also continue to support competitive funding programs that create opportunities for reform and innovation.

States and districts should report far more data on school performance

States and districts should develop data systems that report reliable, high-quality information on educational outcomes, operations, and finance.

Productivity ratings used in this study

Our work on educational productivity builds on the 2007 “Leaders and Laggards” report released by the Center for American Progress in partnership with the U.S. Chamber of Commerce and Frederick Hess of the American Enterprise Institute. In that study, we evaluated state-level return on investment (ROI), comparing state achievement outcomes with education spending, after controlling for differences in special education and low-income students, and living costs.

For this study, we developed three district-level productivity measures. We relied on spending data from the 2008 school year, the most recent available. For achievement, we relied on the results of 2008 state reading and math assessments in fourth grade, eighth grade, and high school. We believe this is the first national effort to gauge the efficiency of over 9,000 districts in more than 45 states against a set of evaluative rubrics. All three of our metrics use a green-to-red color-coding system, and the first two approaches use the matrix shown below to evaluate districts. The same color legend is used on the interactive companion website at www.americanprogress.org/ROI.

ROI Evaluation Matrix

	Lowest achievement	Medium achievement	Highest achievement
Lowest cost			
Medium cost			
Highest cost			

Basic Return on Investment index rating

This measure rates school districts on how much academic achievement they get for each dollar spent, relative to other districts in their state. To avoid penalizing districts where education costs are higher, we adjusted for a variety of factors including cost-of-living differences as well as higher concentrations of low-income, non-English-speaking, and special education students.

Adjusted Return on Investment index rating

This measure uses the same approach as the Basic ROI but applies a different statistical method, called a regression analysis, to account for the higher costs associated with serving larger concentrations of low-income, non-English-speaking, and special education students. The adjustments, or weights, used in the Basic ROI are not always sensitive enough to account for spending differences within states.

Predicted Efficiency index rating

The Predicted Efficiency rating measures whether a district’s achievement is higher or lower than would be predicted after accounting for its per-pupil spending and concentrations of low-income, non-English-speaking, and special education students. Under this approach, a low-achieving district could get high marks if it performed better than predicted. Lowering academic expectations for students from disadvantaged backgrounds is not a policy position supported by the Center.

Our measures are far from perfect, and individual district evaluations should be interpreted with caution. The connection between spending and achievement is complex, and our methods cannot capture everything that goes into creating an efficient school system. Nor can we control for everything that’s outside of a district’s control, and our adjustments for factors like poverty and students in special education are estimations and don’t account for variations in severity and type within those demographic groups. Moreover, most of the variation in student achievement is within schools, and so district-level productivity results most likely mask significant variations in productivity within districts. Finally, we’re aware that some of the data reported by states and districts have reliability issues, with agencies sometimes using inconsistent definitions and weak data collection practices.

Despite these important caveats, we believe our district-level ratings use the best available methods and reveal important results. Our work has been aided by a panel of experts, who reviewed our approach and provided helpful feedback. However, we take full responsibility for the methodology and resulting evaluations.

America's ingenuity and dynamism have helped make it one of the most prosperous countries in the world, and these traits will be key to boosting the productivity of our school system. Efficiency reforms will not come fast or easy, but they must come soon because our nation can no longer afford schools that fail to make the most of their limited resources. We hope that our interactive website— together with the findings and recommendations in the following pages—will prompt a new way of thinking about educational success, one that does far more to guarantee that all schools and districts have the necessary data, tools, and incentives to be efficient with their school dollars.

Background

In education, spending does not always equal success. Countless studies have shown that how a school system spends its dollars can be just as important as how much it spends. But our country's education system lacks the proper incentives, support, and accountability structures to ensure that resources deliver the most efficient results. This section explains how we arrived at this point and what we must do to reform. We also detail our methods of evaluating educational productivity.

A brief history of educational productivity reform

Attempts to improve the nation's educational productivity date back at least to the 19th century, when towns and cities were the major funders of public schools. As states increasingly took responsibility for local education systems, they often tried to organize schools around business ideas in vogue at the time, such as applying "scientific management" theories to increase labor productivity.¹²

Education leaders have since tried a variety of reforms to inject greater efficiencies into the nation's education system, from creating school districts to mandating instructional spending as a budget priority. But for the most part, these initiatives have focused on improving administration and operations, and so they typically require a one-size-fits-all solution that ultimately limits a school's ability to creatively deploy resources. And the data suggests that the strategies have had little effect on improving overall productivity. Academic achievement per school dollar dropped by as much as 65 percent from 1971 to 1999.¹³ Despite our large annual education expenditures, the United States gets far less for its dollar than do other industrialized countries.

In many ways, the issue boils down to the school system's long-standing focus on inputs instead of outcomes, and states for many years were reluctant to even outline what students should learn before graduating from high school. There has been significant recent progress in this area, however. In the last two decades,

“We need to see the possibilities. When there is an outlier in the district—an upward outlier—that means the bar is raised and others can do it,” said Susan Parks, superintendent of San Gabriel Unified School District near Los Angeles, which received high marks on our productivity metrics.

every state has adopted academic standards that describe what students should know and be able to do. States have also created assessment programs that hold schools and districts accountable for their performance against those standards.

The development of academic standards has important implications for advocates of educational productivity. Standards make it far easier to evaluate productivity because all school systems within a state now work toward a common educational goal. The measures also allow educational management systems to better hold schools and districts accountable for their results.

Some education experts remain hesitant about judging schools by how much achievement they produce relative to their spending. They are concerned that it is difficult to adjust for all the factors outside a district’s control. For example, the way some states currently count students in special education programs doesn’t reliably separate students with severe disabilities from those with less debilitating conditions. That makes it hard to know how much additional effort or money educating a student with special needs might entail.

Another concern is that a focus on productivity might inspire policymakers to reduce the already limited funds that schools receive. This concern is particularly acute with regard to schools with large enrollments of low-income and minority students, many of which already receive far less than their fair share of federal, state, and local dollars. Indeed, many states still have regressive funding systems in which high-poverty districts get less money than wealthier ones. In New Hampshire, for instance, a district with a 30 percent poverty rate receives about two-thirds the money per student than a district with no student poverty.¹⁴ Other federal and local fiscal policies exacerbate the problem, and on average, the highest poverty districts receive \$825 per student less in revenues than the most affluent districts.¹⁵

The Center for American Progress has long advocated for greater fiscal equity across schools and districts, and we’ve gone to great lengths in this study to level the playing field and adjust for differences among districts with different populations of students. But equity and efficiency are not mutually exclusive, and our nation’s school system should aspire to be both fair and productive. Moreover, there are unambiguous examples of schools with high concentrations of low-income students that have significant resources but fail to make reasonable academic progress, and if there are not productivity reforms made to the nation’s education system, it’s clear that low-income and minority students will continue to be harmed by the ways in which schools and districts are funded.

What we don't know: A blind eye to educational productivity

In many ways, the nation's educational productivity problem is an educational management problem. Our school system lacks a performance-focused set of practices and policies that ensure that dollars are spent efficiently. The problem manifests itself in ways both big and small. There are the examples of straightforward waste, of course: overpaying for food services by not considering outside providers; students being taught the same material twice because of poorly organized educational programs; central offices becoming bloated and broken due to operational neglect.

The bigger issue is that state and local school operations don't provide educators with the tools, skills, and incentives to connect spending to outcomes and reorganize inefficient programs.¹⁶ For instance, many states use seat-time requirements to determine whether a student is ready to graduate from high school. While such a requirement may have made sense at one time, it divorces inputs from outcomes and prevents educators from trying more productive ways to make all students college- and career-ready.

Local leaders also have little autonomy to spend dollars in ways that they believe will bring the most results. In most areas, the district oversees the school's budget and has the final say on spending decisions. Teacher salaries are also often set at the state level, preventing educators from linking teacher salary to effectiveness. And there's striking uniformity about how districts budget their dollars; the vast majority allocate about 60 percent to student instruction.¹⁷

The nation's haphazard approach to school finance exacerbates the problem, with few states and districts structuring their spending programs to make them as efficient as possible. States often have dozens of different funding programs, and each of these spending initiatives usually has its own set of specific rules and regulations. Take California, which earmarked more than \$41 million in 2009 to hire additional gym teachers to combat childhood obesity. This despite there being no shortage of gym instructors in the state, or any evidence that increasing the number of gym teachers reduces obesity. Worse, the grants are not even targeted at schools with large percentages of overweight students.¹⁸

Many states and districts don't even bother to collect data on program effectiveness. A recent study found that Philadelphia spent \$162 million on professional development in 2008, or about \$6,000 per teacher. But more than six different offices

oversaw the investments, and there was no systematic effort to measure the need for the initiatives.¹⁹ Such a lack of data makes it difficult to pinpoint specific inefficiencies. It also underscores the degree to which the nation's educational system lacks the accountability structures needed to ensure that resources deliver results.

What we do know: The relationship between money and results

The relationship between school funding and academic achievement is a subject of much debate within the education policy community. Some experts maintain it's possible to cut education funding without lowering achievement, while others argue that only an influx of more money can bring the achievement boost our schools so desperately need.

The research does make a few things clear. First, the literature strongly calls into question the notion that simply investing more money in schools will result in better outcomes. At least above some threshold level, the research suggests that if policymakers allocate additional education dollars without any clear controls on how the money is spent, the funds do not appear to have a significant impact on achievement.²⁰ But the literature also makes plain that school spending can make a difference in achievement; a large body of research shows that certain inputs such as teacher quality can significantly impact student outcomes. One series of studies showed that students who have three or four highly effective teachers in a row will succeed academically, while those who have a sequence of weak teachers fall further behind.²¹ Another study found that raising teacher wages by 10 percent could reduce high school dropout rates by more than 3 percent.²²

The bottom line: Additional dollars make a difference only if the funds are well spent. As Stanford University economist Eric Hanushek said in a recent interview: "In some places, you put money in and you get results. In other places, you put money in and you don't get any results. It's not that money can't matter, and it's not that it doesn't matter in some circumstances. It's just that if you do what the courts talk about, what legislatures often talk about, which is a helicopter drop of large amounts of money into districts with no expectations for how well it will be spent, you don't see much coming out the other end."²³

The research also offers clues to why the nation's school productivity remains so low. The problem is that U.S. academic achievement has remained largely flat even as educational expenses have been skyrocketing, with inflation-adjusted per student spending increasing 60 percent since 1985.²⁴ Part of the issue is that schools employ

far more people than ever before, and the teacher force has increased at more than double the rate of enrollment.²⁵ The cost per teacher has also been escalating because of the rising expense of pensions and health care, and the costs of total benefits rose from 25 percent of teacher salaries in 1999 to almost a third in 2006.²⁶

To be sure, school systems have by no means wasted the additional dollars that they have spent over the past four decades. Some of the cost increases, like health care expenditures, were beyond the control of schools and districts, and a number of states, such as Massachusetts, have shown that strategic spending can make a large and significant difference in student achievement. Additional funds also appear to have helped narrow the achievement gap between minority and white students, and from 1973 to 2008 the math scale scores of African-American 4th graders jumped by more than 30 points, or roughly three grade levels.²⁷ Still, despite massive increases in expenditures, overall student outcomes have remained largely stagnant, and achievement gaps remain wide in many areas. American taxpayers, in other words, have seen only a small return on the dollars they've invested in the nation's school system over the past 40 years. This can and must change.

