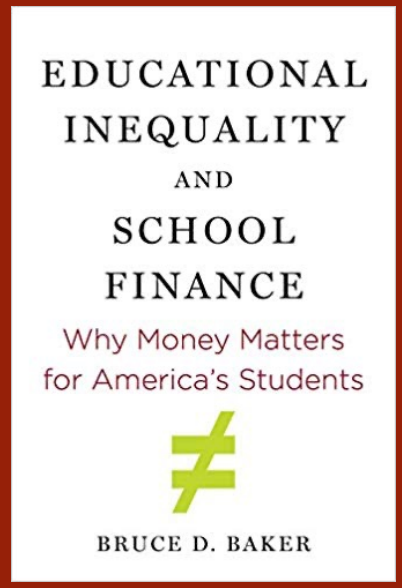
Toward Equitable and Adequate Financing of U.S. Public Schools

Bruce D. Baker
Rutgers University

National Education Finance Research Association
9th Annual Conference



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Overview

- Conceptual framing
  - Equitable and adequate funding as prerequisite condition
    - Calibrating finance systems to provide equal opportunity to achieve common outcome goals
- Methods, models and findings
  - K12 National Education Cost Model
    - Implications for a new, expanded federal role
    - Implications for state school finance systems
    - Understanding the role of race, and designing policies for reparations
- Extending the framework to higher education
  - Universal Community College Financing
  - Texas and California projects

How and Why Money Matters

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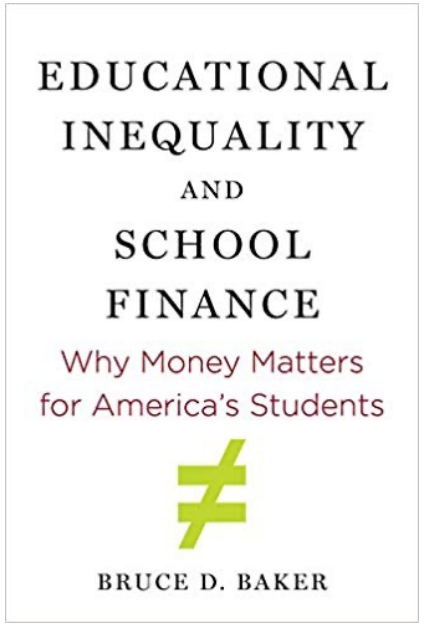
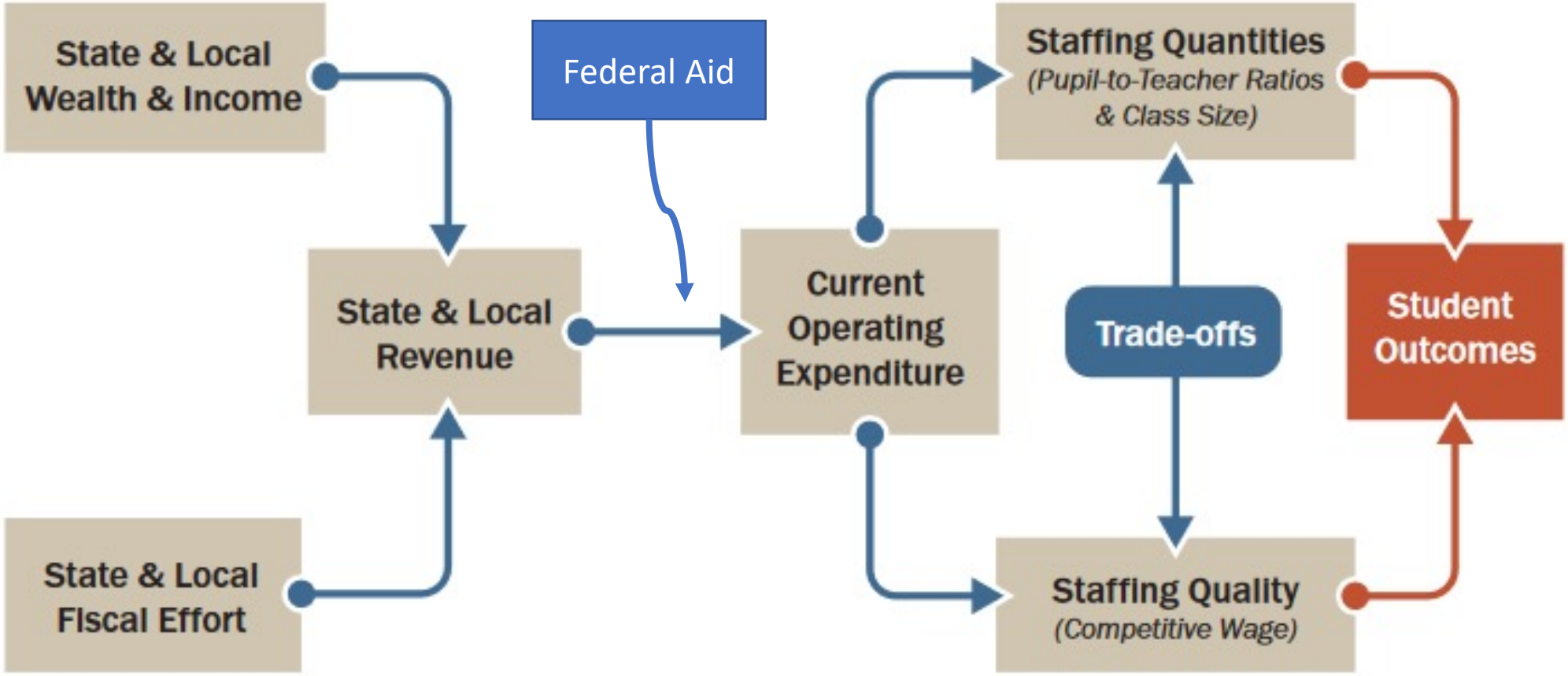
Themes (from my 2018 book)



- Money matters!
- Money translates primarily to human resources
  - Trade-off between quantity and wage
  - There are no magical substitutes
    - Tech-based solutions?
    - Public district, charter and private schools allocate resources largely the same!
      - Running multiple systems in a common space induces inefficiency
- School spending has **not** grown out of control for decades!
  - During bad times, school spending stagnates or even declines
  - But during good times, at least in recent cycles, spending doesn't rebound
- School spending varies substantially across states!
  - For a variety of reasons
  - Some states have really thrown public schooling under the bus

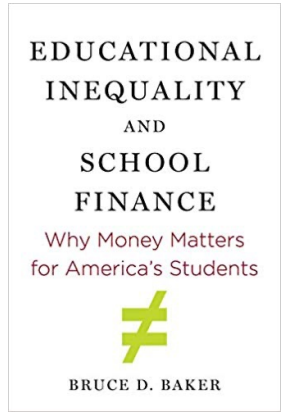
Figure 1
Conceptual Map of the Relationship of Schooling Resources to Children's Measurable School Achievement Outcomes



Core Principles

1. Proper funding is a necessary condition for educational success: Competitive educational outcomes require adequate resources, and improving educational outcomes requires additional resources.
2. The cost of providing a given level of educational quality varies by context: Equal educational opportunity requires progressive distribution of resources, targeted at students and schools that need them most.
3. The adequacy and fairness of education funding are largely a result of legislative policy choices: Good school finance policy can improve student outcomes, whereas bad policy can hinder those outcomes.

Weak evidence against "Money Matters"



- Clouds of doubt
  - Weak correlation between spending and outcomes?
    - **More thorough statistical analysis finds otherwise!**
- The Long Term Trend
  - Spending has doubled and performance is flat?
    - **But a) spending hasn't doubled and b) performance isn't flat!**
    - **AND, more thorough statistical analysis finds otherwise!**
- International Comparisons
  - The US spends more than any other nation (in the world, ever!) and get little, by comparison, in return?
    - **Spending figures most frequently cited simply not comparable (do not cover comparable range of costs/services)**
    - **Numerous other relevant factors invariably left out of comparisons.**
- How money is spent matters more than how much?
  - **But, if you don't have it, you can't spend it!**
    - **(assumes flexibility in trade-offs between staffing quality/quantity)**
    - **LAUSD Class Size / Teacher Wage problem**

What the research actually tells us

- **Recent national school finance studies** (Jackson et al., Lafortune & Rothstein, Candelaria & Shores)
  - Substantial and sustained state school finance reforms have led to improved short term and long term student outcomes
    - The funding increases which led to improved student outcomes generally led to a) smaller class sizes and b) more competitive teacher wages
  - Studies of recession era cuts are revealing short run declines in student outcomes
- **State specific school finance reform studies** (MI, MA, KS, VT, CA)
  - Several state specific longitudinal studies have revealed positive effects of increased funding on student outcomes, from test scores to graduation rates
- **Resources that matter for student outcomes cost money**
  - Smaller class sizes matter
  - More competitive teacher compensation matters
  - High Quality pre-school programs matter
- Recent overview from Matt Barnum: https://chalkbeat.org/posts/us/2018/12/17/does-money-matter-education-schools-research/

But First
Some School Finance Facts!

