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Toward Equitable and Adequate Financing of U.S. Public Schools[1]

Bruce Baker

University of Miami, Coral Gables, Miami – United States

Abstract

This paper provides an overview of concepts and methods used in analysis of public school financing in U.S. States. I begin by providing an overview of trends in public school financing in the U.S. and addressing what the research tells us regarding how and why money matters for providing high quality public schooling. Next, I address core concepts for framing the goals of education finance systems in U.S. States – specifically, that the primary goal is to provide all children, regardless of where they reside or attend school – with equal opportunity to achieve a common set of measurable outcomes. Next, I address methods and models for estimating the costs to meet these goals and provide descriptive evidence on where U.S. States fall short of these goals, and models explaining how and why U.S. States fail to achieve these goals. I conclude by addressing how the highly decentralized U.S. system of financing schools would benefit from more national involvement.

Keywords: **Public Schools. Adequate Financing. USA.**

Rumo a um Equitativo e Adequado Financiamento das Escolas Públicas dos EUA

Resumo

Este artigo fornece uma visão geral dos conceitos e métodos usados na análise do financiamento de escolas públicas nos Estados Unidos. Começo fornecendo uma visão geral das tendências no financiamento de escolas públicas nos EUA e abordando o que a pesquisa nos diz sobre como e por que o dinheiro é importante para fornecer ensino público de alta qualidade. Em seguida, abordo conceitos centrais para estruturar os objetivos dos sistemas de financiamento da educação nos estados dos EUA – especificamente que o objetivo principal é fornecer a todas as crianças, independentemente de onde residam ou frequentem a escola, oportunidades iguais para alcançar um conjunto comum de resultados mensuráveis. Em seguida, abordo métodos e modelos para estimar os custos para atingir essas metas e fornecer evidências descritivas sobre onde os estados dos EUA estão aquém dessas metas e modelos, explicando como e por que os estados dos EUA não conseguem atingi-las. Concluo abordando como o sistema altamente descentralizado de financiamento de escolas dos EUA se beneficiaria de um maior envolvimento nacional.

Palavras-chave: **Escolas públicas. Financiamento Adequado. EUA.**

Hacia una financiación equitativa y adecuada de las escuelas públicas de EE. UU.

Resumen

Este artículo proporciona una descripción general de los conceptos y métodos utilizados en el análisis de la financiación de las escuelas públicas en los Estados Unidos. Comenzamos

[1] This paper was presented in the National Education Finance Research Association 9th annual conference.

proporcionando una descripción general de las tendencias en el financiamiento de las escuelas públicas de EE. UU y abordando lo que la investigación nos dice sobre cómo y por qué el dinero es importante para brindar una educación pública de alta calidad. Luego, se abordan conceptos centrales para estructurar las metas de los sistemas de financiación de la educación en los estados de EE. UU., específicamente,la meta principal, que es brindar a todos los niños, independientemente de dónde residan o asistan a la escuela, igualdad de oportunidades para lograr un conjunto común de metas. Posteriormente, se discuten métodos y modelos para estimar los costos de lograr estos objetivos y proporcionamos evidencia descriptiva sobre dónde los estados de EE. UU no están alcanzando estos objetivos y modelos, explicando cómo y por qué los estados de EE. UU. no logran alcanzarlos. Concluimos abordando cómo el sistema altamente descentralizado de financiamiento escolar de los EE. UU. se beneficiaría de una mayor participación nacional.

Palabras-clave: **Escuelas públicas. Financiamiento adecuado. EE.UU.**

Introduction

I would have loved to have been there in person today, but I'm happy to participate remotely in this conversation around how we think about, at least in the United States context, equitable and adequate financing for US public schools, and how we go about achieving those goals in the design of policy. Notably, we rarely actually get there. We rarely achieve equity and adequacy in the financing of our schools, but we have significantly advanced the conceptual frameworks and the empirical models that can be used to better understand what it would take.

So with that, the topics that I'm going to address today in this relatively short period of time are first the conceptual framing, because anything that follows from that the use of empirical methods to estimate and understand costs or the design of policy towards specific goals requires that we start with, what do we mean by equity and adequacy? What's the conceptual framing that then leads to the empirical analysis and then policy design?

I'm going to talk about some of the empirical methods and models and findings from a national education cost model, which we've been able to estimate across our 50 very different state systems, with harmonized data on school spending and outcomes.

Those data have only recently become available, and I also want to at least mention briefly most of what we are looking at in this kind of public education finance picture within the United States is the funding of early childhood education through what we call the 12th grade, 17 or 18 year old students before they go on to postsecondary education. We are starting to apply the same concepts, methods, models, and policy recommendations to our public higher education systems, and a couple of studies in large States in the United States, in Texas and California in particular.

How and why money matters

First, how and why money matters, and this is information that's in the beginning chapters of my 2018 book. It is taken a long time to develop consensus around this point that how much money you have does affect the quality of schooling you're going to be able to provide and the outcomes that students achieve. It's interesting, even though it's taken a while to create this better public consensus around that point, the evidence has always been there.

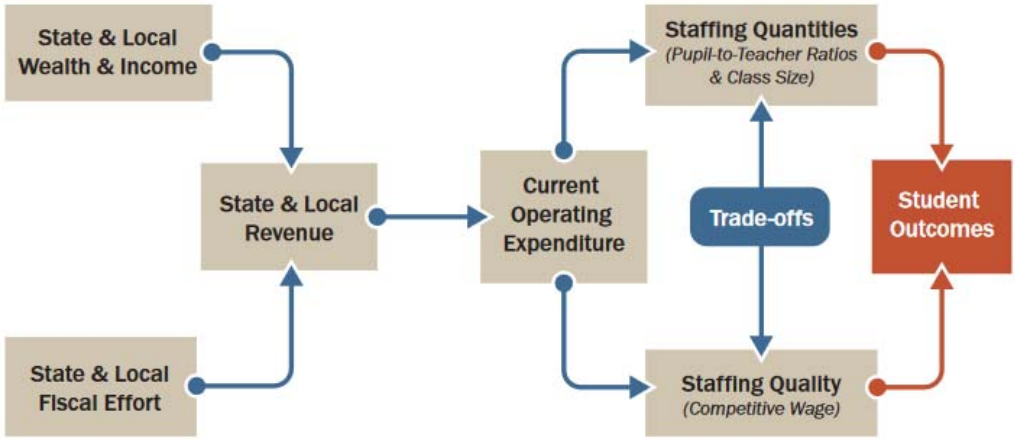
There has never been compelling evidence that money doesn't matter, but there have been a lot of strategies used to emphasize the importance of money in the provision of quality schooling. Money matters. It's a core underlying premise here. And the reason money matters is it translates into the basic things that it takes to run a good school, and that really comes down to people having enough people and having them paid well enough to be able to provide quality schooling.

There are no magical technological substitutes for good people – teachers, administrators, other staff, in U.S. schools. We have a variety of types of schools provided under different organizational structures, but one common thread across our public and private systems is that having sufficient resources matters, and it matters because it takes good people and enough of them to get the job done. In the U.S., there exist several myths about what's going on with school spending. The biggest is that our school spending has grown out of control over time, but our students outcomes really have gone nowhere. School spending hasn't grown out of control when we account for the different costs in hiring and finding and keeping good people over time.

One of the realities in the United States, because we rely mostly on States to govern their education systems, is that we have more than 50 systems that vary incredibly in the effort they put into funding schools and in the outcomes they get from that, we have some States that provide substantial investment in schooling and achieve quite highly, even in international comparisons. Massachusetts and New Jersey and a number of other States that have spent very little on education systems over time and have in fact decreased their investment in education over the years.

This is a figure from one of my reports where I just try to explain that the basics of how school funding translates to student outcomes are exerted through the fact that we collect these different pots of revenue that then are spent primarily on people.

Figure 1 – Conceptual Map of the Relationship of Schooling Resources to Children's Measurable School Achievement Outcomes



Source: The autor.

Schooling is a human resource intensive endeavor, and the main trade offs on the spending side are between how many people we hire versus what wage are we able to provide them to be able to recruit and retain quality people. That's the main trade-off, and it's in making those trade-offs that we leverage resources to achieve student outcomes.

Quality and quantity matter. Smaller class sizes matter for higher student performance, as do competitive wages for teachers to bring good people into classrooms. And the trick is to figure out the right balance. Regardless, it takes money to recruit those people and to pay them enough to get the job done. So proper funding is necessary conditions for educational success.