The bottom line:
Additional dollars
make a difference
only if the funds are
well spent.

The case for focusing on educational productivity now

The economic downturn has dramatically changed the fiscal climate for schools and districts, and our education system is about to enter a time of profound fiscal austerity. Schools will be pressed to stretch their education dollars further for years, perhaps decades. Budget shortfalls have forced more than 30 states to make significant reductions in education spending since the recession began. Colorado rolled back school spending last year by \$260 million, a nearly 5 percent decline from the previous year, in cuts amounting to more than \$400 per student.²⁸ Sagging revenues at the local level have further compounded the problem, with more than two-thirds of superintendents reporting firing staff in 2010 and some 90 percent anticipating having to do so in 2011.²⁹

The budget situation will get worse before it gets better because property-tax valuations typically lag behind actual property values. The full impact of the housing market collapse, therefore, has yet to hit many state and local budgets. Many states and districts have also failed to meet rising pension costs, leading to a nearly \$500 billion teacher pension funding shortfall. And the federal stimulus that helped many districts get through the worst of the recession will soon dry up. States will have \$38 billion less in stimulus funds in 2012. By the end of the same year the federal funds will essentially be gone.³⁰

“Rather than jumping from bandwagon to bandwagon, enough time is spent on initiatives to see the results,” said Donald Beaudette, superintendent of Norwell Public Schools in Massachusetts.

School and districts have a lot riding on their response to the economic crisis. The public was showing impatience with the slow pace of school reform even before the recession began, and outcomes remain low. Most fourth and eighth graders are not performing on grade level in either reading or math.³¹ Three out of every 10 students fail to finish high school with a diploma.³² At a time when states are projecting more than \$100 billion in budget gaps, educators need to be able to show that education dollars produce significant outcomes, or the public might begin to see schools as a bad investment. Put differently, if education systems don’t deliver maximum results for the dollar, public trust in public education could eventually evaporate.

But the economic pressures also offer opportunity, and many forward-looking educators have been using the bleak fiscal situation to experiment with more efficient educational approaches. Some school systems have begun offering online classes, which offer courses in specialized fields often at lower cost. Others have rolled back inefficient policies, and the Los Angeles’ board of education recently approved a landmark settlement that limits the traditional practice of laying off teachers strictly on the basis of seniority.³³ Texas last year released a study looking at how schools and districts spent their money to raise student achievement.³⁴

A lasting transformation of the nation’s school system will require more than a few islands of dedicated reform, however. For our nation to dramatically increase its educational productivity, we must fundamentally rethink how we organize, manage, and fund schools. The challenge for reformers, then, is to create smarter, more productive school management systems that encourage all educators to seek out new ways to improve educational efficiencies and outcomes.

Methodology

Our goal in this project was to measure academic achievement relative to a district's educational spending, while controlling for factors outside their control, such as cost of living and degree of student poverty. Our work builds on a 2007 report, "Leaders and Laggards," published by the Center in partnership with the U.S. Chamber of Commerce and Frederick Hess of the American Enterprise Institute. In that study, we evaluated state-level returns on investment, comparing scores on the National Assessment of Educational Progress with a state's education spending after controlling for differences in student poverty, special education enrollments, and cost of living.

Our measures build on the excellent work of many other researchers. Standard & Poor's School Evaluation Services produced in recent years a district return-on-spending index.³⁵ It looked at the percentage of students achieving proficiency in reading and math for every \$1,000 spent per student on core operations. Florida conducts an annual productivity examination for each of its schools, and the state uses a methodology similar to our Basic Return on Investment Index, described below, which compares school-level reading and math gains against adjusted expenditures.

Our approach was aided by an advisory group that included Bruce Baker, an associate professor at the Graduate School of Education at Rutgers University; Gary Bass, founder and executive director of OMB Watch; Jack Buckley, an associate professor of applied statistics at New York University (and now the commissioner of the National Center for Education Statistics); William Duncombe, a professor of public administration and associate director of the Education Finance and Accountability Program at Syracuse University; Daria Hall, director of K-12 policy development at the Education Trust; Craig Jerald, president of Break the Curve Consulting; Raegen Miller, associate director for education research at the Center for American Progress; and Marguerite Roza, research associate professor at the University of Washington's College of Education (and now a senior data and economic adviser at the Bill & Melinda Gates Foundation).

We also solicited the advice of practitioners including Dr. Bonita Coleman-Potter, deputy superintendent of Prince George’s County (Maryland) Public Schools; productivity experts such as Eric Hanushek, the Paul and Jean Hanna Senior Fellow at the Hoover Institution of Stanford University; and education reform advocates including Van Schoales, executive director of Education Reform Now, a national educational policy advocacy group. Finally, we hired an independent researcher to examine our work and ensure that our results were broadly replicable. Nevertheless, we take full responsibility for the methodology and evaluations.

Data sources

We produced productivity evaluations for more than 9,000 districts that enroll more than 85 percent of all U.S. students. We were unable to produce results for Alaska, the District of Columbia, Hawaii, Montana, and Vermont. Hawaii and D.C. are single-district jurisdictions, so within-state comparisons were not possible. Montana and Vermont likewise did not have enough comparable districts. We excluded Alaska because we could not sufficiently adjust for cost-of-living differences within the state.

Spending data came from the Local Education Agency Finance Survey, also known as the F-33, produced by the federal government’s National Center for Education Statistics, or NCES, the primary federal entity for collecting and analyzing data related to education. These data are from the 2007-08 school year, the most recent year for which complete data are available. Since that time, districts may have taken steps that might have significantly changed their efficiency ratings.

We used the “current expenditures” category, which includes salaries, services, and supplies. It does not include capital expenses, which tend to have dramatic increases from year to year, and thus are unreliable for comparisons. The expenditure data include money from all revenue sources, federal, state, and local. We subtracted from this sum any payments to private schools and charter schools in other districts to come up with per-pupil expenditures, as is NCES practice. The data were downloaded from the NCES website on October 18, 2010.

We restricted our study to districts with at least 250 students that offered schooling from kindergarten to 12th grade. We also excluded districts classified as a charter school agency, state-operated institution, regional education services agency, supervisory union, or federal agency.³⁶ Data from New York City Public Schools

were also aggregated into a single district. And to ensure that we had a sufficient number of comparable districts in each state, we included states only if more than 50 percent of their students were covered by our analysis.

We also relied on NCES to calculate district-level demographic data for the 2007-08 school year, the number of students receiving free and reduced price lunch, the number designated as English language learners, and the number that participate in special education. We downloaded this data from the NCES Common Core of Data website on October 18, 2010.

Many districts did not report demographic data for the 2007-08 school year, necessitating the use of proxies. If a school district was missing a demographic indicator, we substituted data from either the 2008-09, 2006-07, or 2005-06 school year. Because demographic data can vary over time, we did not use data from more than three different school years for any demographic indicator. The Common Core of Data did not report the number of students eligible for free and reduced-price lunch for a number of large North Carolina districts, and so we obtained the data for seven districts in the state—Bertie, Johnston, Robeson, Sampson, Union, Vance, and Wake—from 2008 compliance reports.³⁷ In no instance did we use proxies for achievement or expenditure data. A list of districts for which we used proxy data from alternate years is available on our website at <http://www.americanprogress.org/ROI>.

Achievement data came from the New America Foundation's Federal Education Budget Project, which collects data from the states on district-level student outcomes. We used these data to create an achievement index, developing a score for each district by averaging together the percent of students designated proficient or above on the state assessment in reading and math in fourth grade, eighth grade, and high school for the 2007-08 school year. Because we did not have the total number of students who scored proficient or above, we simply averaged together the percent proficient for each subject and grade level.

The Federal Education Budget Project excludes districts characterized by NCES as a charter school, state-operated institution, regional education services agency, supervisory union, or federal agency. It also does not include any charter districts. The budget project also includes only districts created before 2006. We downloaded the data from the project's website on October 18, 2010.

Our three productivity measures

To emphasize the complexity of measuring a district's productivity, we offer three different approaches to measuring productivity rather than a single ranking. The companion website to this report allows the public to compare districts in a state using each of our metrics, as well as to easily compare school systems with similar demographics and size. The site also details each district's achievement and spending data. We used shades of colors when ranking the districts to emphasize the fact that we did not evaluate districts against an external benchmark but rather on their relative performance.

Basic Return on Investment index rating

This measure rates school districts on how much academic achievement they get for each dollar spent, relative to other districts in their state.

Because it costs more to educate certain populations than their peers, we adjusted the expenditure data for students in special programs, such as students who receive subsidized lunches and are in special education. This is a common practice in school finance research, and we derived the weights by calculating the average weight used in a half-dozen research studies and policy papers.³⁸ Based on those calculations, we used a weight of 1.4 for free and reduced-price lunch, 1.4 for English-language learners, and 2.1 for special education.

To understand how this works, consider an example. The research indicates that each student who qualifies for a subsidized lunch costs about 40 percent more to educate. So, for each additional student in the free and reduced-priced lunch program, we subtracted 40 percent from the district's per-student spending.

To adjust for cost-of-living differences, we used the Comparable Wage Index, a measure of regional variations in the salaries of college graduates who are not educators. Lori Taylor at Texas A&M University and William Fowler at George Mason University developed the CWI to help researchers fine-tune education finance data to make better comparisons across geographic areas. We used adjustments from 2005, the most recent available.

To calculate the adjusted costs for each district, we created a needs index designed to measure how much additional funding a school district should have received based on its students in special programs, including the percentage of students

in the subsidized school lunch program, special education students, and English-language learners. We created the index by multiplying the number of students in these special programs by their respective weight. We then divided the weight by the enrollment to get the average additional amount of funding that a given school district should have received. To avoid penalizing districts with greater needs, we then divided the raw per-pupil expenditure by the weighted index to produce the amount of money a district would have spent if it had no students in special programs. Finally, we adjusted this measure by the CWI to make it comparable across different geographic localities.