Trends in School Funding & Schooling Resources

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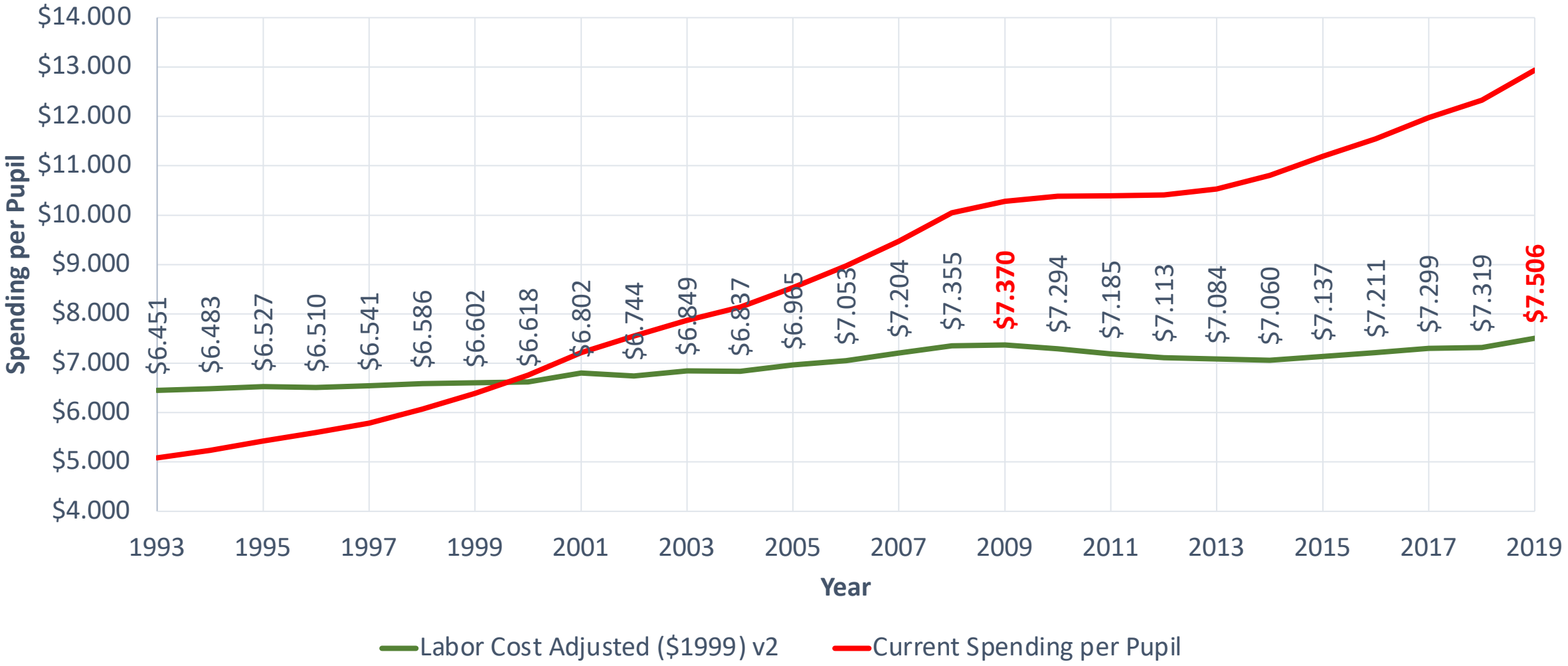
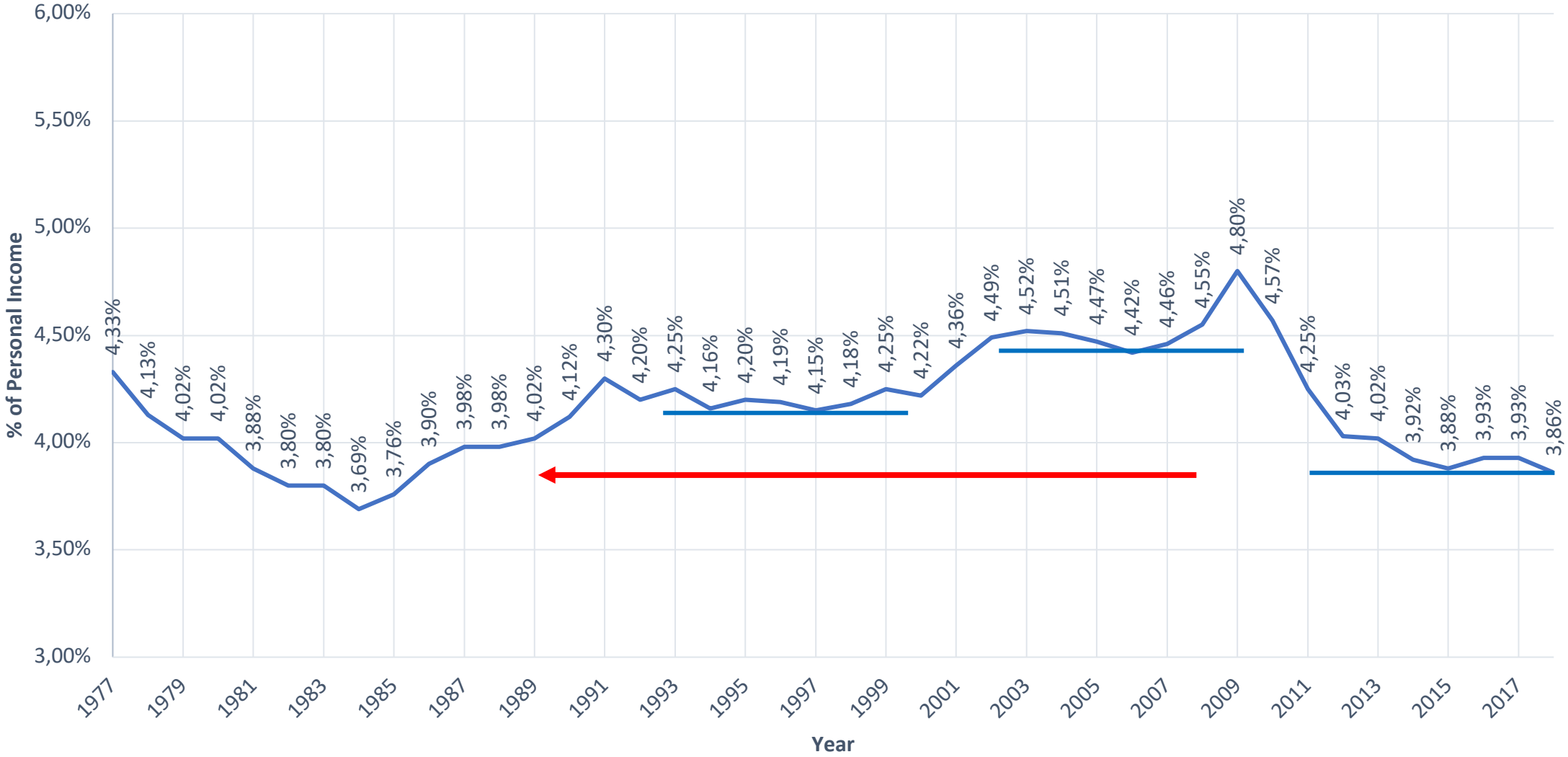
Current Spending per Pupil over Time
(nominal and adjusted for cost of maintaining competitive wages)