The other thing that we know is that the cost of providing a given level of educational quality varies by context. We have vastly different contexts across the United States, across and within States, as you do and in remote rural areas and small schools that lack economies of scale, the cost may be higher. It may also be a higher cost to recruit teachers of comparable qualifications into certain types of school settings.

So, it's important that we consider all of these factors when we look at how much is it going to take to provide equal educational opportunity, which is a concept I'm going to hit a little later.

The adequacy and fairness of education funding in the United States are largely decided at the state level, with about a 10% to 12% share coming from our federal government.

There are a whole bunch of bodies of weak evidence that have been provided by outspoken experts and economists to try to argue that money doesn't matter. One of the most common is to toss out scatter plots, just looking at only two dimensions of spending per pupil and test scores and to show there's not much relationship here.

Of course, that doesn't really constitute a particularly rigorous analysis of whether or not the infusion of additional dollars into certain types of schools serving certain types of kids over time does in fact improve their outcomes.

Then there's also this long-term trend argument. Our spending has gone up and up, but the test scores have stayed flat, even those two trends over time on closer inspection would actually show the opposite. And I'll show you a little graph of that in a few minutes. But even that's not a particularly rigorous analysis to say that. When spending was going up, test scores went up when spending flattened and dipped. So too did test scores.

That's what we saw in the lead-up to our Great Recession from 2009 to 2011. And in the aftermath of that when we saw dramatic cuts to education spending.

International comparisons, also at a cursory level, would tend to make the United States look like it spends more but gets less than other countries. But when we look at the international comparisons of educational expenditure, we've got to do a much better job at parsing the scope of services included in those expenditures. And I was working on a project for Organization for Economic Cooperation and Development a number of years ago, trying to achieve more comparable spending metrics across countries, but that eventually stalled out and didn't ever achieve completion.

A lot of people will also make the argument that how money is spent matters more than how much. But the bottom line is if you don't have it, you can't spend it. And it's inherently unfair to tell certain local public schools and districts that may have higher costs and be serving needy or student populations that they just need to be cleverer with the fewer resources they have available. It should be a prerequisite condition that equitable and adequate resources are available. And then from there, we can talk about the most effective and efficient ways to leverage those resources.

We have a large body of research, including recent studies Kirabo Jackson and Rucker Johnson and Claudia Persico, as well as Jesse Rothstein and Candelaria and Shores. We've had increasing quality of longitudinal data on local public school district expenditures in the United States that have allowed us to better study the effects of school finance reforms over time, and study after study over the last five to seven years has shown positive effects of the infusion of resources on short term test scores, graduation rates, and long-term student outcomes, College Matriculation, persistence and completion, and later in life income. But we actually already had a number of studies at the state level that showed that school finance reforms, when studied longitudinally, had positive effects on student outcomes.

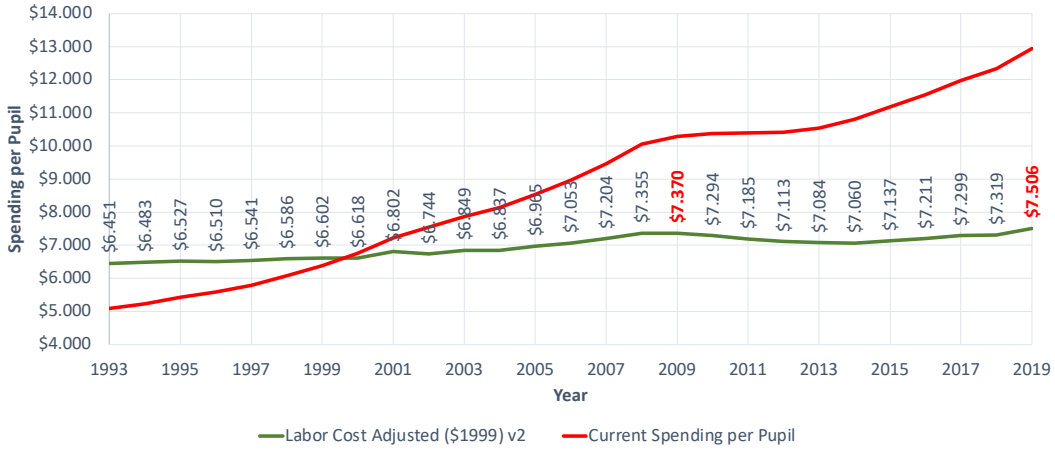
All of these are summarized in my book and in a policy brief that's been available for a number of years[2]. And it does boil down to these simple issues. Even in Kirabo Jackson and Rucker Johnson's study, where they showed the effects of school finance reforms on student outcomes, they then backtracked, to study what the additional money was spent on. It tended to be spent on smaller class sizes, more competitive wages, and other types of programs and services that tend to lead to better student outcomes and at the same time cost more money. We also have some good reporters in education media in the United States who've really done a nice job at summarizing the state of this literature over time, including this link to a Chalkbeat site[3].

Some school finance facts

First, a couple of school finance facts in the United States, and I'm going to go through these very quickly so I can get to the more important content of the day here. First, when we adjust our current spending per pupil for the changes in the labor cost it takes to run schools in the United States, they've been relatively flat over time. They have not climbed out of control, and we only barely reached breakeven from where we were at prior to our Great Recession ten years later.

Figure 2 – Current spending per Pupil over Time

(nominal and adjusted for cost of maintaining competitive wages)



Data source: http://schoolfinancedata.org/download-data/. District Level Panel.

2 Available at: https://learningpolicyinstitute.org/product/how-money-matters-report

3 Available at: https://www.chalkbeat.org/2018/12/17/21107775/does-money-matter-for-schools-why-one-researcher-says-the-question-is-essentially-settled.

It took us ten years to get back to where we were in 2009 on labor cost adjusted per people spending. One of the things that we also have seen is that the proportion of our economic capacity, in this case measured as the aggregate personal income in the United States, the proportion of our economic capacity we are spending on schools is at a new low equilibrium. The “spike” in 2009 occurs because the denominator – income – suddenly and significantly contracted.

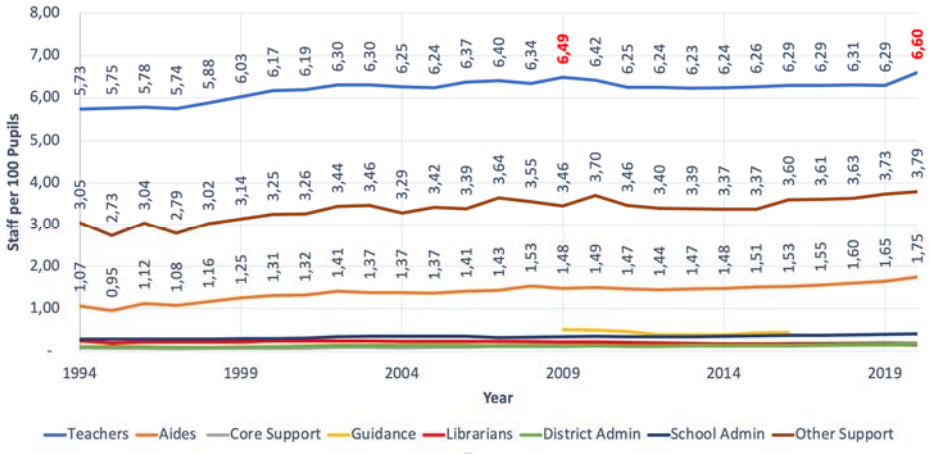
Figure 3 – Education Spending Effort over Time (E027) Elem Educ-Direct Exp

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

But prior to that, we had reached about a four and a half percent share of personal income being spent on Elementary and secondary education, and we're back down below 4%, which is below where we were at 30 years ago. So we have really decreased the share of our economic capacity that we're spending on schools.

But the bigger issue is that has been widely varied across US States. Staffing a lot of people have made the claim, and there's been a little bit of this trade off that we've oftenjust added more and more staff to our schools, but we've not considered how well we pay them. Staffing has remained relatively flat over time, especially for teachers. It has climbed a little bit for other support staff in schools.