We then distributed districts in each state into three equal tiers based on their position on the achievement index, with the highest achievers in the top tier and the lowest achievers in the bottom tier. We also divided the districts into three equal tiers based on their adjusted expenditures, with the highest adjusted spenders in the top tier and the lowest adjusted spenders in the bottom tier. Then we used an evaluation matrix to assign colors to each district based on their achievement tier relative to their spending tier, with green being the most productive and red being the least productive.

The matrix rewards districts that had low spending and high achievement relative to other districts in their state. So if a district was in the top third of achievement and the bottom third in spending, it would receive a rating of green.

ROI Evaluation Matrix

	Lowest achievement	Medium achievement	Highest achievement
Lowest cost			
Medium cost			
Highest cost			

To understand better how our Basic ROI Index works in practice, consider Maryland. We first ranked the state’s 24 districts along our achievement index. That put districts with relatively high achievement, such as Queen Anne’s County Public Schools, in the top achievement tier. (Queen Anne’s County has an achievement index of 87 and ranks sixth in the state on that measure). Districts with relatively low achievement, such as Dorchester County Public Schools, went into the bottom achievement tier. (Dorchester County has an achievement index of 72 and ranks third from the bottom on this measure.)

Then we looked at each district's adjusted spending. Dorchester County had high adjusted spending, and so it went into the highest adjusted spending tier. (Dorchester's adjusted per-student spending is \$10,462 and ranks 17th out of 24 districts on this measure.) Queen Anne's County had relatively low adjusted spending, and so it went into the lowest adjusted spending tier. (Queen Anne's adjusted per-student spending is \$8,648 and ranks seventh in the state on this measure.)

Then we used the evaluation matrix (see box, page 19) to assign colors to each district based on its achievement tier relative to its spending tier. Queen Anne's County had high achievement and low adjusted spending, and so it received a green rating. Dorchester had low achievement and high adjusted spending, and so it received a red rating.

Adjusted Return on Investment index rating

This measure uses the same approach as the Basic ROI rating but applies a different statistical method, called a regression analysis, to account for factors outside a district's control, such as the added costs of educating low-income, non-English-speaking, and special education students. The adjustments, or weights, used in the Basic ROI are not always sensitive enough to account for spending differences within states. For example, states might provide districts with additional funding for students in special education, and thus a weight of 2.1 for a student in special education might be too high.

In this approach we predicted what a district would spend relative to other districts in the state. We ran the regression models separately for each state to account for variation within each state's educational financing system. Here's the process depicted as an equation:

$$\ln(\text{CWI adjusted ppe}) = \beta_0 + \beta_1 \% \text{ free lunch} + \beta_2 \% \text{ ELL} + \beta_3 \% \text{ Special Ed} + \varepsilon$$

We predicted each district's spending based on the percentage of students in special programs, including the percentage of students receiving free or reduced-price lunch, the percentage designated as English-language learners, and the percentage who participate in special education. Thus, we predicted how much more or less the school district is spending than what we predicted it should be spending—also known as a residual—and we used this as our measure of spending.

We then divided the districts into three tiers based on how much more or less the district spent than what we predicted it should have spent. Districts with lower-than-predicted scores went into the lowest tiers, and those with higher-than-predicted scores into the highest tier.

We then used the achievement index to separate the districts into three tiers, as in the Basic ROI rating. Finally, we assigned each district a color on the evaluation matrix based on its placement on the achievement and predicted-spending tiers.

To get a sense of how this worked in practice, consider again the Maryland example. First, we ranked all the districts in the state based on their achievement indexes. Again, districts with high achievement, such as Queen Anne’s County, went into the top tier while relatively low-achieving districts, such as Dorchester County, went into the bottom tier.

Next, we looked at each district’s predicted spending score, or the difference between the predicted value and the actual value. Dorchester County had an average predicted spending score, or residual, and so it went into the middle tier for predicted spending. Queen Anne’s County had an average predicted spending score, or residual, and so it went into the middle tier for predicted spending.

Then we compared the districts against our evaluation matrix. Dorchester County had low achievement and a middling predicted spending score, or residual, and so it received a rating of dark orange. Queen Anne’s County had high achievement and a middling predicted spending score, or residual, and so it received a rating of light green.

Predicted Efficiency index rating

This measure is significantly different than the first two measures.

The first two measures rate districts based on the achievement that school systems produce compared to their expenditures after controlling for factors outside the district’s control. In contrast, the predicted efficiency measure doesn’t compare achievement to spending. Instead, the approach rates districts on the results of their predicted achievement after controlling for factors outside their control. This distinction is important. The first two approaches attempt to measure how much “bang for the buck” a school district gets. This third approach attempts to elimi-

nate the effects of spending and other factors such as students with additional needs and then evaluates districts by how much more or less achievement the district produced than would be expected.

Technically, then, this approach does not evaluate districts against an evaluation matrix, nor does it weight or predict the amount that a school district spends on education. Instead, we used a regression analysis to predict what achievement a district should have relative to other districts in the state given its spending and percentage of students in special programs.

To calculate this estimate, we used a production function, a type of regression analysis that examines the relationship of inputs to an output, and we predicted the achievement index as a function of the district's cost of living adjusted per-pupil expenditure, the percentage of students participating in the free and reduced-priced lunch program, the percentage of students who are English-language learners, and the percentage of special education students.

This approach is shown in equation form below:

$$\text{achievement} = \beta_0 + \beta_1 \ln(\text{CWI adjusted ppe}) + \beta_2 \% \text{ free lunch} + \beta_3 \% \text{ ELL} + \beta_4 \% \text{ Special Ed} + \varepsilon$$

To control for differences in state finance systems, we calculated individualized production functions for each state. Then, after predicting each district's achievement, we divided the results into six bands and awarded colors to districts that produced higher or lower levels of achievement than would be expected, with green being the most productive and red being the least productive. Districts with negative scores—or those that produced a lower level of achievement than would be expected—were given the least desirable rankings.

One of the limitations of the Predicted Efficiency index is that districts with high overall achievement can receive low productivity scores. That is not the case with the first two productivity approaches. The measure also adjusts academic expectations for students from disadvantaged backgrounds. While this is an accepted research practice in the education policy community, the Center for American Progress opposes the lowering of academic expectations as a matter of policy. The reasons are both philosophical and practical. Philosophical because we do not believe that a country that promises that everyone is created equal should have lower educational standards for students who are from low-income families or speak English as a second language. Practical because we believe that unless

schools have high academic expectations, we will not ensure that all students—regardless of family background—will succeed. But as we researched various productivity measures, we found that this approach provided important insight into a district’s productivity and helped provide a more well-rounded understanding of its overall efficiency.

Consider the districts in Maryland again as an example. On the Predicted Efficiency index, Queen Anne’s County received just below-average marks, and it earned a rating of orange. That means that it did less well relative to other districts than would be expected, given its spending and percentage of students in special programs. To help understand that result, consider that Queen Anne’s has 15 percent of its students in the subsidized school lunch program, and in Maryland, the percent of students who participate in the program have a large and negative impact on achievement, one of the largest of any of the variables included in our regression.

The regression model predicted Queen Anne’s achievement relative to other districts, and there are districts in the state that have similar demographics that spent less and achieved more, which helps to explain why Queen Anne’s received just below-average marks. Calvert County, for instance, has largely similar percentages of students in special programs as Queen Anne’s, but it has an achievement index score of 90, three points higher than Queen Anne’s, and Calvert’s adjusted per-student spending was \$8,091, about \$500 less per student.

Dorchester County also received just below-average marks on this metric, and it received a rating of orange. This indicates that the district did less well than was estimated, given its spending and percentage of students in special programs. To help explain the evaluation, consider that Dorchester County enrolls a large percentage of low-income students, with about half of the students in the district participating in the subsidized school lunch program. Again, the percentage of students who receive subsidized lunches in Maryland has a large and negative impact on predicted achievement, one of the largest of any of the variables included in our study.

Our regression model compared Dorchester County’s achievement to that of other districts, taking into account the low performance of students who participate in the subsidized lunch program. Dorchester’s results were just below average in part because there are districts in the state with similar rates of poverty, such as Allegany County Schools, that have significantly higher achievement.

Important caveats

One of the aims of our study is to draw attention to the large variance in productivity within states, and while we believe that our district-level evaluations rely on the best available methods—and show important and meaningful results—we caution against making firm conclusions about the ratings of an individual district.

The literature on productivity is limited, and there's a lot we don't know about the relationship between spending and achievement. It appears, for instance, that the link between outcomes and money is not always linear. In other words, even in an efficient school system, the first few dollars spent on a program or school might not have the same effect as subsequent expenditures, with additional dollars not boosting outcomes as much as initial investments. We also know that additional resources are often provided to districts that already have high achievement and that this can potentially mask inefficiencies in spending.

Because of the limitations of the research, we could not evaluate the efficiency of a district against an external benchmark. We therefore rated districts based on their relative performances. That means a few things. First, we slotted districts into different evaluation levels even though in some cases the numerical value that separated the districts may not have been significant. It also means that states with a smaller number of districts had different cutoff points between rating categories than did states with larger numbers of districts.

Our measures also cannot account for all of the variables outside the control of a district, in large part because the field of education suffers from a lack of high-quality data. School-by-school spending data, for instance, are not available in most states. That's why we were able to produce only district-level productivity results, which likely mask significant variation within a district. And apart from excluding any district serving fewer than 250 students, we did not adjust for economies of scale. There are issues with the data as well as debate within the research community about what economies of scale say about the quality of a district's management.³⁹ But given the potential impact that size can have on spending, we made it easy to sort by both enrollment and geography on our interactive website so that users can compare similar districts.

The available data are also problematic. State and district data often suffer from weak definitions and questionable reliability. For instance, the federal government requires that every school report the number of students who participate in the

free and reduced-price lunch program. But schools rely on parental self-reporting to determine eligibility, and so schools that are more aggressive about recruiting families into the program often have higher participation rates, even though they might not necessarily have larger percentages of low-income students.

Other data released by NCES appear to be simply flawed. Take, for instance, Connecticut's New Canaan Public Schools, which is located about an hour north of New York City. In 2008, NCES reported that close to 100 percent of New Canaan's students received free and reduced-priced lunch. That would make New Canaan one of the poorest districts in the country. But only 2.2 percent of students in the New Canaan area are poor, according to the Census Bureau. That's well below the state average of 10 percent.⁴⁰ When we informed NCES of the contradiction, an official said the state had reported the data to them and that there was no way for them to verify if the figure was too large or small. (We used subsidized lunch as the measure of poverty for our evaluations because it's the only poverty indicator available at the district level. The rest of the poverty data are available only at the county or municipal level.)