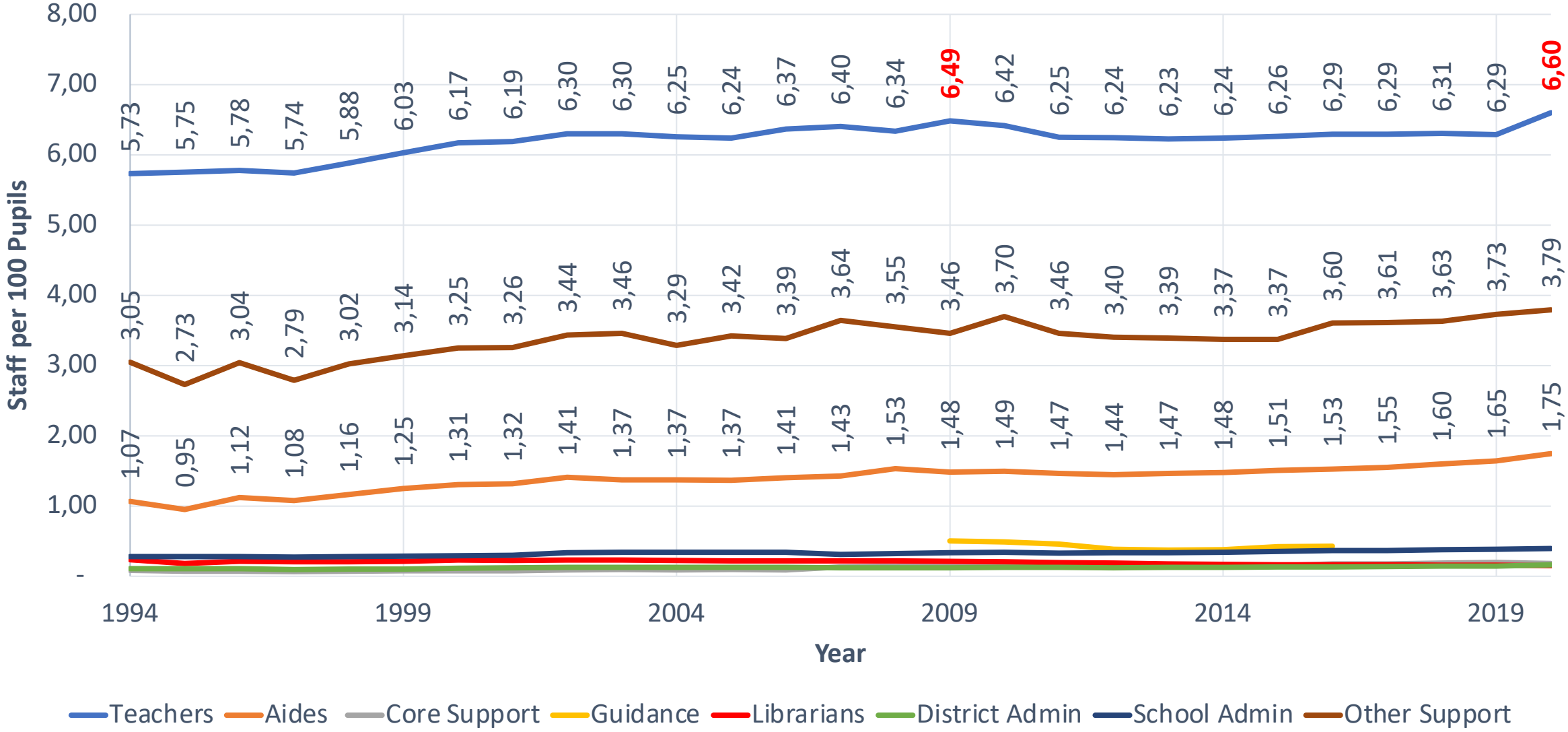
Data source: http://schoolfinancedata.org/download-data/ (District Level Panel)

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



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)

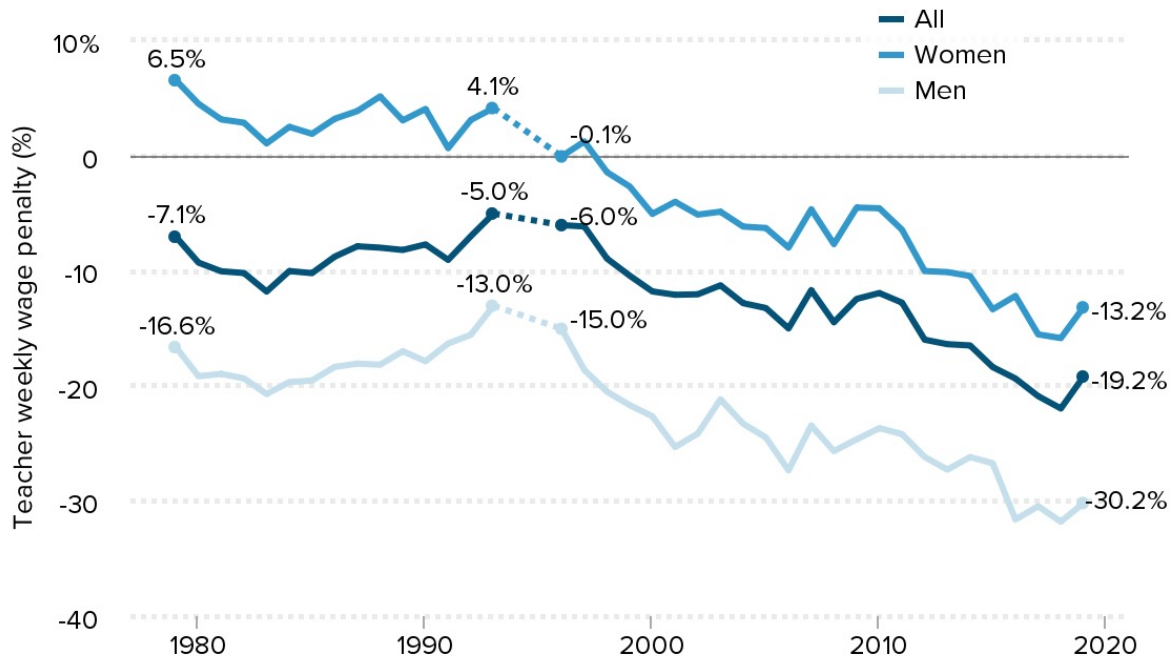
Staffing per 100 Pupils



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

Teachers earn 19.2% less than comparable college graduates

Teacher weekly wage penalty (or premium) for all teachers and by gender, 1979–2019