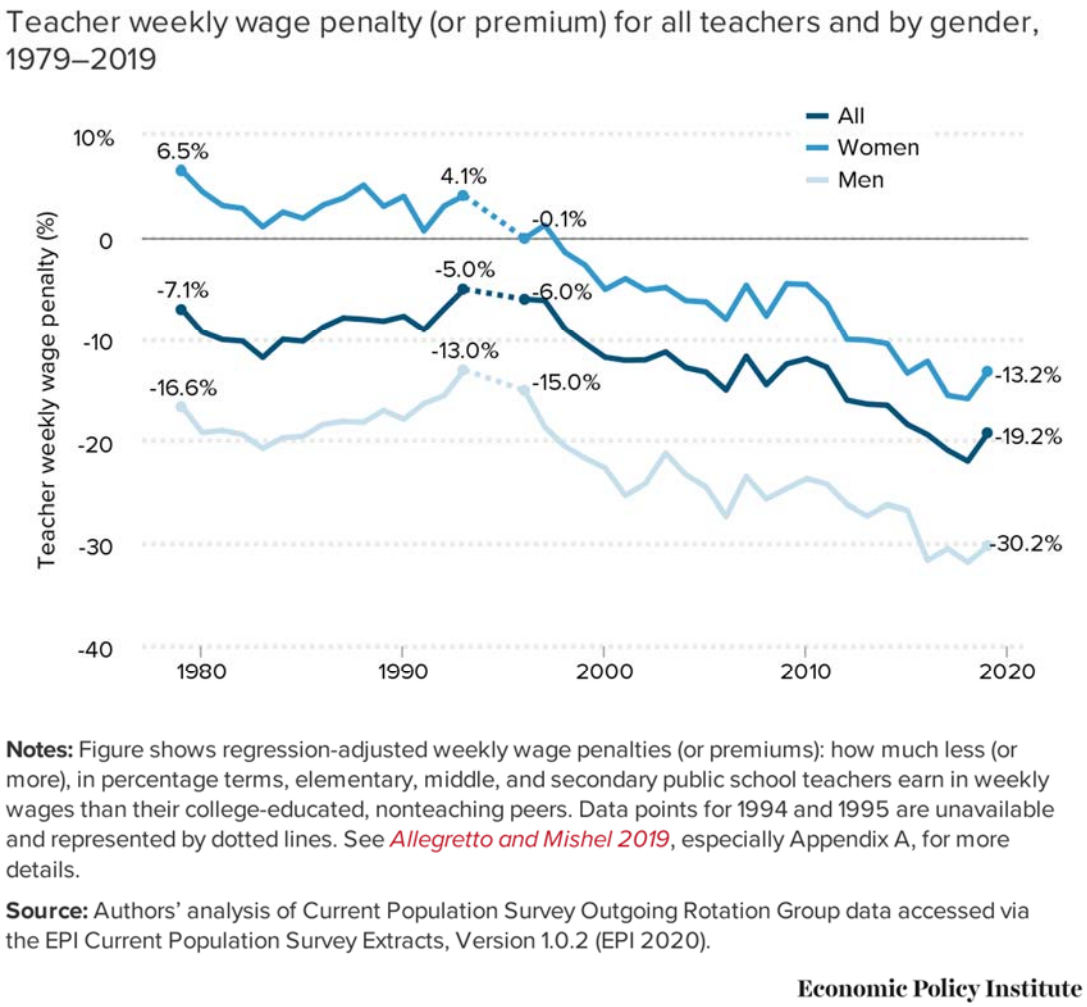
Figure 4 – Staffing per 100 Pupils



Data source: http://schoolfinancedata.org/download-data/. District Level Panel.

The administrative staffing in schools has been relatively flat and at a fairly low share. The number of teachers per 100 pupils in the United States has rebounded to back where it was ten years ago in our most recent kind of nationally available data. But yes, we have had teacher wages declining relative to on a weekly basis relative to similarly educated private sector workers, which makes it harder and harder to retain the same quality of people into the teaching profession. In our schools, teacher wages rebounded a bit when private sector wages dipped at the beginning of Covid.

Figure 5 – Teachers earn 19.2% less than comparable college graduates



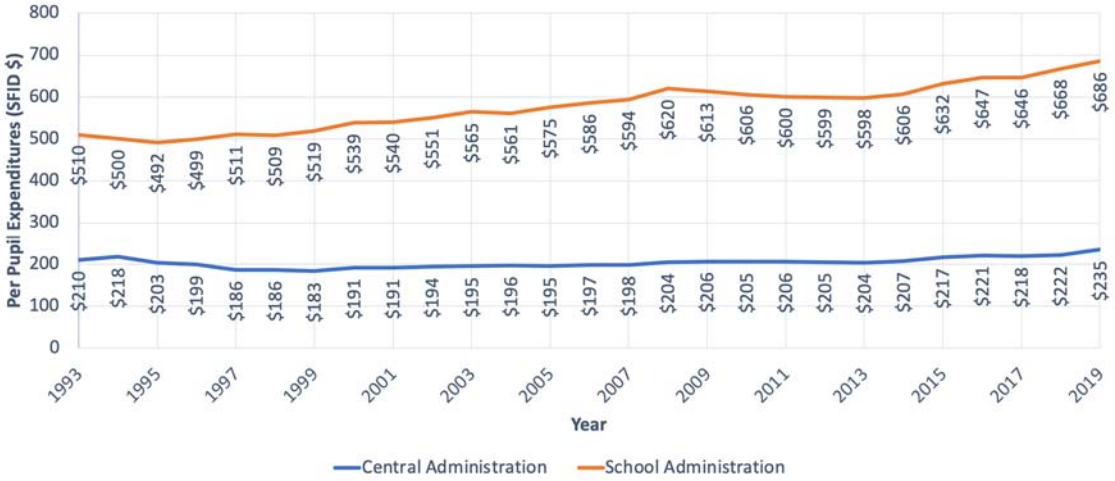
Notes: Figure shows regression-adjusted weekly wage penalties (or premiums): how much less (or more), in percentage terms, elementary, middle, and secondary public school teachers earn in weekly wages than their college-educated, nonteaching peers. Data points for 1994 and 1995 are unavailable and represented by dotted lines. See *Allegretto and Mishel 2019*, especially Appendix A, for more details.

Source: Authors' analysis of Current Population Survey Outgoing Rotation Group data accessed via the EPI Current Population Survey Extracts, Version 1.0.2 (EPI 2020).

Economic Policy Institute

But in the long term, teacher wages as a percent of non teacher wages have been on a continuous slide to where they're about 20% below. Teacher salaries are about 20% below what a non teacher, a private sector worker with at least with a bachelor's or master's degree, earns on a weekly basis.

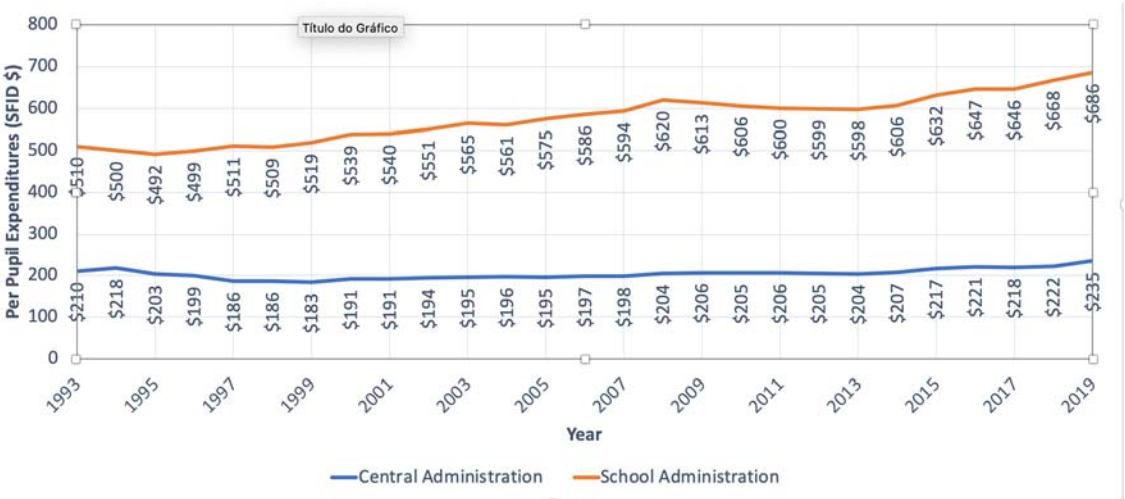
Figure 6 – District & School Administrative Expenditures. Adjusted for Competitive Wages over Time, Expressed in 2016$. National Average of All Districts, Weighted for Enrollment



Data Source: http://schoolfinancedata.org/wp-content/uploads/2019/03/DistrictIndicatorsDatabase_Stata_2019.zip.