There are problems with achievement data, too. Many state assessments don't rigorously assess what students know and are able to do. Some of the exams use only multiple-choice questions to test student mastery of a subject, thus providing limited perspective on student skills. Other exams are not properly aligned with state curriculum standards and may be too easy. Moreover, our study looks only at reading and math test scores, an admittedly narrow slice of what students need to know to succeed in college and the workplace.

Despite these caveats, we believe our evaluations are useful, and the best available, given existing traditions and knowledge. We designed our color-rating system to empower the public to engage the issue of educational productivity, and we've produced an interactive website that allows users to compare the productivity of similar districts. We hope this project promotes not just further talk and deeper research—but also thoughtful action to maximize school spending.

Findings

This report is designed to spark a national conversation about educational productivity and to identify districts that generated more relative achievement per dollar spent. Below are our major findings:

Inefficient school systems represent a significant reform opportunity

If school systems spent their dollars more productively, many would see large gains in student achievement. Consider California, where a low-productivity school district could see as much as a 25 percent boost in achievement if it increased its efficiency from the lowest level to the highest, all else being equal. In Arizona, that jump in achievement could be more than 36 percent, according to our analysis.

Our data show that 41 states show the potential for double-digit percentage increases in achievement without necessarily spending additional funds. Such growth in student learning will not come without significant reform since the programs and policies that cause low productivity are often systemic. But at a time of sagging revenues and pending budget cuts, these results should inspire states and districts to tackle productivity head-on and consider reforms that boost achievement without incurring significant costs. (See Table A2)

Low productivity is costing the nation's school system billions of dollars each year

After adjusting for variables outside a district's control, districts with below-average productivity spent over \$950 more per student than did above-average districts. This estimated loss in capacity is substantial.*

To be sure, inefficient districts are not necessarily “wasting” the lost capacity. Our approach cannot account for all the factors outside of a district’s control, and the extra money spent by some districts might be supporting outcomes beyond the scope of this study. But at the same time, our estimate might also be low since it does not cover the cost of poorly prepared students entering college and the workforce. Far more research needs to be done in this area in order to better understand the scope of the productivity problem.

Without clear controls on how additional school dollars are spent, more education spending will not automatically improve student outcomes

Additional dollars corresponded to higher student achievement in only 16 states. In five states, including Florida, Texas, and New Jersey, additional dollars predicted slightly lower achievement.

That does not mean that money can’t—or doesn’t—have an effect on achievement in Florida, Texas, or anywhere else. Rather, it means that money matters only if it’s spent in effective ways, at least above some threshold level, and that without a systemic approach to spending, unfocused increases in expenditures are not likely to have any impact on student outcomes.

Efficiency varies widely within states

Some districts spent thousands more per student to obtain the same broad level of academic achievement. In New York, the range of spending among the districts in the highest third of achievers was more than \$7,000 per student. In California, the range was almost \$8,000 per student.

The differences are starker when comparing similar districts, like Oshkosh and Eau Claire, Wisconsin. The two school systems are about the same size, have largely comparable results on state exams, and serve similar demographics. But in 2008, Eau Claire spent over \$8 million more than Oshkosh, or about \$300 more per student. (See page 32)

More than 1 million students are enrolled in highly inefficient districts that received a low rating on all three of our measures

That's over 400 school districts, serving about 3 percent of the almost 43 million students covered by our study. These districts spent far more money than other districts, and after adjusting for characteristics outside the district's control, these low-productivity districts spent over \$2,000 more per student than the average school district.

High-spending school systems are often inefficient

Our analysis showed that after accounting for factors outside a district's control, many high-spending districts posted limited outcomes. In Minnesota just 23 percent of the districts in the top third of spending were also among the top third in achievement. In Florida, only 17 percent of the state's highest-spending districts were also in the highest-achieving tier.

In high-spending districts, success often comes at significant cost. Consider Howard County School District in Maryland. Many consider the affluent district to be one of the best in the country, and a magazine recently heralded the district as an international academic "powerhouse."⁴¹ But after controlling for factors outside the district's control, the school system has one of the highest rates of per-student expenditures in the state, spending over \$1,600 more per student than the state average and almost \$3,000 more than the national average.

To be sure, our evaluation could not control for all the variables that go into measuring an efficient school district, and some of the money expended by high-spending districts like Howard County may support high-quality programs and tools such as science labs and computer rooms that would not be captured in math and reading tests. But given the need to dramatically improve the nation's reading and math outcomes, taxpayers and parents should scrutinize high-spending districts and ensure that they're getting everything that they can for their school dollar.

Students from disadvantaged backgrounds are more likely to be enrolled in inefficient districts

Our data showed that students who participated in the subsidized-lunch program were 12 percentage points more likely to be enrolled in the nation's least-productive districts than the most productive. This finding appears after adjusting expenditures for the higher cost of educating lower-income students and suggests that highly inefficient districts are more likely to have larger percentages of students from disadvantaged backgrounds.

Students from minority backgrounds are also more likely to be enrolled in highly inefficient districts. The least-efficient districts were more likely to have larger percentages of black students (18 percent versus 5 percent) and Hispanic students (14 percent versus 7 percent) than the most efficient ones. But while some within the research community use race as an adjustment within regression models to account for the fact that students of color often perform worse than their peers, we did not do so for a number of reasons. Race variables, for one, did not add significantly to the robustness of our productivity evaluations. The Center also does not support policies that lower academic expectations for students of color or from disadvantaged backgrounds.

These findings present an important avenue for additional research. Our data cannot capture everything that goes into creating an efficient school system, and there were confounding variables that our study was not able to control for. For instance, school systems with weak tax bases may be subject to greater administrative burdens and have less control over how funds are spent, which might make it harder for them to be efficient. Such school systems also typically tend to have greater proportions of low-wealth parents, whose students often perform less well on reading and math exams. But we could not account for differences in revenue sources because the fiscal database produced by NCES does not track expenditures by source, and this may make districts with weaker tax bases appear less efficient than they really are.

Highly productive districts are focused on improving student outcomes

We surveyed a sample of the districts that performed well on each of our productivity metrics, and they shared a number of attributes, such as building support within their communities for productivity reforms and using data-mining practices to reduce inefficiencies. (See page 36.)

States and districts fail to evaluate the productivity of schools and districts

Only two states, Florida and Texas, currently provide annual school-level productivity evaluations, which report to the public how well funds are being spent at the local level. But without consistent metrics, educators will not be able to figure out if school dollars are well spent.

The quality of education data is often poor, which impedes the study of educational productivity

In far too many cases, crucial data on school finance, operations, and outcomes are unavailable, making it difficult to accurately measure the achievement that a school district produces relative to its expenditures. For instance, we could not control for certain cost factors, such as transportation, due to a lack of robust data, and so a rural district that has high busing costs because its students are spread out over a large area might be at a disadvantage in some of our metrics relative to a more densely populated district.

When states and districts do collect key education data, they often use inconsistent definitions and weak data collection practices. For instance, policymakers in some states set the cut scores of state exams at very low levels so that many school systems report having proficiency levels at 90 percent or above. Six districts in Nebraska reported that all their students were proficient in reading and math in fourth grade, eighth grade, and high school in 2008. This makes it difficult to compare the productivity of districts, since some have essentially topped the achievement scale.

The nation's least-productive districts spend more on administration

The most inefficient districts in the country devote an extra 3 percentage points of their budgets on average to administration, operations, and other noninstructional expenditures. This translates into large per-student spending differences, and after adjusting for students in special programs and cost of living, the least productive districts spend almost \$300 more per student than the average district on student and staff support, which includes expenditures on school libraries, media centers, and

guidance counselors. The least productive districts also spend over \$350 more per student than the average district in administrative costs, which includes dollars spent on central services such as payroll as well as principals and other administrators.

This finding does not mean that high administrative costs cause low productivity. Inefficiencies are often buried deep within the operation of school systems.⁴² The problem might be large expenses on programs that do little to raise student achievement, or salaries paid out to staff that have little or nothing to do with the employee's effectiveness. It's also possible that our measures reflect the fact that districts with lower achievement are often subject to increased state regulations. In that case, it wouldn't be high administrative spending causing low efficiency, but low efficiency causing increased administrative burdens. We also do not endorse policy proposals that require a set amount of money per student to be spent in the classroom. Such blunt formulas often do more to hinder local administrators than help them.

Some urban districts are far more productive than others

While our main results are limited to within-state comparisons, we conducted a special cross-state analysis of urban districts that recently participated in a national achievement test. And after adjusting for certain factors outside a district's control, we found that some big-city school systems spend millions of dollars more than others—but get far lower results on math and reading tests. (See page 33)

****Correction, May 4, 2015:** This report incorrectly stated the cost of low productivity to the nation's school system. Based on new CAP calculations, the correct estimate is approximately \$18 billion. To reflect these new calculations, the report has been corrected to reflect that low productivity costs the nation's school system billions of dollars and that the loss in capacity is substantial.*

A tale of two districts

The school districts of Oshkosh and Eau Claire in central Wisconsin are remarkably similar. Both have about 10,000 students. Both serve similar demographics, with about 30 percent of students qualifying for free and reduced-priced lunch. They also have largely comparable test results, and 83 percent of fourth grade students in both districts scored proficient or above in reading in 2008. They both even sent a high school basketball team to the state finals in 2009.

But Eau Claire spent about \$330 more in unadjusted dollars per student to run its school system, or more than \$8 million in 2008. That difference registered on our productivity metrics. Oshkosh received a light green evaluation on each of our three return-on-investment measures, while Eau Claire scored a yellow on each of the three metrics.

When we examined the 2008 budgets of the two districts, we found that Oshkosh spent 65 percent of its budget on instructional expenditures, while Eau Claire dedicated just 59 percent of its money to costs

associated with teaching. Eau Claire, meanwhile, outspent its sister district 16 percent to 11 percent on administrative expenditures as a share of total budgets. These different priorities have a large impact on the districts' budgets. In 2008 unadjusted dollars, Eau Claire spent almost \$7 million—or almost \$600 more per student—in administrative expenditures than Oshkosh.

To be sure, Eau Claire may be getting something valuable for its additional spending. While Oshkosh posted higher eighth-grade math scores, Eau Claire showed better high school reading outcomes, and Eau Claire scored one point higher on our achievement index, getting a score of 81, while Oshkosh averaged an 80. (The index range in the state was from 35 to 95 points, with an average of 81.) Moreover, our study doesn't cover a full range of potential school outcomes, such as science achievement or graduation rates. But still the Oshkosh comparison suggests that when it comes to recent reading and math exams, Eau Claire is spending more to get largely similar outcomes—and taxpayers should be asking why.