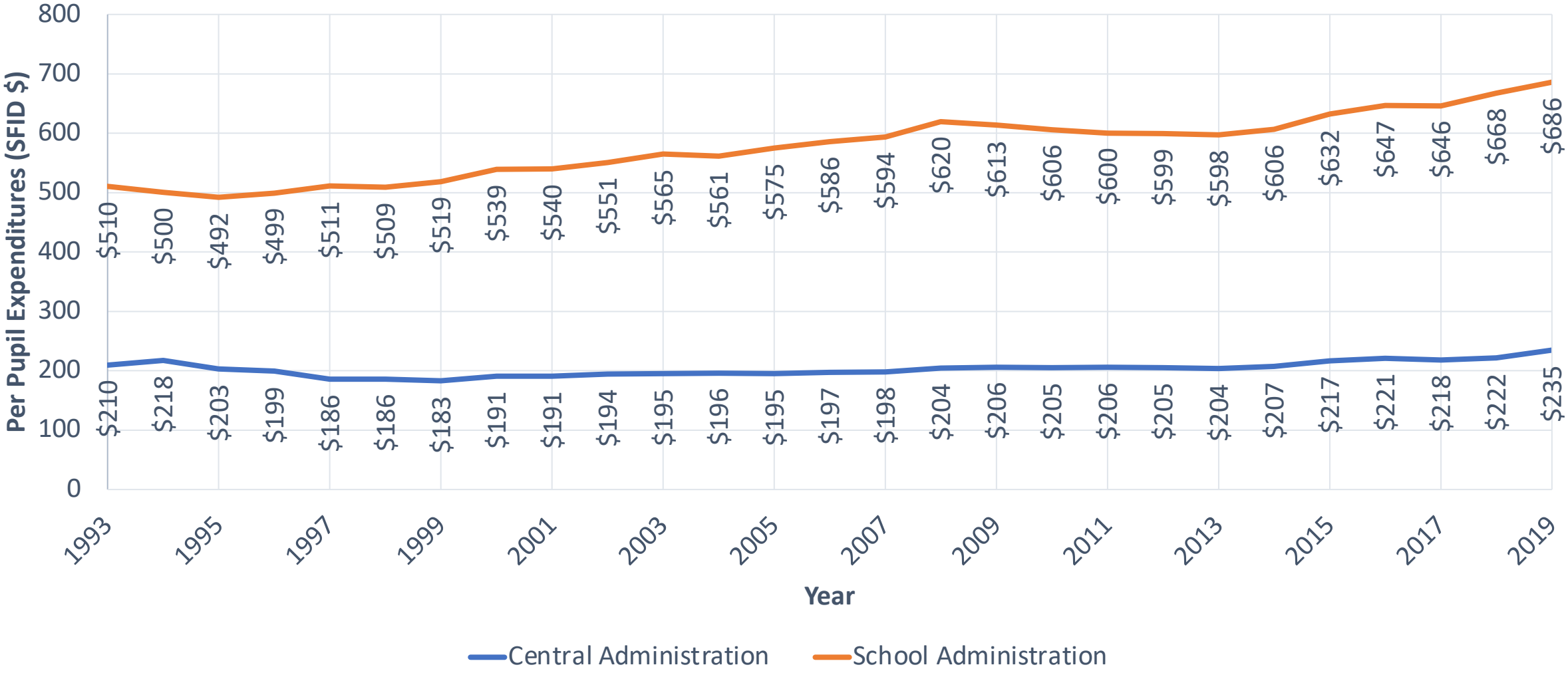


Notes: Figure shows regression-adjusted weekly wage penalties (or premiums): how much less (or more), in percentage terms, elementary, middle, and secondary public school teachers earn in weekly wages than their college-educated, nonteaching peers. Data points for 1994 and 1995 are unavailable and represented 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

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

Wages & Benefits over Time (Constant 2016$)

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

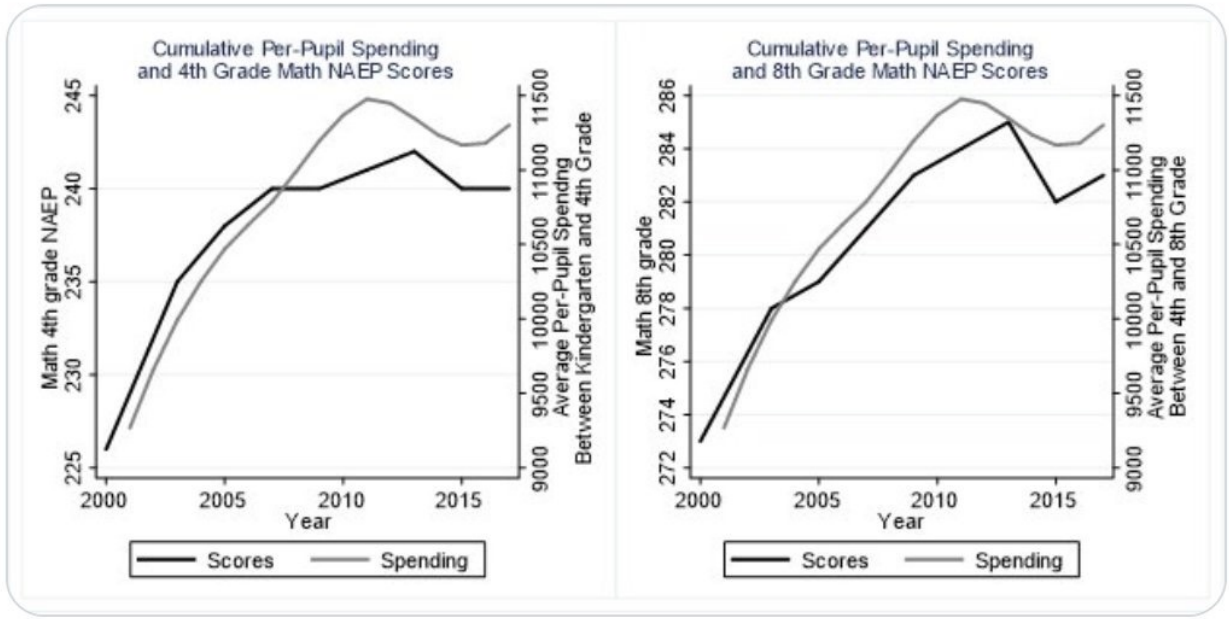
THIS!

C. Kirabo Jackson @KiraboJackson · Apr 12, 2018

Replying to @BetsyDeVosED

Here is a similar graph without the nonsensical scaling.

educationnext.org/could-disappoi...



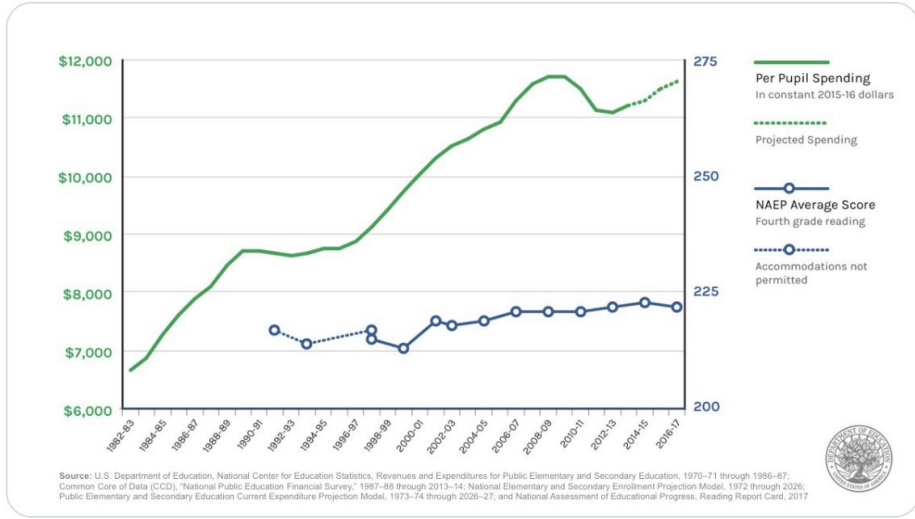
2 48 105

NOT THIS!

Secretary Betsy DeVos ✓

@BetsyDeVosED

The Nation's Report Card shows that test scores continue to stagnate. This is not something we're going to spend our way out of and not something we're going to regulate our way out of. #RISE2018



4:53 PM · Apr 12, 2018 · TweetDeck

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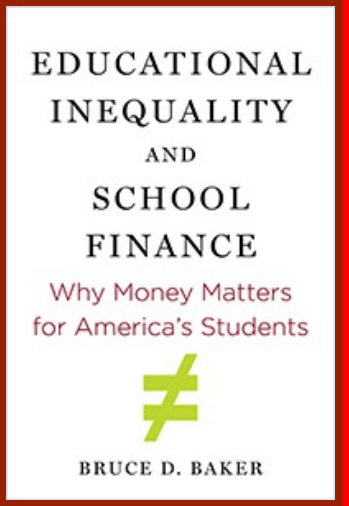
Evaluating State School Finance Systems

Indicators of School Funding Equity and Adequacy



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Core assumptions

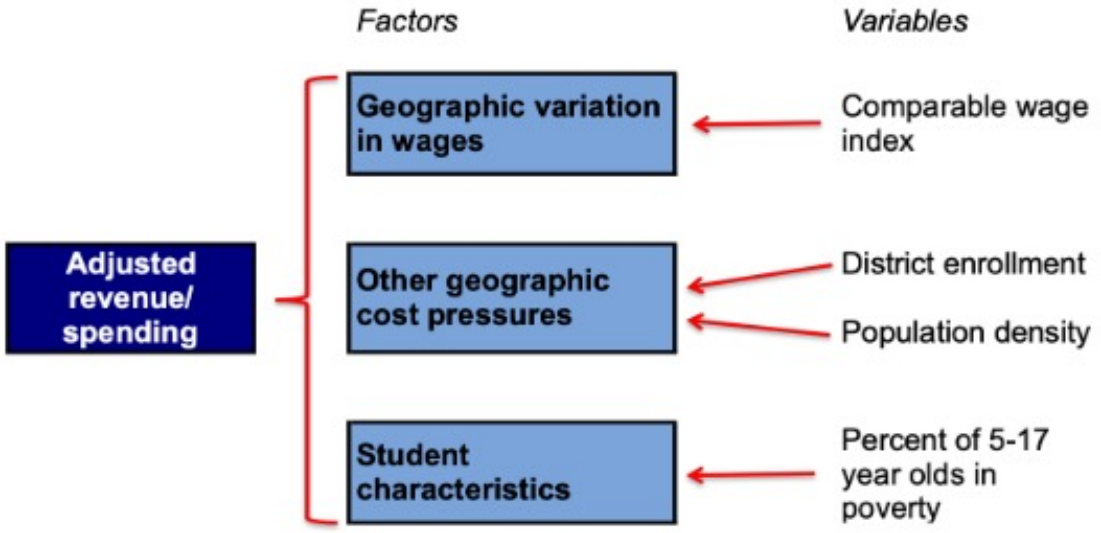
- The goal of state school finance systems is to provide all children, regardless of where they live or attend school, ***equal opportunity to achieve common, adequate outcome goals***
- Providing equal educational opportunity toward common goals costs different amounts in different settings, and across children (individually and collectively) by needs and contexts
  - State accountability systems (for whatever they're worth) set common goals… rate, rank and evaluate schools (and children) on whether they meet those goals
  - A fair system requires funding sufficient to provide equal opportunity to meet these mandates (which are often used for articulating constitutional rights).