Our administrative expense at our school building level has climbed somewhat, but we have a layered system of schools within local public school districts, which are kind of city, town or county school districts, then governed by States. Most of the human resources are at that district and school level. Our state departments of education in the 50 States are not that heavily staffed, nor is our US Department of Education relative to the system as a whole.

Figure 7 – District & School Administrative Expenditures. Adjusted for Competitive Wages over Time, Expressed in 2016$. National Average of All Districts, Weighted for Enrollment



Data Source: http://schoolfinancedata.org/wp-content/uploads/2019/03/DistrictIndicatorsDatabase_Stata_2019.zip.

Benefits, costs for health insurance, pensions, and things like that have gone up over time while wages have stayed flat.

Figure 8 – Cumulative per-pupil spending

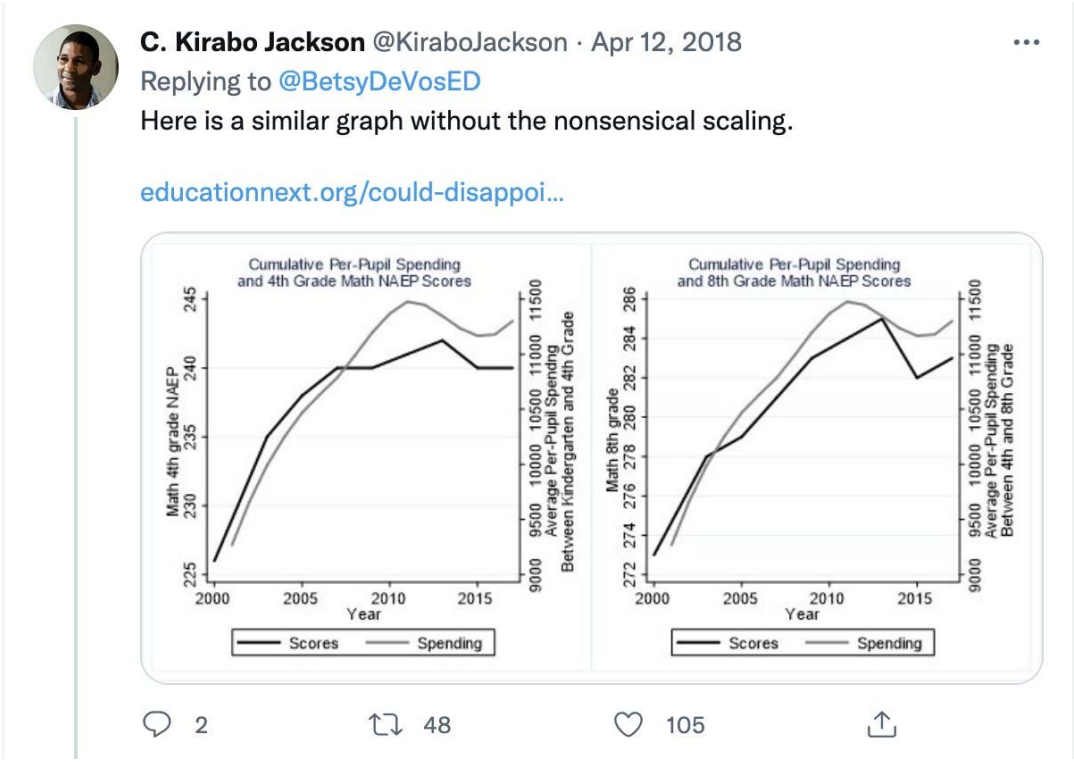


Figure 9 – Cumulative per-pupil spending.

This is that graph I was talking about before, where many will try to make the argument that our spending has gone up, but our test scores have stayed relatively flat. This was put out on Twitter by our previous Secretary of Education. But Kirabo Jackson points out that even if we just rescale and zoom in on those axes, we actually saw growth in outcomes while spending was growing and dip in outcomes when spending flattened out and dipped. Not that that's the compelling empirical analysis or the causal modeling. But Jackson goes on to do extensive causal modeling in a number of studies, both looking at the infusion of additional resources that led to better outcomes and the spending cuts that followed the Great Recession in the United States.

Evaluating State School Finance Systems

So now we move to this conceptual framing, and this is really where we need to go on the financing of schools. We need to shift the focus away from the equity of the financial inputs and toward providing equal educational opportunity to achieve common outcome goals.

Traditionally, in US school finance, we talked about things like horizontal equity, which was usually reduced to meaning the equal allocation of dollars or resources to students considered equal and vertical equity was our basis for saying some kids need more and should receive more. But really, the cleaner framing of all of that is to say, why do some need more than others? Why do some settings require more resources than others?

They require those additional resources so that the kids in those settings can have equal opportunity to achieve a common set of outcome goals. Providing equal opportunity to achieve common outcome goals requires different amounts of resources based on the children being served and the context in which they're served.

It provides a unifying framework for dealing with all these cost differences and building them into policy and even doing empirical analysis that speak directly to the point of, what would it cost to achieve common outcome goals in this setting in that setting, with these children, with those children? So this is the unifying framework that can guide policy. And then we can also talk about, well, how much does it cost to achieve a common set of outcome goals here there with this child or that child. But we can also go to the next question of and if we set those goals at this level, how much will it cost to get there if we set the goals at a higher level, how much will it cost? One of the basic understandings that comes from this approach is that it costs more to achieve higher outcomes, in addition to the fact that it costs more in some places with some children to achieve the same outcomes as with others.

In a series of national reports, we consider three measures that characterize state school finance systmes: 1) effort, 2) progressiveness and 3) adequacy. I've already talked a bit about effort and will jump over the second measure – progressiveness of spending – because it is generally less informative than our adequacy measure.

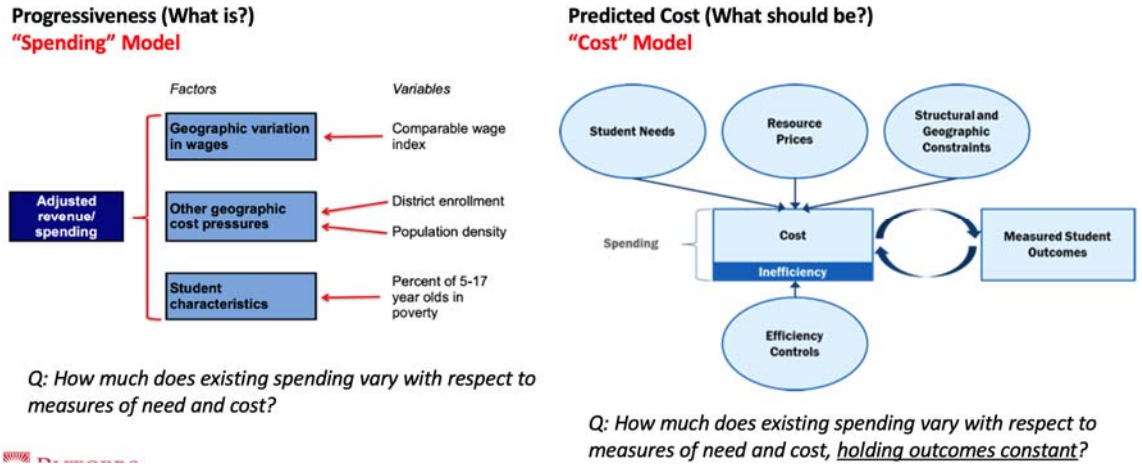
The third measure down here, relative Adequacy and equal opportunity is a model based estimate that is built on the assumptions from the previous slide. We now have methods and data that permit us to estimate a model nationally across our 13,000 or so local public-school districts that are embedded in our 50 state systems, plus Washington, DC. We can fit a model with expenditure data and outcome data and a number of different district and student characteristics to estimate the expenditure needed to achieve a specific set of outcomes for every one of those local school districts in our country. And we can compare what they

currently spend to what they would need to spend to achieve those targets. And that allows us to evaluate the relative adequacy of the funding and equal educational opportunity.

One of the other things that we evaluate is that measure of educational effort. How hard is a state trying to raise adequate funding? What proportion of their economic capacity are they allocating to K twelve schooling? So we're going to take a look at a number of these slides at the different effort put up by US States and the different degrees of adequacy and equal opportunity provided through their funding systems.

Where, again, the idea here with equal educational opportunity is it's about having sufficient resources given the setting and the children served to achieve a common set of outcome goals, and then we can raise and lower those outcome goals to see who and how many children fall further below what's needed to get them there.