TABLE 1
Total current expenditures for Eau Claire School District, Wisconsin

Spending	Amount	Amount per student	Percent
Total current expenditures	\$111,278,000	\$10,310	
Instructional expenditures	\$66,023,000	\$6,117	59%
Student and staff support	\$8,539,000	\$791	8%
Administration	\$18,126,000	\$1,679	16%
Operations, food service, other	\$18,590,000	\$1,722	17%

Source: U.S. Department of Education, National Center for Education Statistics, Current Expenditures for Public Elementary and Secondary Education: School Year 2007–08.

TABLE 2
Total current expenditures for Oshkosh School District, Wisconsin

Spending	Amount	Amount per Student	Percent
Total current expenditures	\$103,083,000	\$9,979	
Instructional expenditures	\$66,530,000	\$6,440	65%
Student and staff support	\$9,271,000	\$897	9%
Administration	\$11,341,000	\$1,098	11%
Operations, food service, other	\$15,941,000	\$1,543	15%

Source: U.S. Department of Education, National Center for Education Statistics, Current Expenditures for Public Elementary and Secondary Education: School Year 2007–08.

Wide variations in urban district productivity

Because each state has its own student assessment program, the return-on-investment measures used in this report are restricted to within-state comparisons of school districts.

We were able, however, to conduct a special cross-state analysis of the urban districts that participated in the Trial Urban District Assessment, or TUDA. That trial program uses the National Assessment of Educational Progress test, known as the “nation’s report card,” the only source of comparable student performance data across states. Because of the differences in methodologies, the TUDA data is not always directly comparable to the achievement results reported in the companion website to this report.

What we found is that some large urban school systems get more bang for their buck than others. After adjusting for certain factors outside a district’s control, such as cost of living and student poverty, some big-city school systems spend millions of dollars more than others—but get far lower results on national math and reading exams.

Consider the Austin Independent School District in Texas, one of the highest-scoring districts on the most recent TUDA exam. After adjusting for factors such as cost of living and students in poverty, Austin spent \$6,450 per student in 2008. That’s about \$2,500 less per student in adjusted costs than what was spent by the Baltimore City Public School System, where the percentage of students scoring at or above proficient is lower by at least 20 percentage points in each of the areas assessed by the exam.⁴³

Austin and Baltimore are far from perfectly comparable school systems. While the two districts enroll similar numbers of students (around 80,000 students), Baltimore had a higher percentage of students receiving subsidized lunches (73 percent to 61 percent) and special education students (17 to 10 percent) in 2008. But Austin has a greater proportion of students who are English language learners

(13 percent to 2 percent). And while we controlled for poverty and students in special education, we could not fine-tune our adjustments to control for differences in the type of poverty or disability. Nor could we adjust for all of the other factors outside of a district's control. This means that differences in achievement and expenditures do not necessarily indicate that districts like Baltimore are squandering the additional dollars they spend. But the data suggests that when it comes to fourth and eighth grade reading and math scores, the public should be asking some districts if their education dollars could have been spent differently to produce higher results.

For their part, the nation's urban school districts have been working to improve their productivity. The Council of Great City Schools, a coalition of 65 of the nation's largest public school systems, recently announced an initiative to boost efficiency. The Managing for Results in America's Great City Schools project provides districts with specific spending and operations targets so that school systems can better identify potential cost-savings. For example, consider a district that had 100 buses and only 69 percent were in operation on a given day. Since the percentage of buses in operation was well below the median for urban schools, the district might use the benchmarked data to argue that it should sell 16 of its fleet and save \$320,000, or enough for five new teachers.⁴⁴ Such changes will not happen overnight, but they hold the promise of saving taxpayers millions of much-needed school dollars.

TABLE 3

Urban district achievement and spending and demographic indicators

District	Percentage of 4th graders scoring at or above the proficient level on NAEP TUDA math exam	Percentage of 4th graders scoring at or above the proficient level on NAEP TUDA reading exam	Percentage of 8th graders scoring at or above the proficient level on NAEP TUDA math exam	Percentage of 8th graders scoring at or above the proficient level on NAEP TUDA reading exam	Percentage of all students in the district who are low income	Percentage of all students in the district who are in special education	Percentage of all students in the district who are English language learners	District per-pupil spending, adjusted for student needs and cost of living	Enrollment
Atlanta	21%	22%	11%	17%	76%	9%	3%	\$9,224	49,991
Austin	38%	32%	39%	30%	61%	10%	13%	\$6,450	82,564
Baltimore City	13%	12%	10%	10%	73%	17%	2%	\$9,124	81,284
Boston	31%	24%	31%	23%	71%	21%	19%	\$11,270	56,168
Charlotte	45%	36%	33%	28%	43%	11%	14%	\$5,805	131,176
Chicago	18%	16%	15%	17%	76%	13%	18%	\$6,245	407,510
Cleveland	8%	8%	8%	10%	55%	20%	5%	\$8,698	52,954
Detroit	3%	5%	4%	7%	72%	15%	7%	\$7,681	107,874
Fresno	14%	12%	15%	12%	79%	10%	26%	\$6,661	76,460
Houston	30%	19%	24%	18%	62%	9%	14%	\$5,722	199,534
Jefferson County, Kentucky	31%	30%	22%	26%	55%	14%	5%	\$7,626	95,871
Los Angeles	19%	13%	13%	15%	68%	12%	32%	\$6,856	693,680
Miami-Dade	33%	31%	22%	28%	59%	11%	15%	\$7,405	348,128
Milwaukee	15%	12%	7%	12%	77%	18%	9%	\$8,047	86,819
New York City	35%	29%	26%	21%	71%	18%	15%	\$9,434	968,722
Philadelphia	16%	11%	17%	15%	68%	15%	7%	\$6,072	172,704
San Diego	36%	29%	32%	25%	62%	13%	29%	\$6,633	131,577

Source: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, Trial Urban District Assessment, 2009; U.S. Department of Education, National Center for Education Statistics, Common Core of Data, 2008; U.S. Department of Education, National Center for Education Statistics, Current Expenditures for Public Elementary and Secondary Education, 2008.

A closer look at the most productive school districts

What should schools and districts do to improve productivity? What programs and practices do the most productive districts have in common? To answer these questions, we analyzed the more than 240 districts that scored well on each of our productivity measures. We examined both their achievement and their expenditures as well as surveyed a sample of districts to learn more about their principles and practices.⁴⁵

The most productive districts were generally larger and more privileged than the inefficient districts. They enrolled lower percentages of low-income students than the least productive districts (37 percent to 49 percent). They were also more likely to be classified as large suburban school systems (20 percent versus 10 percent) and less likely to have small student bodies (77 percent of the least productive districts enrolled less than 2,000 students, in contrast to 51 percent of the most productive districts).

But highly productive districts do vary widely in size, location, and demographics. The Hawthorne School District, for instance, a few miles west of Compton, California, has a student body that's more than 85 percent low-income and almost 40 percent English-language learners, and earned very high marks on each of our efficiency metrics. Other highly productive districts were very small and rural, such as the 700-student Dolores School District in the mountains of western Colorado.

For all their diversity, we found that the highly productive districts shared a number of attributes. Let's examine each of them in turn.

A focus on outcomes

Highly productive districts reported a laser-like focus on student performance. "The biggest driving force [here] is first and foremost the question: 'How will this enhance learning?'" said Michele Campbell, superintendent of Pennsylvania's Fort

Leboeuf School District. “Expenditures need to fit into our vision and overarching educational objectives.”

The districts used a variety of ways to increase student achievement. Some emphasized low-cost strategies, such as requiring principals to visit every classroom each week to give feedback on instruction. Some tried to create a more collaborative teaching culture. Waverly-Shell Rock Community Schools in Iowa has been building “learning communities” of teachers to ensure student learning is taking place and help educators develop their curricula.

Strong community relations

Many of the highly productive districts worked closely with their communities to help maximize education spending. Franklin Public Schools in Massachusetts, for example, merged its technology department with that of the town in order to reduce costs. Poyen School District in Arkansas developed an agreement with a local community college to offer Poyen students free college and vocational courses.

Strong community relationships can also help with tough fiscal decisions. In 2009, St. Lucie County Schools in Florida had to cut \$30 million from its budget. The union and the administration agreed on a number of cost-saving strategies, including pay freezes so that classroom teachers would be protected as much as possible. “There is a unity from our school board, our district and school leaders, and our union partners that provide the context of how work is done,” said Kathy McGinn, the district’s assistant superintendent for strategic planning and central services.

A willingness to make tough choices

Reducing spending while maintaining strong outcomes takes fiscal acumen, political savvy, and a willingness to make hard choices. In Taylorville, Illinois, the district recently closed two underenrolled elementary schools and laid off administrators. The cuts saved the 3,000-student district more than \$1 million, and the system continues to post solid academic results—with test scores well above the state average. “Our communities are getting a good bang for their buck,” said superintendent Gregg Fuerstenau.

Reducing costs without cutting into achievement also requires careful planning. Norwell Public Schools in Massachusetts is in the third year of a comprehensive reform plan. A 25-member team of teachers, parents, administrators, and community leaders developed the initiative, which was aimed at boosting student outcomes and improving efficiency. “Rather than jumping from bandwagon to bandwagon, enough time is spent on initiatives to see the results,” said Norwell Superintendent Donald Beaudette. “Doing more with less has become a necessity.”

A priority on quality instruction

The country’s highly productive districts devoted 3 percentage points more of their budget to instructional costs than did the least efficient districts. They spent about 61 percent of their dollars on instructional expenditures, which includes teacher salaries, curriculum materials, and other classroom costs. “We aggressively protect resource[s] ... for direct instructional services,” said Vic Noel Adkison, superintendent of Thomasville City Schools in Alabama.

Highly productive school systems sought large pools of teacher applicants by broadening job postings to local newspapers, state employment websites, and area universities. They also often employed instructional coaches to help mid-career educators hone their skills. “Our teaching staff continues to grow stronger and more effective as a result of a careful selection process and the support and training provided by the district,” said David Johnson, superintendent of the Harlan Independent School District in Kentucky.

Smart use of data

Most of the highly productive districts reported having sophisticated data systems that provided detailed information on a variety of school outcomes, from parent satisfaction to student success in college. Districts reported that the data allowed them to understand what works and what doesn’t. “We need to see the possibilities. When there is an outlier in the district—an upward outlier—that means the bar is raised and others can do it,” said Susan Parks, superintendent of San Gabriel Unified School District near Los Angeles.

Robust data systems also allowed the districts to identify potential cost inefficiencies. By analyzing its facilities spending, Rio Rancho Public Schools in New Mexico was able to post a 23 percent decrease in natural gas usage and a 71 percent reduction in irrigation water usage.