Indicators of State School Finance Systems

- Core Measures in SFID
  - **Educational Effort**
    - Education spending share of aggregate personal income
    - Education spending share of gross domestic product (state)
  - Spending (revenue & key resource) Progressiveness
    - Ratio of resources (per pupil) available in higher versus lower poverty settings (basically a regression slope)
      - Descriptive regression model of “what is” (in terms of resource distribution)
      - Method can be used between and/or within districts
    - Per Pupil Spending, State & Local Revenue, Staffing Ratios
  - **Relative Adequacy / Equal Opportunity**
    - Ratio of current spending to spending predicted to be needed (based on education cost model) to achieve national mean outcomes in reading and math.
      - By including outcome measures, allows estimation of “what should be” for comparison with “what is”

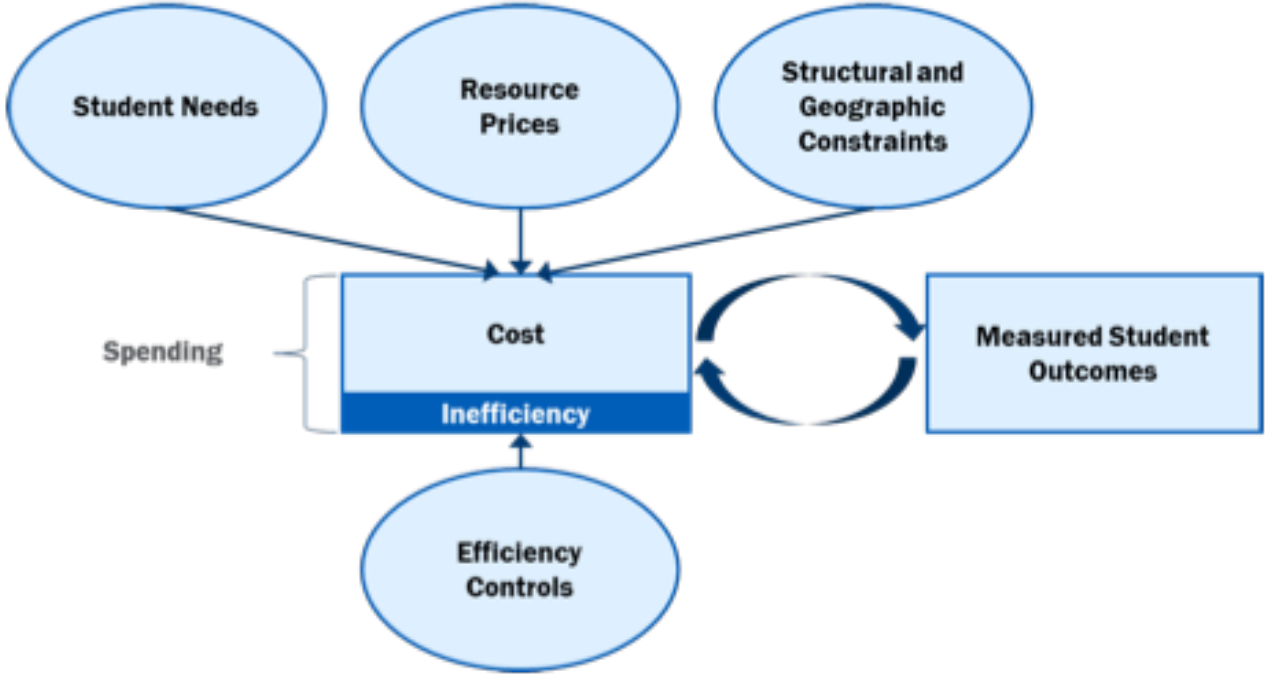
Modeling Differences in Spending & Cost

Progressiveness (What is?)
"Spending" Model



Q: How much does existing spending vary with respect to measures of need and cost?

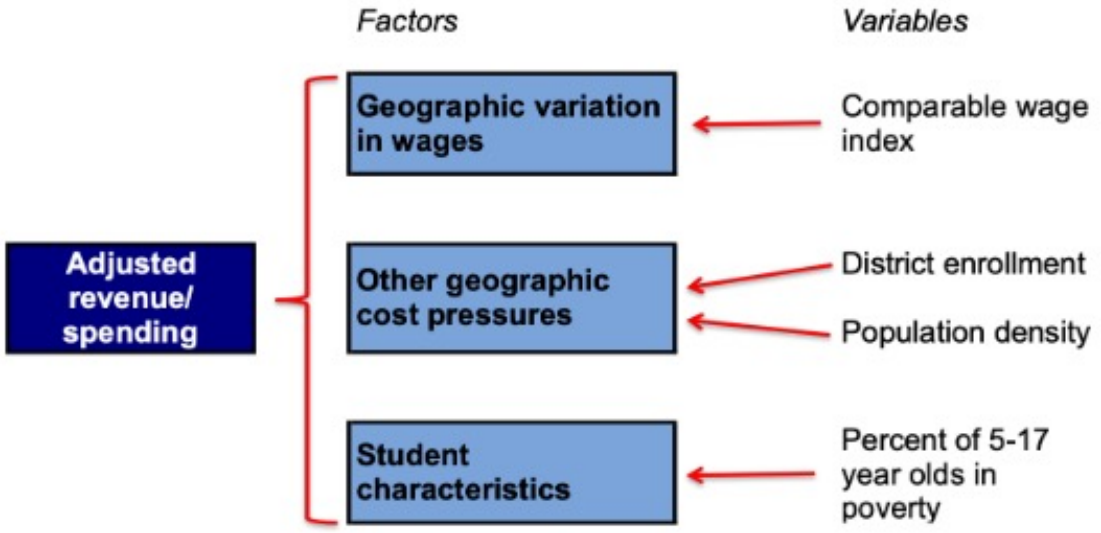
Predicted Cost (What should be?)
"Cost" Model



Q: How much does existing spending vary with respect to measures of need and cost, holding outcomes constant?

Modeling Differences in Spending & Cost

Progressiveness (What is?)
"Spending" Model



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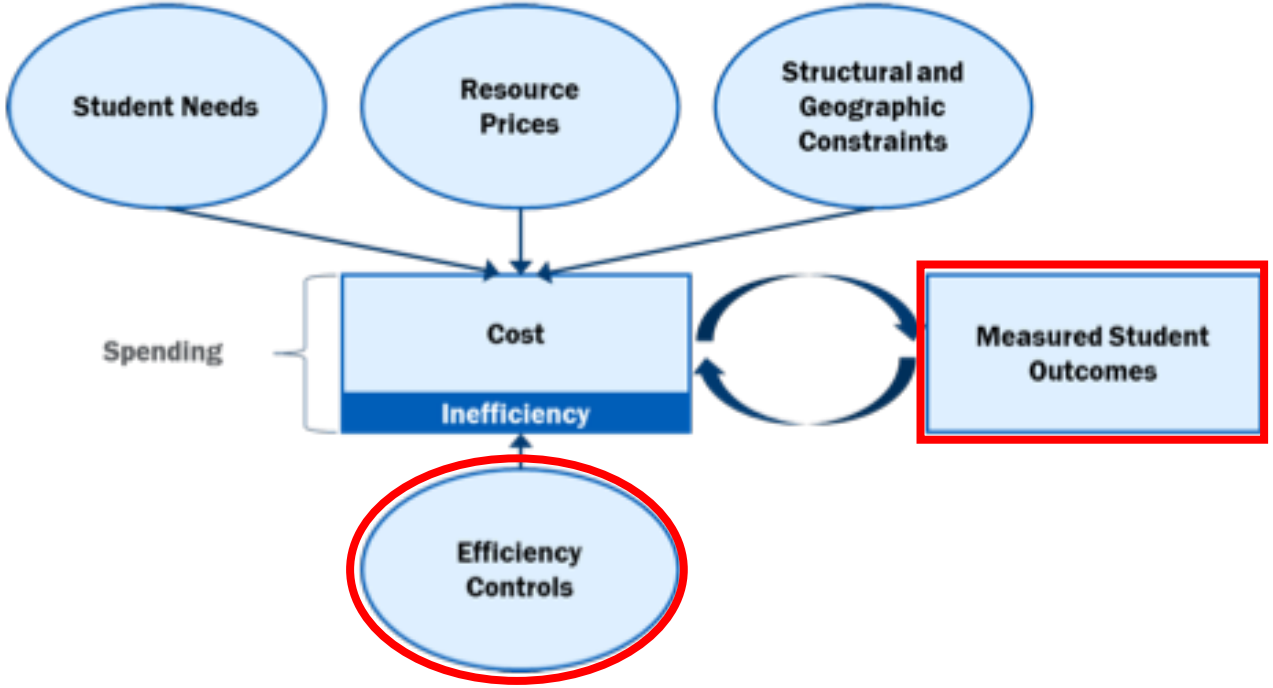