Figure 10 – Modeling Differences in Spending & Cost

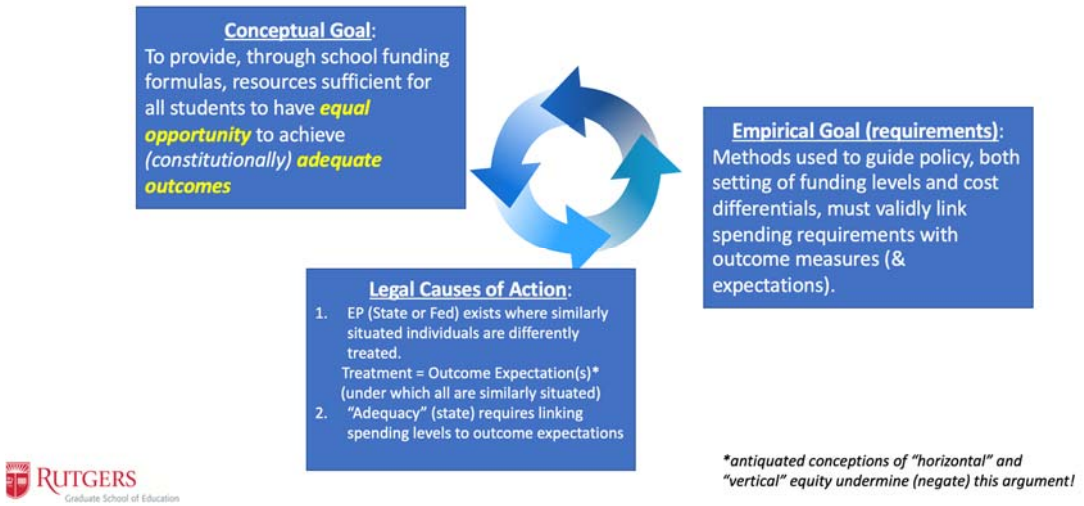


Source: The autor.

So we've moved toward this thing called an education cost model. It's been in literature in public sector analysis for decades. It was popularized in econometric literature in the United States by William Duncombe and John Yinger at Syracuse University at the Maxwell School, as well as concurrently by Lori Taylor, Dennis Jansen and Tim Gronberg at Texas A& M. And for a while in the it was also being used fairly extensively by Andrew Reschovsky and Jennifer Imazeki at the University of Wisconsin.

So this cost modeling approach allows us to integrate outcome measures and control for inefficiency in spending based on factors that predict the likelihood that some local districts spend more than others to achieve a given set of outcomes and come up with these cost predictions. How much does each district need to spend to achieve a given outcome goal and then run sensitivity analysis on different outcome goals and look at different districts and States across the US to evaluate how they're doing. And this all really wraps together the framework of our conceptual goal and our empirical goal. And it turns out, in the United States, there are rights to education that are embedded in each state's Constitution.

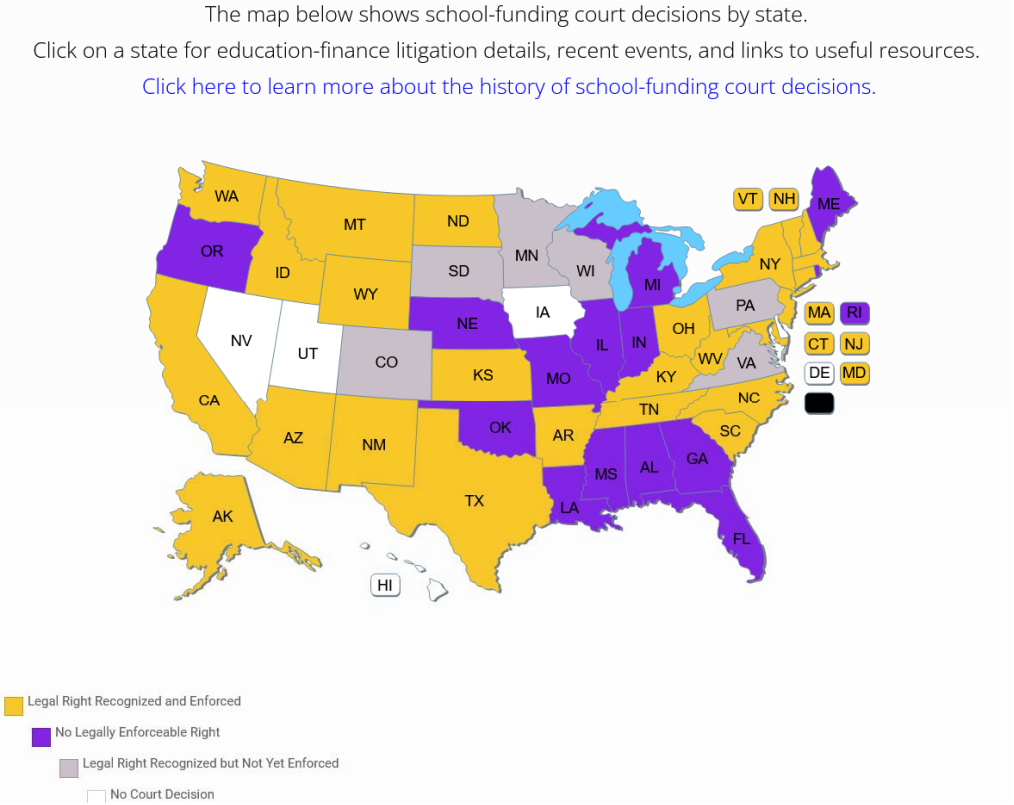
Figure 11 – Unifying concepts & methods



Source: The autor.

Actually framing our arguments in these terms that children should have equal opportunity to achieve common outcome goals has been particularly effective in making arguments about what the students rights are in certain States. The state of Kansas, which is a fairly conservative US state, has been one of the States where this approach has been most consistently applied, and I actually have a new book out on Kansas in which I explain how cost modeling of the type I'm talking about here has been used to inform the Kansas State Supreme Court and Kansas legislators at two points in time in 2006 and again in 2018.

Figure 12 – School-funding court decisions by state



Source: https://www.schoolfunding.info/

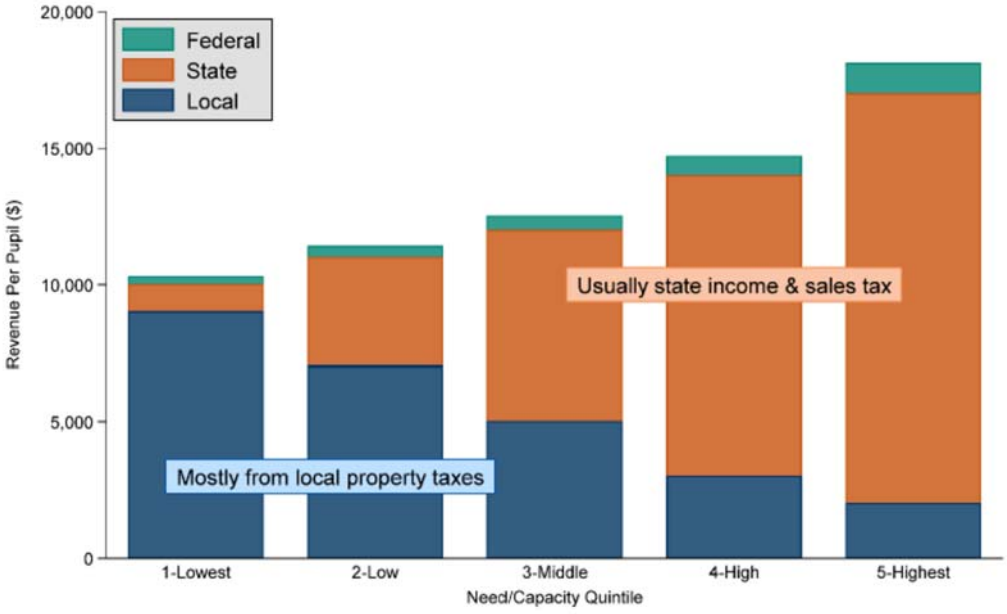
We do have a number of States in the United States where their courts have not declared that any legal right, even though their state constitutions include language regarding education rights. There are still many state courts that have not chimed in to say that there is a right that can be enforced in those States. But the States in yellow here are States where the right has been recognized and enforced, but clearly to varying degrees is what you'll see down the line.

State systems in the US

Allow me to provide a quick summary on how the layered revenues come together for a state education system in the United States because we have local funding, state funding, and then a smaller slice of federal funding going to our schools.