In many ways, of course, these highly efficient districts were also a lot like other, less productive districts, and they were concerned that additional budget cuts could impair future outcomes. Florence District Five in South Carolina, for instance, has weathered major revenue reductions over the last three years. “This year we received funding levels that reflect spending 10 years ago,” said Superintendent John Morris. In trying to protect key academic programs from budget rollbacks, Florence has cut everything from custodial uniforms to cell phones. Morris said he was worried that if budget reductions continued, his district would not be able to continue to post high student outcomes. “Things are getting desperate.”

Recommendations

Our analysis leads us to the following recommendations.

Policymakers should promote educational efficiency

We must know far more about how well school systems are investing federal, state, and local taxpayer resources, and we hope this report launches a thoughtful conversation about educational efficiency. Specifically, policymakers should:

- Work with state and federal governments to spark a much-needed dialogue about ways for education systems to do more with less
- Direct academic studies at the state and local level of alternative measures of educational efficiency
- Convene a national advisory panel to make recommendations on how state and federal governments can better support local efforts to become more productive

States and districts must reform school management systems

Successful organizations reward success, encourage innovation, and ensure the efficient use of funds. But these practices are frequently absent in our nation's education system. Specifically, policymakers should:

- Create performance-focused management systems that are flexible on inputs and strict on outcomes
- Hold superintendents and principals accountable for the productivity of their organizations through the public reporting of efficiency metrics. Currently, only two states, Florida and Texas, produce school-level productivity measures
- Increase the authority that principals and superintendents have over budgets, employees, and other operational decisions. For instance, states should elimi-

nate mandatory salary schedules, which establish salaries at the state level, preventing local districts from setting teacher compensation levels

- Provide educators with the tools, technology, and training that they need to succeed. Among other things, states should offer school administrators strategies on how to thoughtfully stretch their school dollar

Education leaders should encourage smarter, fairer approaches to school funding, such as student-based funding policies

Education policymakers should develop funding policies that direct money to students based on their needs, so that all schools and districts have an equal opportunity to succeed. Specifically, policymakers should:

- Link increases in funding to improved student achievement
- Reduce unnecessary regulations, including the reliance on state categorical programs, which often come with unnecessary strings and red tape
- Develop funding policies where money follows students based on their needs, so that all schools and districts have an equal opportunity to succeed
- Take steps to improve fiscal equity across schools, districts, and states and ensure that all students have an equal opportunity to achieve high standards
- Support competitive funding programs that create opportunities for reform and innovation

States and districts should report far better data on school performance

States and districts should develop data systems that report reliable, high-quality information on school finance, operations, and outcomes. Specifically, policymakers should:

- Advocate for greater transparency surrounding spending data. The federal government should also make permanent the reporting of school-level expenditures, which was mandated as a one-time requirement under the American Recovery and Reinvestment Act of 2009
- Develop statewide data systems that offer accurate collection, analysis, and use of high-quality data to track student achievement and other aspects of school performance

- Require the federal government to annually publish a database that includes school-level achievement and accountability data, which is already collected through programs such as Title I
- Collect, process, and report educational data in a timely manner. Currently, expenditure data is released at the federal level more than a year after the previous school year has ended

Appendix A: Select tables and figures

Table A1 provides correlations between our measures and select spending and demographic indicators. Note that after adjusting for students from low-income families, there remains a moderate correlation with the Basic and Adjusted Return on Investment indexes and students who receive free and reduced-priced lunch. This most likely has a mix of causes, and it highlights the significance of the Predicated Efficiency index, which has almost no correlation with poverty.

TABLE A1
Correlations between productivity models and key spending and demographic indicators

	Basic ROI	Adjusted ROI	Predicted index	Per-pupil expenditures	Percent free and reduced-price lunch students	Percent special education students
Basic ROI	1	-	-	-	-	-
Adjusted ROI	0.9554	1	-	-	-	-
Predicted ROI	0.4656	0.4651	1	-	-	-
Per-pupil expenditures	0.252	0.2444	-0.0017	1	-	-
Percent free and reduced-priced lunch students	0.3953	0.3934	0.0082	-0.1263	1	-
Percent special education students	0.1772	0.1572	-0.0075	0.2032	0.1003	1

Table A2 offers some descriptive statistics on select indicators that were mentioned in the major findings section. Results of other analysis, including outcomes from alternate specifications and models, are available upon request.

TABLE A2
Select state spending and productivity indicators

	Range of adjusted spending		Coefficients and R-squared for Predicted Efficiency index								Achievement gains***	
	Between all districts in the state*	Between all top achievers**	Free and reduced lunch		English-language learners		Special education		Per-pupil expenditure		R-squared	Percent achievement increase if a district moves from least to most productive, all else equal
			Coef-ficient	Standard error	Coef-ficient	Standard error	Coef-ficient	Standard error	Coef-ficient	Standard error		
Alabama	\$3,180	\$3,896	-0.32	0.03	0.18	0.11	-0.52	0.23	0.11	0.04	0.67	11%
Arizona	4,635	3,659	-0.21	0.06	-0.34	0.12	-0.33	0.51	-0.19	0.07	0.56	36
Arkansas	2,752	2,201	-0.47	0.04	0.19	0.10	0.01	0.20	-0.04	0.05	0.50	25
California	6,175	7,936	-0.51	0.03	-0.02	0.04	-0.43	0.19	0.04	0.02	0.70	25
Colorado	4,723	5,117	-0.36	0.04	-0.35	0.08	-0.04	0.25	0.13	0.04	0.58	23
Connecticut	5,081	4,807	-0.29	0.04	-1.00	0.17	-0.85	0.28	-0.03	0.04	0.80	10
Delaware	5,513	2,518	-0.61	0.28	0.57	0.74	0.47	0.77	0.10	0.15	0.40	18
Florida	3,575	3,131	-0.39	0.07	-0.24	0.18	0.16	0.25	-0.12	0.06	0.53	18
Georgia	3,327	2,920	-0.22	0.02	0.05	0.07	-0.17	0.11	0.01	0.02	0.52	8
Idaho	5,554	7,487	-0.11	0.06	-0.19	0.07	-0.26	0.27	0.01	0.03	0.25	9
Illinois	3,761	3,364	-0.36	0.02	-0.31	0.08	-0.17	0.09	0.03	0.02	0.59	15
Indiana	2,814	2,344	-0.47	0.02	0.07	0.06	-0.11	0.09	0.01	0.02	0.69	12
Iowa	3,269	3,206	-0.31	0.04	-0.15	0.06	-0.28	0.11	0.09	0.02	0.37	12
Kansas	4,372	4,347	-0.34	0.03	-0.06	0.05	-0.03	0.11	0.14	0.02	0.40	14
Kentucky	3,226	3,797	-0.33	0.04	-0.20	0.27	-0.19	0.15	0.11	0.04	0.34	21
Louisiana	4,175	5,292	-0.49	0.06	-0.40	0.64	-0.48	0.32	0.03	0.06	0.55	23
Maine	6,296	4,874	-0.46	0.04	-0.19	0.13	-0.57	0.24	0.08	0.04	0.62	23
Maryland	3,842	5,444	-0.53	0.06	-0.57	0.33	0.11	0.38	0.17	0.05	0.85	6
Massachusetts	4,253	4,016	-0.67	0.04	0.61	0.14	-0.35	0.18	0.02	0.03	0.77	21
Michigan	2,771	2,819	-0.38	0.02	-0.07	0.06	-0.56	0.10	0.10	0.02	0.55	15
Minnesota	3,580	3,803	-0.47	0.04	0.00	0.08	-0.18	0.12	0.10	0.03	0.44	20
Mississippi	3,687	3,068	-0.72	0.04	0.67	0.41	0.52	0.23	0.14	0.04	0.73	27
Missouri	3,489	3,860	-0.38	0.02	-0.23	0.14	-0.12	0.12	0.09	0.02	0.41	34
Nebraska	4,946	4,932	-0.09	0.04	0.02	0.08	0.06	0.09	0.02	0.03	0.05	10
Nevada	6,731	4,274	-0.28	0.11	-0.64	0.46	-0.09	0.59	0.00	0.06	0.62	11
New Hampshire	6,862	7,994	-0.58	0.06	0.25	0.51	-0.38	0.17	0.16	0.03	0.67	13
New Jersey	5,099	2,922	-0.45	0.03	0.11	0.12	-0.23	0.09	-0.10	0.03	0.81	11

TABLE A2 CONTINUED

	Range of adjusted spending		Coefficients and R-squared for Predicted Efficiency index									Achievement gains***
	Between all districts in the state*	Between all top achievers**	Free and reduced lunch		English-language learners		Special education		Per-pupil expenditure		R-squared	Percent achievement increase if a district moves from least to most productive, all else equal
			Coef-ficient	Standard error	Coef-ficient	Standard error	Coef-ficient	Standard error	Coef-ficient	Standard error		
New Mexico	\$6,109	\$7,422	-0.21	0.06	-0.17	0.06	-0.06	0.32	0.02	0.04	0.47	38%
New York	7,326	7,372	-0.41	0.01	-0.01	0.06	-0.36	0.08	0.00	0.01	0.67	13
North Carolina	3,604	3,513	-0.52	0.04	0.12	0.11	0.27	0.28	0.08	0.04	0.58	15
North Dakota	4,327	3,389	-0.10	0.13	-0.74	0.25	-0.43	0.31	-0.21	0.09	0.50	26
Ohio	3,250	4,081	-0.31	0.02	0.08	0.07	-0.27	0.07	0.01	0.02	0.55	11
Oklahoma	3,889	4,282	-0.24	0.03	-0.11	0.06	-0.18	0.10	0.03	0.02	0.28	16
Oregon	4,157	6,740	-0.29	0.06	0.04	0.07	-0.33	0.22	0.10	0.03	0.30	17
Pennsylvania	4,128	4,309	-0.42	0.02	-0.40	0.13	-0.40	0.10	0.04	0.02	0.61	15
Rhode Island	4,202	2,986	-0.57	0.11	0.24	0.45	-0.69	0.38	0.08	0.08	0.88	20
South Carolina	2,662	2,803	-0.43	0.04	-0.01	0.42	0.38	0.20	-0.09	0.05	0.72	12
South Dakota	4,479	3,772	-0.27	0.05	-0.60	0.19	-0.29	0.10	0.00	0.05	0.65	15
Tennessee	2,652	2,835	-0.17	0.03	-0.43	0.19	0.02	0.06	0.02	0.03	0.27	8
Texas	6,943	7,402	-0.15	0.01	-0.29	0.03	-0.23	0.08	-0.02	0.01	0.28	13
Utah	5,499	5,176	-0.12	0.10	-0.54	0.17	-0.38	0.44	0.08	0.05	0.42	14
Virginia	4,106	2,424	-0.16	0.03	-0.05	0.06	0.30	0.18	-0.02	0.03	0.25	9
Washington	4,042	3,632	-0.47	0.04	0.11	0.07	-0.17	0.24	0.09	0.03	0.55	24
West Virginia	2,392	2,537	-0.33	0.06	-0.64	0.68	0.02	0.22	0.10	0.06	0.38	10
Wisconsin	3,679	3,340	-0.28	0.03	-0.40	0.10	-0.36	0.14	0.04	0.03	0.50	11
Wyoming	8,606	4,687	0.07	0.12	-0.67	0.13	0.01	0.33	-0.10	0.07	0.69	15

*We defined range of spending in the state as the difference between districts at the 5th and 95th percentiles of the per-pupil-expenditure distribution. Data were adjusted for student needs and cost of living.