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Modeling Differences in Spending & Cost

Progressiveness (What is?)
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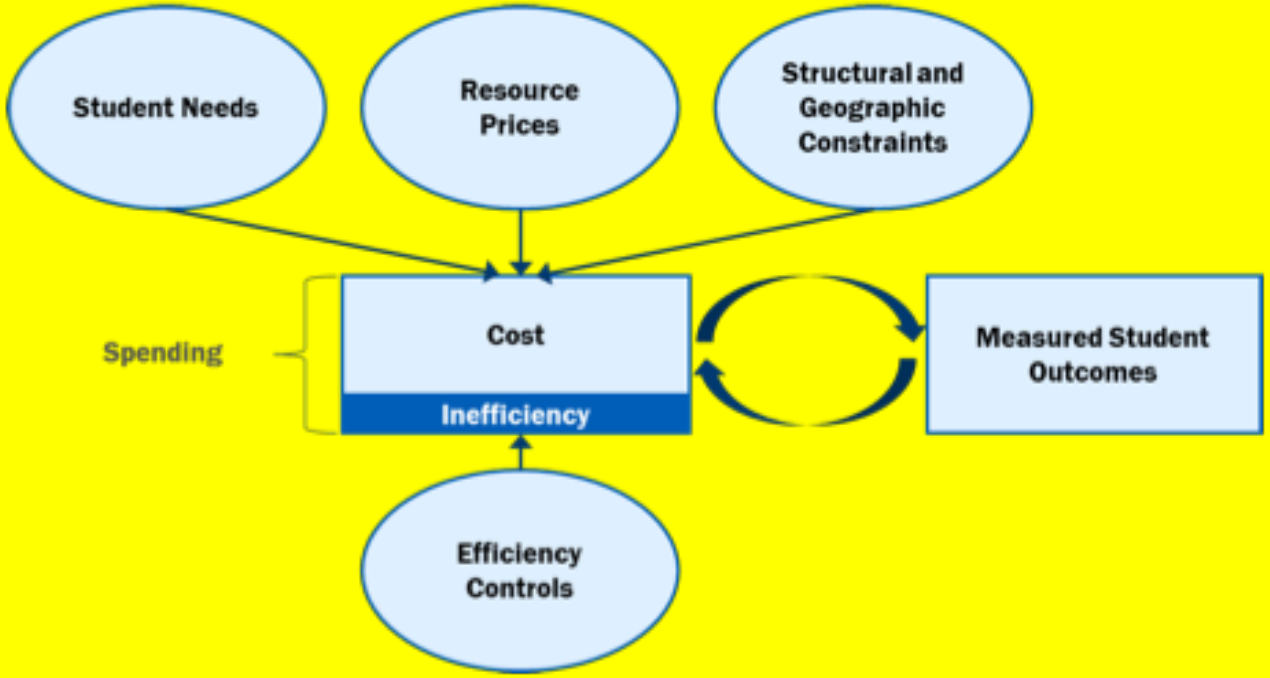
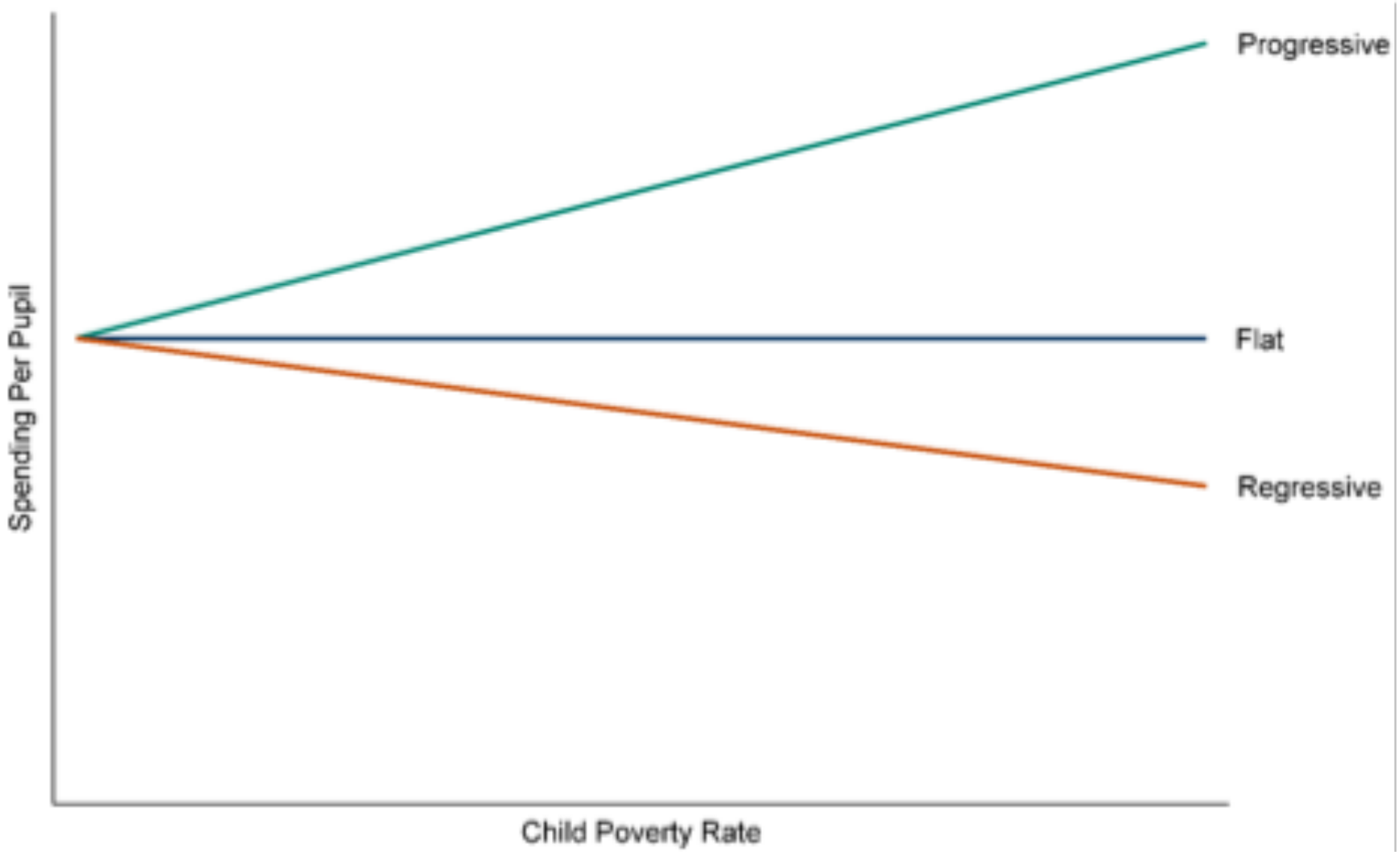