The real trick is to figure out how to put together the state and local funding to achieve those equal opportunity goals. And that means having state grants to local districts that, at the same time deal with the fact that local districts have very different ability to raise their own money and also deal with the fact that local districts have very different costs that they need to meet to provide equal opportunity.

Figure 13 – Hypothetical Progressive Foundation Aid Formula



Notes: The share of revenue contributed by the state increases as local revenue capacity decreases. The target state and local spending level is based on student need and geographic cost adjustments.

So a hypothetical picture of a system that would be providing equal opportunity in the United States would be a system where typically the very highest need, highest poverty, low income settings in the United States probably have less capacity to raise local sources of their own, and at the same time have much higher costs to achieve common outcome goals as local public school districts at the other end of the spectrum.

So the layered patterns of aid might look something like this figure, too, from a related report that I produced. The goal, though, is to really just figure out how to blend the state and local revenues and then layer on the federal revenues so that the endpoint the sum of those is sufficient to provide equal educational opportunity.

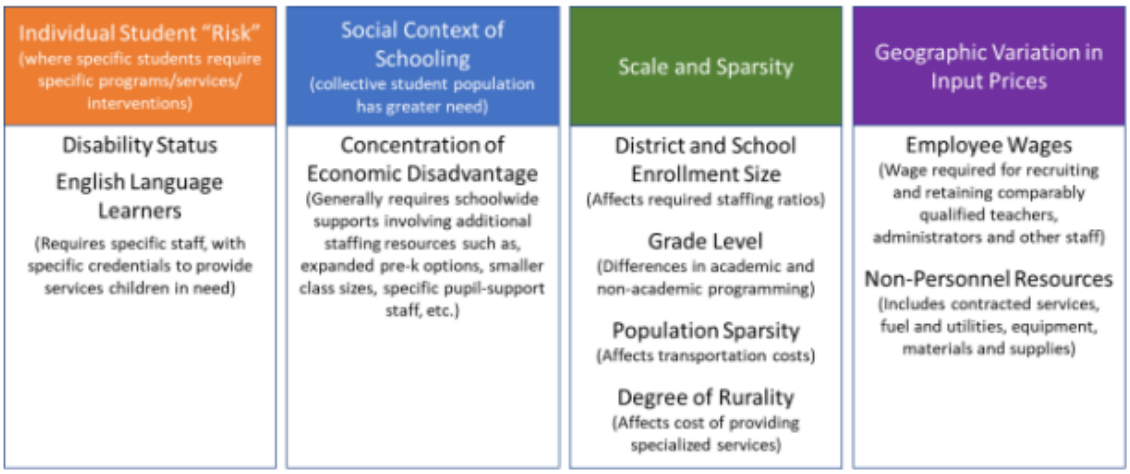
Figure 14 – Components of foundation aid formulas and equity objectives

Foundation formula element	Purpose	Notes
Foundation level	Intended to represent cost of "adequate educational services" and/or cost of achieving "adequate educational outcomes" in either "average" or "lowest cost" district.	Without other considerations, guarantees only equity of nominal financial inputs (equal dollars).
Input price (teacher wage) adjustment	Intended to provide local public school districts sufficient funding to purchase comparable "real resources."	May attempt to account for differences in competitive wages and other input prices across regions, or may also attempt to account for influence of local working conditions on wages required to hire high-quality teachers.
Student need adjustments	Intended to provide for "equal educational opportunity" by providing financial resources to achieve appropriately differentiated programs (program intensity).	Based on the premise that students with particular needs require additional school funding to achieve equal educational opportunity.

Source: The author.

This is typically what that might look like. And the way that pieces together in a state school funding formula in the United States is that those funding formulas will start with some foundation level of spending. What's a basic level of cost in the district with the least needs to achieve common outcomes? And then what are the additional costs that need to be layered into the formula with multipliers or additional grants? To address the fact that teacher wages may need to be different in some places than others, to recruit and retain similar quality teachers, and to address the fact that student needs vary for children with disabilities, for children who don't speak the common language of schooling, for dealing with the other content of schooling, and for children with economic disadvantage coming into school.

Figure 15 – Factors Affecting the Costs of Achieving Common Outcome Goals



Note. Cost is the spending required, less inefficiency, to achieve any specific set of outcome goals

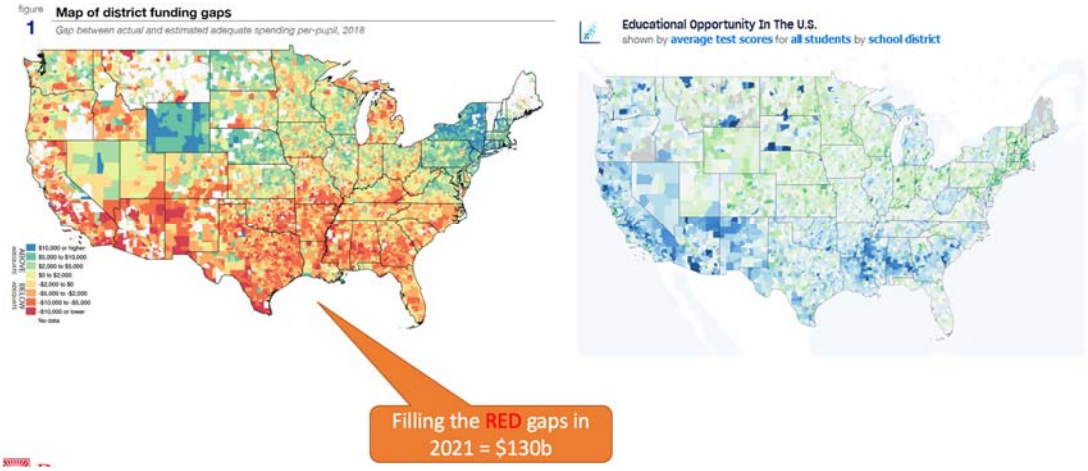
Source: The author.

So these are packages of types of adjustments that go into the different height bars above, where the goal is to get these highest need but lowest capacity districts to a higher target of funding to provide those kids with equal opportunity. These are lists of the types of things that go into the adjustments in a state school funding formula in the United States to try to advance equal opportunity, but rarely do we ever get there right.

Adequacy and outcomes

A lot of our States have pieces and multipliers and some of these things in their formulas. But the reality in the United States is that opportunity to achieve common outcomes across local public school districts varies incredibly.

Figure 16 – Funding Gaps (SFID) & Outcome Gaps (SEDA)

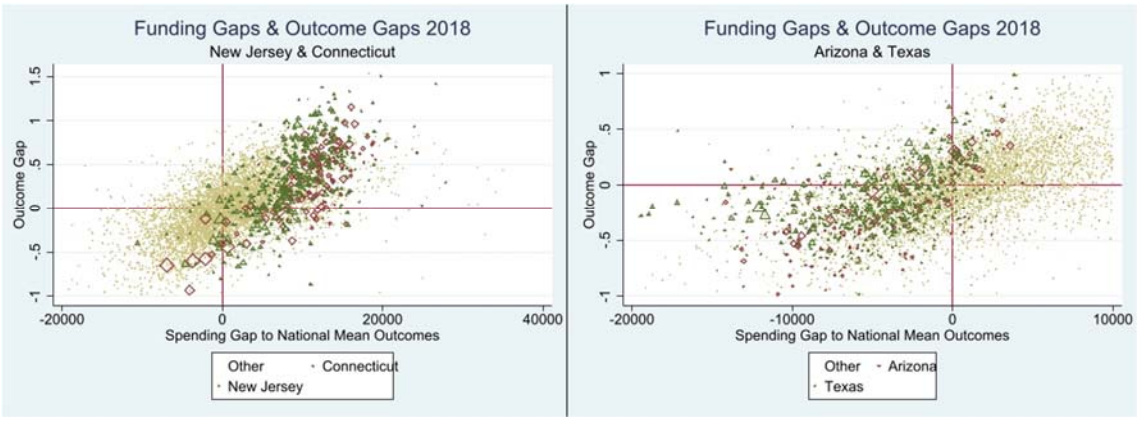


Here we set our model to predict the cost of achieving our national average outcomes for every one of these little geographic subdivisions within States, deep red areas are areas where the local public schools spend 10,000 or more US dollars less per pupil than they would need to spend to achieve our national average outcomes, which many of you may know from looking at the international assessments like Pisa, are not particularly stellar.

Our national average outcomes, I would argue, are what they are because we have so many of these States that have significantly under invested in their elementary and secondary school systems so that they're spending substantially below what they need to spend just to bring them to our own national average.