**We defined range of spending in the state as the difference between districts at the 5th and 95th percentiles of the per-pupil-expenditure distribution for the districts scoring in the top third of all districts in the state. Data were adjusted for student needs and cost of living.

***We relied on the Predicted Efficiency index to calculate these figures.

Appendix B: Frequently asked questions

What is educational productivity?

In the business world, productivity is a measure of benefit received relative to spending. This project adopts that concept to measure public school districts' academic achievement relative to their educational spending, while controlling for cost of living, student poverty, the percentage of students in special education, and the percentage of English-language learners.

Why do you say that your evaluations should be approached with caution?

The connection between spending and achievement is complex, and our data cannot capture everything that goes into creating an efficient school system. Nor can we control for everything that's outside a district's control, and our adjustments for factors like poverty and students in special education are estimations and don't account for variations in severity and type within those demographic groups. Also, some of the data reported by states and districts are unreliable; agencies occasionally use inconsistent definitions and weak data collection practices. So while we believe our results are meaningful, we caution against reading too closely into individual evaluations of districts.

Should the United States spend less on public education?

Our emphasis on educational productivity does not mean that we believe that lawmakers should spend less on education. Quite the opposite. Transforming our schools will demand both real resources and real reform, and our project is an argument for dramatically improving our nation's school system so that dollars create results.

Why didn't you create a single score for each district?

A single score would have masked wide variation in the rankings of districts across our three models. We produced three productivity measures because we wanted to emphasize the complexity of measuring a district's efficiency and expose educators, policymakers, and the public to different ways of measuring educational productivity.

Did you evaluate districts against a benchmark?

No. We evaluated each district relative to the performance of other districts in the same state. That means that states with fewer districts have different evaluative cut points than states with larger numbers of districts. We believe this approach, which has been used in other education policy reports, is a fair way to evaluate within-state performance.

How did you measure achievement?

We relied on the New America Foundation's Federal Education Budget Project, which collects data from the states on district-level student outcomes. We used this data to create an achievement index for each state by assigning each district a score. We derived the score by averaging together the percentage of students in 2008 designated proficient or above on statewide reading and math tests for fourth grade, eighth grade, and high school.

How did you measure expenditures?

We used 2008 expenditure data from the National Center for Education Statistics, the most recent year for which complete data are available. We used "current expenditures," the preferred metric among educational leaders, which includes salaries, services, and supplies. We did not use "total expenditures," which also includes capital expenses, because these can fluctuate dramatically from year to year and are thus unreliable for comparisons.

How did you account for differences in revenue sources?

We did not. The fiscal database produced by NCES does not track educational expenditures by specific revenue source.

How did you adjust for differences in cost of living between districts?

We used the Comparable Wage Index, a measure of regional variations in the salaries of college graduates who are not educators. Lori L. Taylor at Texas A&M University and William J. Fowler at George Mason University developed the CWI to help researchers make better comparisons across geographic areas. We used adjustments from 2005, the most recent available.

Did you adjust for enrollment or economies of scale?

Apart from excluding from our study any district serving fewer than 250 students, we did not adjust for economies of scale because it is difficult to fairly deploy such adjustments across state and district lines. There is also debate within the research community over what economies of scale say about the quality of a district's management. But given the potential impact that size and location can have on a district's spending, we made it easy to sort by enrollment and geography on our interactive website.

Why did you use the percentage of students at or above the "proficient" rather than "basic" level to create your achievement index?

The proficient level indicates a firm grasp of the knowledge and skills needed to succeed at grade level. Students scoring at the basic level have only partially mastered the necessary knowledge and skills.

My district scores well on standardized tests, so why does it do poorly on your Basic and Adjusted Return on Investment indexes?

We rate schools on how much academic achievement they get for each dollar spent, while controlling for factors outside a district's control, such as cost of living and students in poverty. A district therefore received high marks on our basic and

adjusted ROI indexes if it had both high achievement and low spending relative to other districts in the same state. Districts with high achievement and high spending by definition fare less well, as do districts with low achievement and low spending.

My district scores poorly on standardized tests. Can it do well on your Basic and Adjusted Return on Investment indexes?

No. School districts with low student achievement cannot get a color rating higher than orange—or just below average—on either the basic or the adjusted ROI indexes.

My district scores poorly on standardized tests, so why does it do so well on your Predicted Efficiency index evaluation?

The Predicted Efficiency Index measures whether district achievement is higher or lower than its predicted achievement given per-pupil spending and percentage of students in special programs, such as subsidized school lunches. Under this approach, a low-achieving district could get high marks if it performed better than expected.

Can I compare districts across states?

Because each state has its own student assessment program, the return-on-investment measures listed on our website are restricted to within-state comparisons of districts, and comparisons across states are not meaningful. We were able, however, to conduct a special cross-state analysis of the urban districts that participated in the Trial Urban District Assessment (TUDA). The assessment is the only source of comparable student performance data at the district level across states, and the results of that analysis are listed in the paper.

Why is my district not included in your evaluation?

We restricted our study to districts that teach kindergarten through the 12th grade and that serve more than 250 students. We also excluded districts classified as a charter school agency, state-operated institution, regional education services

agency, supervisory union, or federal agency. These restrictions were to ensure that districts were comparable to one another. We also excluded districts with inadequate demographic, achievement, or expenditure data.

Why is my state not included in your evaluation?

We did not produce results for Alaska, the District of Columbia, Hawaii, Montana, and Vermont. D.C. and Hawaii have only one school district, so within-state comparisons are not possible. Montana and Vermont likewise did not have enough comparable districts for meaningful results. We excluded Alaska because we could not sufficiently adjust cost-of-living differences within the state.

Endnotes

- 1 National Center for Education Statistics, "Total and Current Expenditures per Pupil in Public Elementary and Secondary Schools: Selected Years, 1919-20 through 2006-07" (Washington: U.S. Department of Education, 2009), table 182, available at http://nces.ed.gov/programs/digest/d09/tables/dt09_182.asp.
- 2 B.D. Rampey, G.S. Dion, and P.L. Donahue, "NAEP 2008: Trends in Academic Progress" (Washington: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, 2009).
- 3 "Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States" (OECD, 2010), available at <http://www.oecd.org/dataoecd/32/50/46623978.pdf>
- 4 Nicholas Johnson, Phil Oliff, and Erica Williams, "An Update on State Budget Cuts: At Least 46 States Have Imposed Cuts That Hurt Vulnerable Residents and the Economy" (Washington: Center on Budget and Policy Priorities, 2010), available at <http://www.cbpp.org/cms/?fa=view&id=1214>.
- 5 Frederick M. Hess, and Whitney Downs, "K-12 Budget Picture: Lean Years Ahead" (Washington: American Enterprise Institute for Public Policy Research, 2010), available at www.aei.org/outlook/101002. Also see Byron F. Lutz, "The Connection Between House Price Appreciation and Property Tax Revenues" (Washington: Federal Reserve Board of Governors), available at <http://www.federalreserve.gov/pubs/feds/2008/200848/200848pap.pdf>.
- 6 Elizabeth McNichol, Phil Oliff and Nicholas Johnson "States Continue to Feel Recession's Impact" (Washington: Center on Budget and Policy Priorities, 2010), available at <http://www.cbpp.org/cms/index.cfm?fa=view&id=711>.
- 7 Arne Duncan, "The New Normal: Doing More with Less," Speech given on November 17, 2010, American Enterprise Institute, available at <http://www.ed.gov/news/speeches/new-normal-doing-more-less-secretary-arne-duncans-remarks-american-enterprise-institut>.
- 8 Nick Lovegrove and others, "Making It Work in Government: Perspectives on Transforming Performance in the Public Sector" (Washington: McKinsey & Company 2010).
- 9 "Leaders and Laggards: A State-by-State Report Card on Educational Innovation" (Washington: Center for American Progress, U.S. Chamber of Commerce, and Frederick M. Hess of the American Enterprise Institute, 2009), available at http://www.americanprogress.org/issues/2009/11/pdf/leaders_and_laggards.pdf
- 10 Percentage of GDP is based on 2008 fourth-quarter data. "Gross Domestic Product: Fourth Quarter 2008" (Washington: Bureau of Economic Analysis), available at: <http://www.bea.gov/newsreleases/national/gdp/2009/pdf/gdp408f.pdf>.
- 11 By least productive, we mean districts that did poorly on each of our productivity metrics.
- 12 R.E. Callahan, *Education and the Cult of Efficiency: A Study of the Social Forces That Have Shaped the Administration of the Public Schools* (Chicago: University of Chicago Press, 1962).
- 13 Caroline Minter Hoxby, "School Choice and School Productivity. Could School Choice Be a Tide that Lifts All Boats?" Working Paper No. 8873 (Washington: National Bureau of Economic Research, 2002), available at <http://www.nber.org/papers/w8873>
- 14 Bruce D. Baker, David G. Sciarra, and Danielle Farrie, "Is School Funding Fair? A National Report Card" (Newark: Education Law Center, 2010), available at <http://www.schoolfundingfairness.org/executivesummary.htm>.
- 15 "The Funding Gap" (Washington: Education Trust, 2006), available at <http://www.edtrust.org/sites/edtrust.org/files/publications/files/FundingGap2006.pdf>.
- 16 For a detailed discussion of some of the barriers to educational productivity and how districts might save money while raising achievement, see Frederick Hess and Eric Osberg, *Stretching the School Dollar: How Schools and Districts Can Save Money While Serving Students Best* (Cambridge: Harvard Education Press, 2010). For a broader discussion of educational innovation and management—which inspired some of the arguments in this paper—see "Leaders and Laggards" (2009).
- 17 Lawrence O. Picus, "Does Money Matter in Education? A Policymaker's Guide." In William J. Fowler, ed. *Selected Papers in School Finance* 1995, p.19-35. (Washington: National Center for Education Statistics, 1997).
- 18 "Leaders and Laggards" (2009).
- 19 "Strategic Professional Development Review of the School District of Philadelphia: School Year 2007-2008" (Watertown: Education Resource Strategies, 2008), available at <http://educationresourcestrategies.org/documents/SDPStrategicPDReview8.28.08.FINAL.pdf>.
- 20 Helen F. Ladd and Janet S. Hansen, eds., "Making Money Matter: Financing America's Schools" (Washington: National Academy Press, 1999). Also see Eric Hanushek, "Efficiency and Equity in Education" (Cambridge: National Bureau of Economic Research, 2001), available at <http://www.nber.org/reporter/spring01/hanushek.html>.
- 21 Robert Gordon, Thomas J. Kane, and Douglas O. Staiger, "Identifying Effective Teachers Using Performance on the Job" (Washington: Brookings Institution, 2005), available at http://www.brookings.edu/views/papers/200604hamilton_1.pdf.
- 22 Susanna Loeb and Marianne Page, "Examining The Link Between Teacher Wages And Student Outcomes: The Importance Of Alternative Labor Market Opportunities And Non-Pecuniary Variation," *Review of Economics and Statistics* 82 (3) (2000): 393-408, available at <http://ideas.repec.org/a/tpr/restat/v82y2000i3p393-408.html>.
- 23 "Money Matters: An Interview with Eric Hanushek," available at <http://www.educationsector.org/publications/money-matters>.
- 24 Lei Zhou, "Revenues and Expenditures for Public Elementary and Secondary Education: School Year 2007-08 (Fiscal Year 2008)" (Washington: National Center for Education Statistics, 2010), available at <http://nces.ed.gov/pubs2010/expenditures/findings.asp>.
- 25 "Rankings & Estimates, Rankings of the States 2009 and Estimates of School Statistics 2010" (Washington: National Education Association, 2009), available at: <http://www.nea.org/assets/docs/010rankings.pdf>. Also see Stephen Sawchuk, "Teacher Layoffs May Be Linked to Hiring Spree," *Education Week*, May 13, 2010, available at <http://www.edweek.org/ew/articles/2010/05/13/32layoffs.h29.html>.