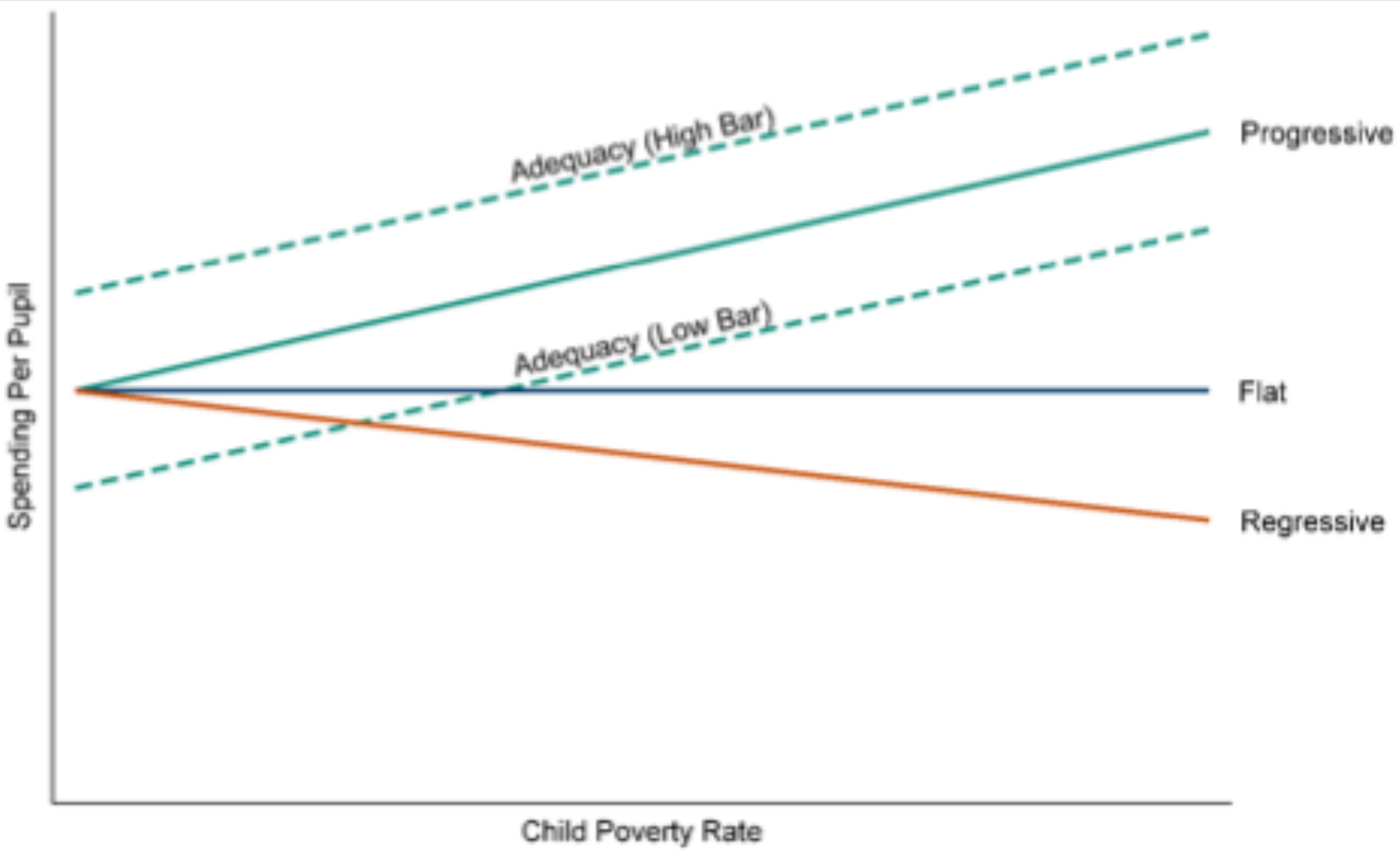
Q: How much spending is needed, controlling for need and cost factors (and inefficiency), to achieve specific outcome goals?

Progressiveness vs. Adequacy

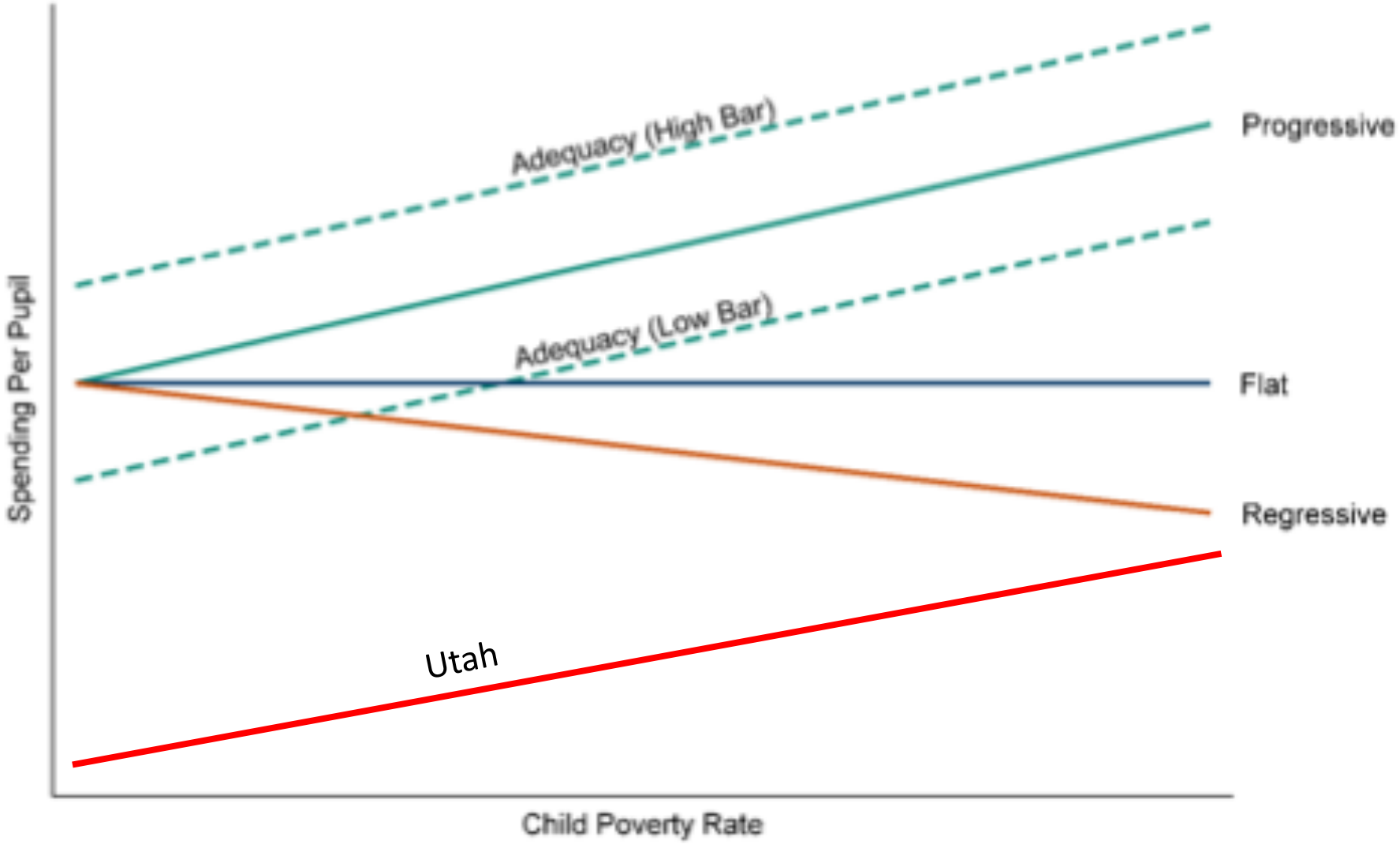
(SFID, Urban Institute & Ed Trust)



Progressiveness vs. Adequacy

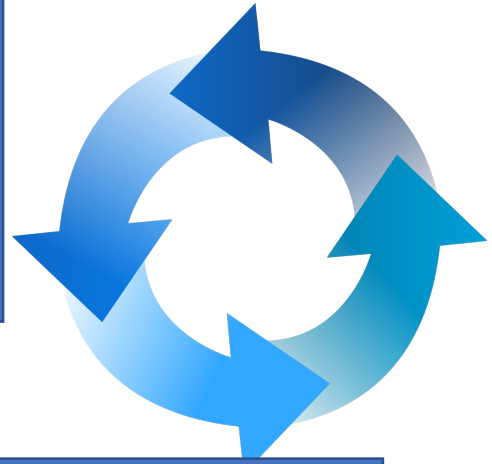


Progressiveness vs. Adequacy



Unifying concepts & methods

Conceptual Goal:
To provide, through school funding formulas, resources sufficient for all students to have ***equal opportunity*** to achieve *(constitutionally)* ***adequate outcomes***



Empirical Goal (requirements):
Methods used to guide policy, both setting of funding levels and cost differentials, must validly link spending requirements with outcome measures (& expectations).