While many other States, New Jersey, Massachusetts, and Connecticut, are on average, spending well above what they would need to spend just to be average in our own national context, the spending gaps in the picture on the left align with the outcome gaps from this educational opportunity project out of Stanford University called the Stanford Education Data Archive. Our spending gaps and their outcome gaps align. Now they align, in part because we modeled our spending gaps based on the cost of equalizing their outcome and closing their outcome gaps.

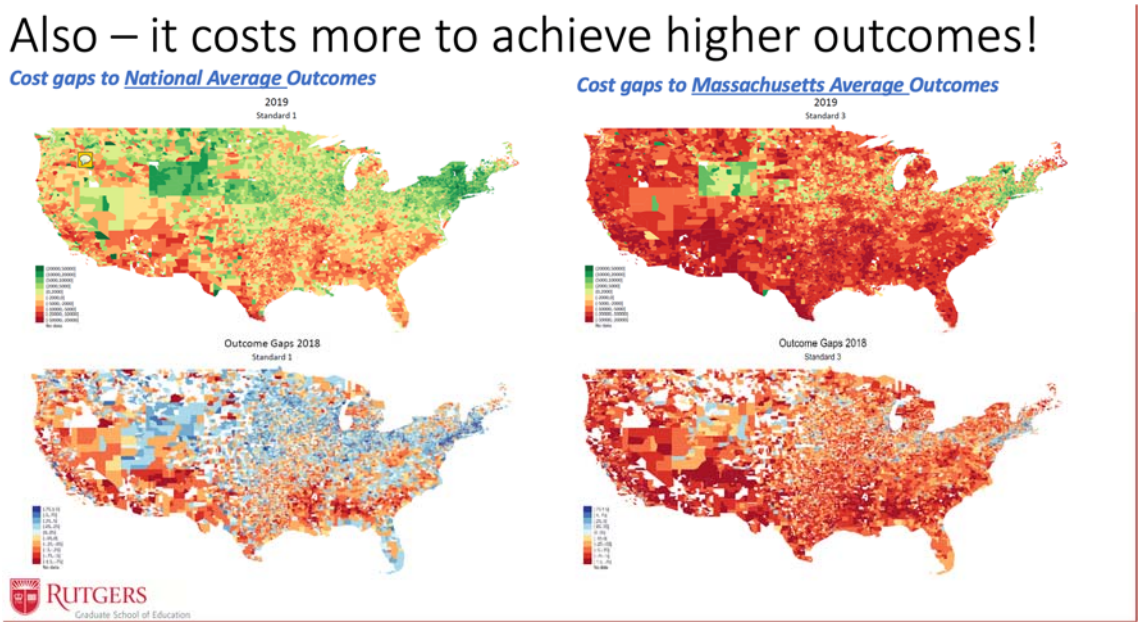
Figure 17 – Adequacy and Outcomes



So the US States vary widely if we put some of them onto these scatter plots of the spending gap to outcome gap. We see, for example, that local public school districts in New Jersey in the United States, generally spend more than they would need to achieve national average outcomes, and they generally achieve more than national average outcomes. The same is true in our nearby state of Connecticut, except that Connecticut does under invest in a number of its larger cities that then fall in the lower left hand corner. Our States of Texas and Arizona in those States that significantly under invest in public schools.

In Arizona and Texas, the vast majority of children attend school districts with far less than they would need to achieve national average outcomes. And the vast majority of school districts in those States fall below the national average bar of outcomes.

Figure 18 – Cost gaps to National Average Outcomes

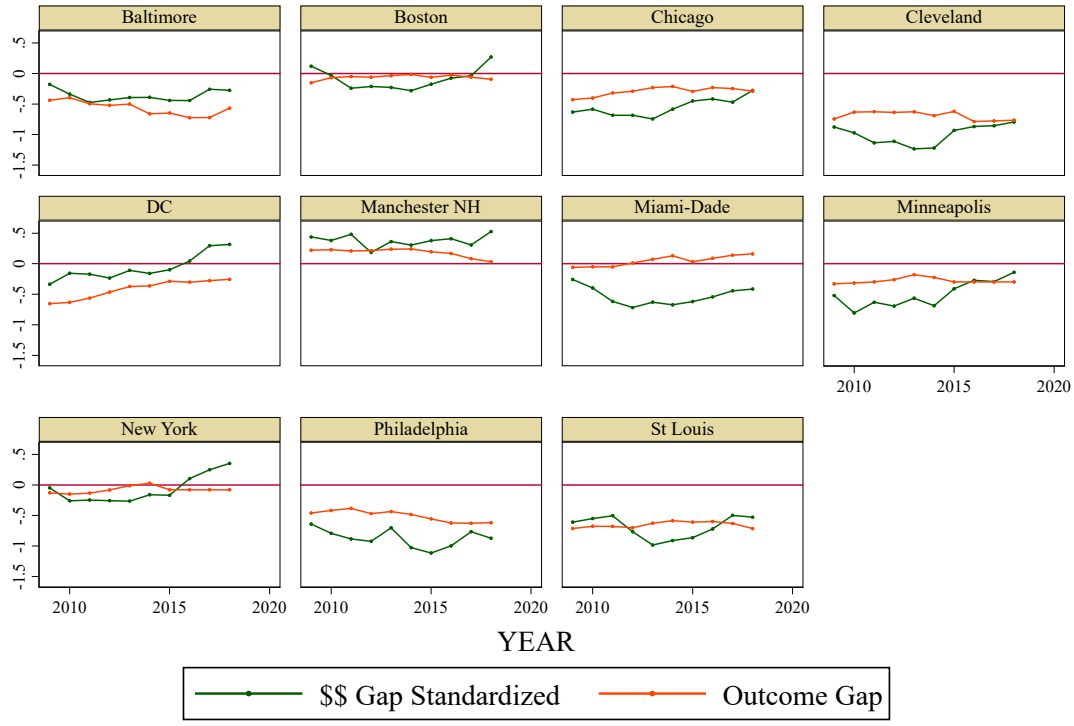


If we raise the outcome bar more fall below it, and further below it, we could set our outcome bar to a high standard of outcomes in reading and math, grades three through eight that are average in our US state of Massachusetts, which, if we extract it and compare it independently on international assessments, it would look more like Finland or Singapore.

And if we try to shoot for a high bar, more States and local public school districts are below that bar and many of them very far below that bar. This becomes a very useful tool for

discussing what do we want to achieve and how much more is it going to cost to get there? Where do we have enough money to already get there? And how far from that target are we in some places where do we really need to focus our efforts?

Figure 19 – Funding Adequacy & Outcomes in Select US Cities



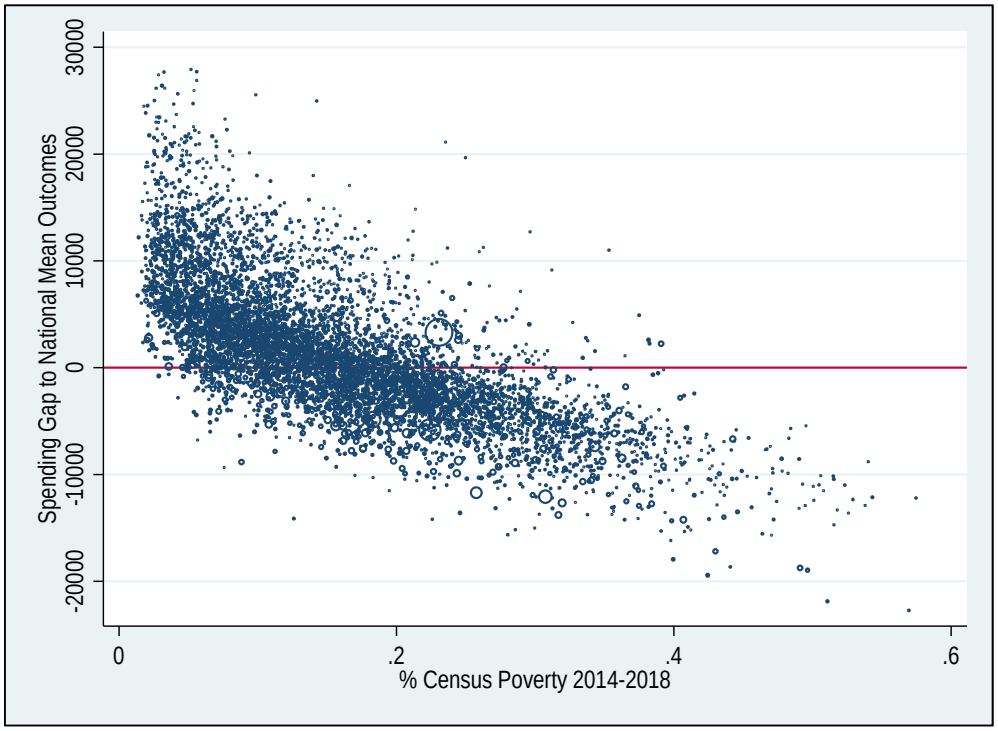
Graphs by city

We see that in major US cities where we've put more adequate funding in over time, those cities also have better outcomes over time. We do have some outliers, like Miami Dade, a very large county that hosts Miami. Florida actually has outcomes that are beyond what we would expect given their spending level.