- 26 Paul Hill and Marguerite Roza, "Curing Baumol's Disease: In Search of Productivity Gains in K-12 Schooling" (Seattle: Center on Reinventing Public Education, 2010), available at http://www.crpe.org/cs/crpe/view/csr_pubs/343.
- 27 "Long-Term Trend Report; Great Trends in Mathematics for Black and Hispanic Students than for White Students Since 1973" (Washington: National Assessment of Educational Progress, 2008), available at http://nationsreportcard.gov/ltr_2008/ltr0005.asp
- 28 Johnson, Oliff, and Williams, "An Update on State Budget Cuts: At Least 46 States Have Imposed Cuts That Hurt Vulnerable Residents and the Economy."
- 29 "A Cliff Hanger: How America's Public Schools Continue to Feel the Impact of the Economic Downturn" (Washington: American Association of School Administrators, 2010), available at http://www.aasa.org/uploadedFiles/Policy_and_Advocacy/files/CliffHangerFINAL%281%29.pdf.
- 30 "State Budget Update: November 2010" (Washington: The National Conference of State Legislatures, 2010), available at <http://www.ncsl.org/LinkClick.aspx?fileticket=AqSBWjZkwK8%3d&tabid=21829>.
- 31 "Long-Term Trend Report," (2008).
- 32 Education Week and EPE Research Center, "Diplomas Count 2010 Examines Graduation Rates and Data-Driven Reform," News Release, June 10 2010, available at http://www.edweek.org/media/ew/dc/2010/DC10_PressKit_FINAL.pdf
- 33 Jason Song, Howard Blume, and Jason Felch, "Settlement Limits L.A. Teachers' Seniority Protection," The Los Angeles Times, October 6, 2010, available at <http://www.latimes.com/news/local/la-me-laUSD-20101006,0,375697.story>.
- 34 The Texas's Comptroller's office developed the Financial Allocation Study for Texas (FAST) in order to examine how school district spending translates into student achievement. More at <http://www.fastexas.org>.
- 35 Martin Hampdel, "Measuring Educational Productivity in Standards-Based Accountability Systems" (Standard & Poor's, 2005).
- 36 Many of New Hampshire's schools systems are classified by NCES as supervisory unions. We found the districts to be comparable, however, and thus we included them in our study. We made this exception only for New Hampshire.
- 37 We downloaded the reports from <http://statelibrary.ncdcr.gov>.
- 38 Many other research and policy organizations have used weights in school finance research, including Education Week, "Quality Counts 2010" (2010), which uses a poverty weight of 1.2 and a special education weight of 1.9. Also, "Funding Gap 2006" (Washington: Education Trust, 2006), available at <http://www.edtrust.org/dc/publication/the-funding-gap-0>, which uses weights of 1.9 for disability, 1.6 for poverty, and 1.2 for English Language Learners. We conducted a literature review in order to gather studies from which we constructed an average weight. We limited our analysis to studies conducted at the state level, published after 2000, and commissioned by states or published in peer reviewed journals. They included the following:
- John Augenblick and others, "Calculation of the Cost of a Suitable Education in Kansas in 2000-2001 Using Two Different Analytical Approaches" (Topeka: Legislative Coordinating Council, 2002), available at <http://skyways.lib.ks.us/ksleg/KLRD/Publications/SchoolFinance-FinalReport.pdf>.
 - "Calculation of the Cost of An Adequate Education in Maryland in 1999-2000 Using Two Different Analytical Approaches" (Denver: Augenblick & Myers, Inc., 2001), available at <http://www.stateinnovation.org/Research/Education/Adequacy-Based-School-Funding/MarylandAdequacyStudysummary.aspx>.
 - Justin Silverstein and others, "Estimating the Cost of an Adequate Education in Montana" (Helena: Montana Quality Education Coalition, 2007), available at <http://www.apaconsulting.net/uploads/reports/5.pdf>.
 - "Costing out the Resources Needed to Meet Pennsylvania's Public Education Goals" (Denver: Augenblick, Palaich and Associates, Inc., 2007), available at <http://www.apaconsulting.net/uploads/reports/6.pdf>.
 - Allen Odden and Michael Goetz, "Wisconsin School Finance Equity Revisited" (Madison: Consortium for Policy Research in Education, 2005), available at <http://cpre.wceruw.org/finance/sf-equity.pdf>.
 - "State of Rhode Island Education Adequacy Study" (Gainesville: R.C. Wood & Associates, 2007), available at <http://www.rcwoodassoc.com/pdf/rhodeisland.pdf>.
- 39 The best available data on population density, for instance, is at the county level, not at the district level, and in many states such as Maryland, a county will include a wide variety of geographic contexts. With regard to economies of scale and the quality of district management, see William Duncombe and John Yinger, "How Much More Does a Disadvantaged Student Cost?" *Economics of Education Review* 24 (5) (2005): 513-532. In that paper, the researchers wrote: "There is extensive evidence, for example, that small districts have higher costs per pupil than middle-sized districts ... This can be interpreted as a cost difference, but it can also be interpreted as a sign that the small districts have refused to consolidate with their neighbors and thereby to lower their costs. Similarly, there is evidence that large districts have higher costs than middle-sized districts. This difference may reflect diseconomies of district scale, but it might also reflect mismanagement that arises in some large districts but not in others."
- 40 Additional indicators on New Canaan's poverty levels are available on the U.S. Census website: http://factfinder.census.gov/servlet/GCT-Table?_bm=y&-geo_id=04000US09&-box_head_nbr=GCT-P14&-ds_name=DEC_2000_SF3_U&-format=ST-7
- 41 Jennifer Broadwater, "From farmland to front of the pack in 50 years: How Howard County Public Schools earned an international reputation as an education powerhouse," *Howard County Magazine*, 2010, available at http://www.hcpss.org/news/howardmag_082010.pdf.
- 42 Eric Hanushek and Alfred Lindseth, *Schoolhouses, Courthouses, and Statehouses: Solving the Funding-Achievement Puzzle in America's Public Schools* (Princeton: Princeton University Press, 2009).
- 43 The per-pupil expenditure data cited here come from 2008, the most recent available. In 2009, TUDA was administered only in grades 4th and 8th in reading and math.
- 44 Council of Great City Schools, "Managing for Results in America's Great City School," PowerPoint presentation presented at the "A Penny Saved: How Schools and Districts Can Tighten Their Belts While Serving Students Better" conference hosted by the American Enterprise Institute and Thomas B. Fordham Institute, January 11, 2010, available at <http://www.aei.org/docLib/Cassery%20Panel%20I.pdf>.
- 45 We surveyed the districts during the summer and fall of 2010. We reached out to them via phone and email and provided them with a list of 11 questions and an online form with which to provide their answers. We heard back from 44 districts out of a sample of 249, for a response rate of 18 percent.

About the author

Ulrich Boser is a Senior Fellow at American Progress, where he analyzes education, criminal justice, and other social policy issues. He also serves as the research director of Leaders and Laggards, a joint project of the Center, the U.S. Chamber of Commerce, and Rick Hess of the American Enterprise Institute that evaluates state systems of education.

Prior to joining the Center, Boser was a contributing editor for *U.S. News & World Report*, special projects director for the *Washington Post's Express*, and research director for *Education Week*. Boser graduated with honors from Dartmouth College and lives in Washington, D.C.

Acknowledgements

The author wishes to acknowledge the invaluable research assistance of Erin Pollard. She did much of the data analysis for this report, often working late into the evening on short deadlines. Other staff at the Center also offered a great deal of generous feedback and support, including Cynthia Brown, Raegen Miller, Gadi Dechter, Donna Cooper, and Reece Rushing. The author also received deeply helpful advice from Jack Buckley, Bruce Baker, and other members of the advisory board. Jennifer Cohen, Eamonn Collins, Jason Delisle, Zach Dilonno, Austin Frerick, James Hairston, Adrienne Hosek, Frank Johnson, Lauren Smith, and Taylor Stanek also all provided gracious assistance.

Our Mission

The Center for American Progress is an independent, nonpartisan policy institute that is dedicated to improving the lives of all Americans, through bold, progressive ideas, as well as strong leadership and concerted action. Our aim is not just to change the conversation, but to change the country.

Our Values

As progressives, we believe America should be a land of boundless opportunity, where people can climb the ladder of economic mobility. We believe we owe it to future generations to protect the planet and promote peace and shared global prosperity.

And we believe an effective government can earn the trust of the American people, champion the common good over narrow self-interest, and harness the strength of our diversity.

Our Approach

We develop new policy ideas, challenge the media to cover the issues that truly matter, and shape the national debate. With policy teams in major issue areas, American Progress can think creatively at the cross-section of traditional boundaries to develop ideas for policymakers that lead to real change. By employing an extensive communications and outreach effort that we adapt to a rapidly changing media landscape, we move our ideas aggressively in the national policy debate.

Center for American Progress