These are the interesting things to dig into in the model to figure out if there are flaws in the data and model, or if maybe there's something special and interesting going on in that setting that permits them to produce these outcomes more efficiently.

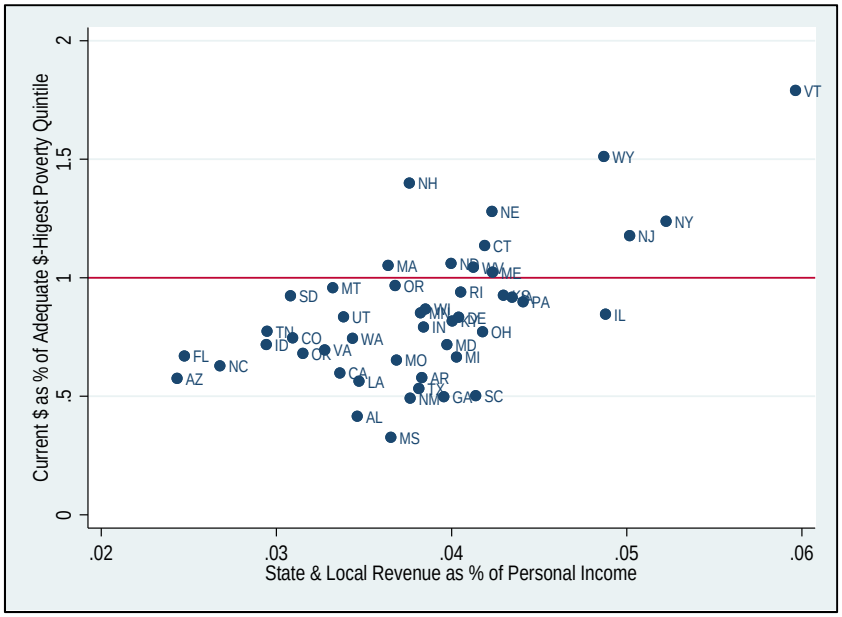
We find that poverty is a major driver of the relative adequacy of funding to achieve common outcomes in the United States. We've not mitigated this much at all. Higher poverty districts much less likely to have adequate resources within and across States. We also find, though, that the amount of a state's own economic capacity that they spend on schools really does affect how adequate their funding it is. It's not just about whether a state is richer or poorer.

Figure 20 – Spending Adequacy and Child Poverty



We have some poor States like Alabama (AL) and Mississippi(MS). These are States that can put up relatively average effort and still not raise much money for their highest property schools. But we have other States like Florida, Arizona and North Carolina that have simply chosen not to put up the effort it would take to sufficiently fund their schools. What we see over time is many of these States have just put in less and less effort.

Figure 21 – Effort and Adequacy (High Poverty Districts)



After the recession, some States did rebound in the amount of effort that they were putting into schools. We are presently conducting related analyses to figure out what are the predictors of changes in effort.

Figure 22 – The Collapse of Effort & the Great Recession

We find strong evidence of racial gaps in the effort where, as we see differences in the racial makeup of the adult and student population, the adult population disinvest in schools. In particular, as the share of students in schools who are black or Latino in the United States grows, the funding for their schools tends to decline if the adult population is predominantly white. So we have these continued racial tensions in how much States invest in schools, and that also then ties in with these relationships to funding and poverty across US States and school systems just want to close out here with an introduction to the idea that we've been looking at in the United States.

Figure 23 – What Predicts "Adequacy" for the Highest Poverty Quintile?

	Between	Within	Between	Within
VARIABLES	Current $ as % of Adequate $-Higest Poverty Quintile	Current $ as % of Adequate $-Higest Poverty Quintile	Current $ as % of Adequate $-Higest Poverty Quintile	Current $ as % of Adequate $-Highest Poverty Quintile
Ratio of Total State & Local Education Expenditure to Gross State Product	18.892*	2.967*		
% School Revenue from Federal Sources	-0.044	**0.005***	-0.036	**0.005***
% of School Revenue from State Sources	***-0.004***	***0.001***	***-0.003***	***0.002***
Effective Property Tax Rate	2.462	-0.062	5.076	-0.110
Property Taxes as % of HH Income	-0.199	-0.004	-0.214	-0.004
Household Income [ln]	0.493	**0.572***	0.071	**0.541***
Housing Value [ln]	0.087	**0.220***	0.174	**0.205***
Income Ratio Under/Over 130 Poverty Income	4.190	0.321	2.463	0.300
% 6 to 16 Enrolled in Public School	0.480	-0.171	0.429	-0.249
Income Ratio Public to Non-Public Enrolled	0.361	0.034	0.556	0.034
Statewide Share Enrolled in Charter Schools	**-2.070***	**0.514***	**-2.272***	**0.618***
Elementary & Secondary Educ Spending as % of State Revenue	-2.555	**0.659***	-2.054	**0.527***
Year		-0.021*		-0.018*
State & Local Revenue as % of Personal Income			**17.586***	**4.248***
Constant	-6.865	32.641*	-3.146	28.636*
Observations	470	470	470	470
R-squared	0.700	0.321	0.706	0.332
Number of statefip	47	47	47	47

Standard errors in parentheses
* p<0.05

Application to Possecondary education

We have public two year and four-year colleges, as well as a vast network of private colleges and universities which serve very large shares of our students. We've tended not in the United States to think of our post secondary system as part of a universal system of education. But we've started to look at the provision of the two-year public College system, a system which is provided within States at a subdivision level of counties– or community colleges. We've started to look at that as part of our universal system, and as a result, we've started to think about how we can apply similar analysis to support funding formulas to make those two year public colleges accessible to all free of charge, as we do with elementary and secondary education, and we're taking two approaches to that right now.

One is to do the same kind of cost modeling, using data on persistence and completion rates of students as our outcomes by the different types of technical and vocational and academic and other programs they might pursue. We're doing cost modeling of institutions in the state of California and in the state of Texas similar to what we've done in elementary and secondary education. But we're also doing this fun new approach, where we dive into the transcripts of courses taken by students in the more versus less successful pathways to completing certain programs, degrees and certificates, and trying to get a better understanding of the resource costs of supporting effective pathways to completing programs and certifications.

So this is a new area of work in which we're embarking. It takes having big enough sample size of institutions to be able to do the first type of analysis. But we're also building it around that same common framework that all kids deserve equal opportunity to succeed, and we're going to have to use more resources in some places than others for that to happen.

I want to just point you for anyone who is interested in studying further US education systems and data. We have this school Finance Indicators Database at schoolfinancedata.org, where we provide state level data panel data from 1993 to 2019 and also have available a local public school district that's 13,000 per year data panel that has much more fine grained data.

These data and several reports are available to anyone interested in studying learning more about the US system. This includes our national cost model. We have a policy brief that provides the technical details and statistical output for that national education cost model and downloadable data tables to look at the relative adequacy of funding for every district in the United States that's available publicly accessible at schoolfinancedata.org.

With that, I just want to wrap up with a few quick summary points. Money matters. Leaving school funding to States as we've done in the United States has led to vast disparity. So it really takes if we want to fix those gaps between States and really smooth out educational inequality in the United States, we're going to have to have an increased federal effort. But when we scale up that federal effort in the United States, we're also going to have to put pressure on States through some mechanism to make sure that they do their own part.

I often argue these days that if we talk about education and our supposedly deplorable state of educational outcomes in the United States, if we talk about that as being in the national interest, then we have to tackle it with federal policy.

Bruce Baker is a Professor and chair of the Department of Teaching and Learning at the University of Miami.
ORCID: https://orcid.org/0000-0002-0915-9072
E-mail: educpolicy@gmail.com

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