Legal Causes of Action:

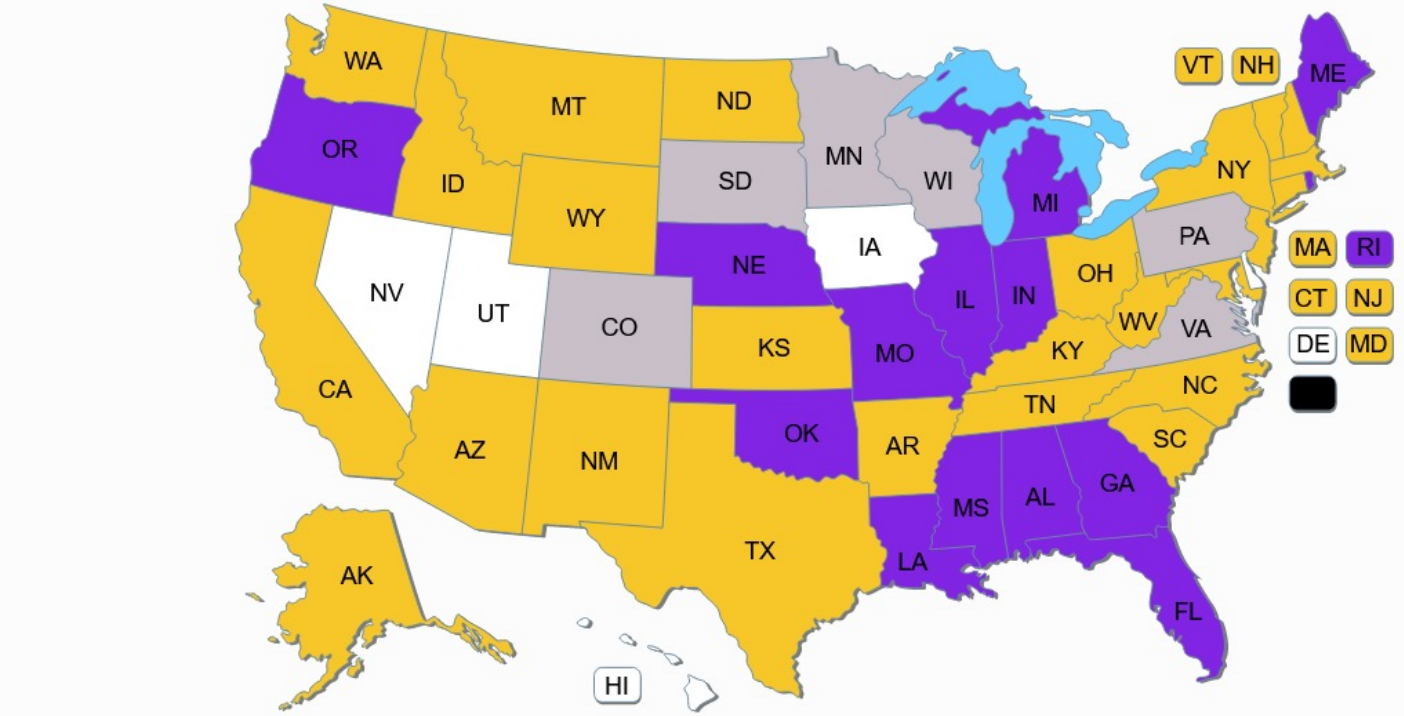
1. EP (State or Fed) exists where similarly situated individuals are differently treated.
   Treatment = Outcome Expectation(s)*
   (under which all are similarly situated)
2. "Adequacy" (state) requires linking spending levels to outcome expectations

**antiquated conceptions of "horizontal" and "vertical" equity undermine (negate) this argument!*

The map below shows school-funding court decisions by state.

Click on a state for education-finance litigation details, recent events, and links to useful resources.

Click here to learn more about the history of school-funding court decisions.



Legal Right Recognized and Enforced

No Legally Enforceable Right

Legal Right Recognized but Not Yet Enforced

No Court Decision

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https://www.schoolfunding.info/

State systems in the US

A Primer

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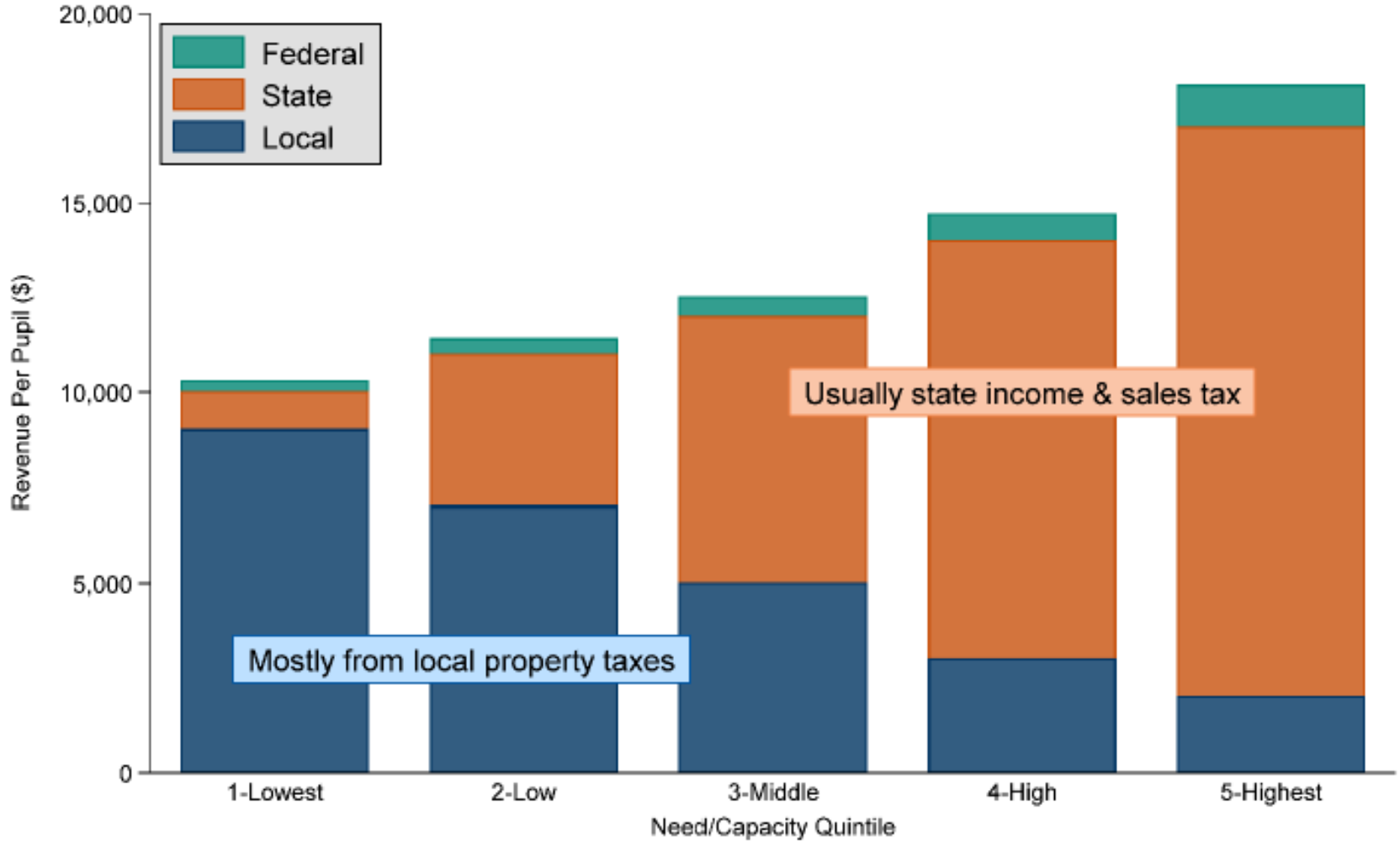
Goals

- Account for differences in the costs of achieving equal educational opportunity (to achieve desired outcomes) across schools, districts, and the children they serve.
- Account for differences in the ability of local public school districts to cover those costs. Local districts' ability to raise revenue might be a function of either or both local taxable property wealth and the incomes of local property owners, thus their ability to pay taxes on their properties.

Figure 2. Hypothetical Progressive Foundation Aid Formula

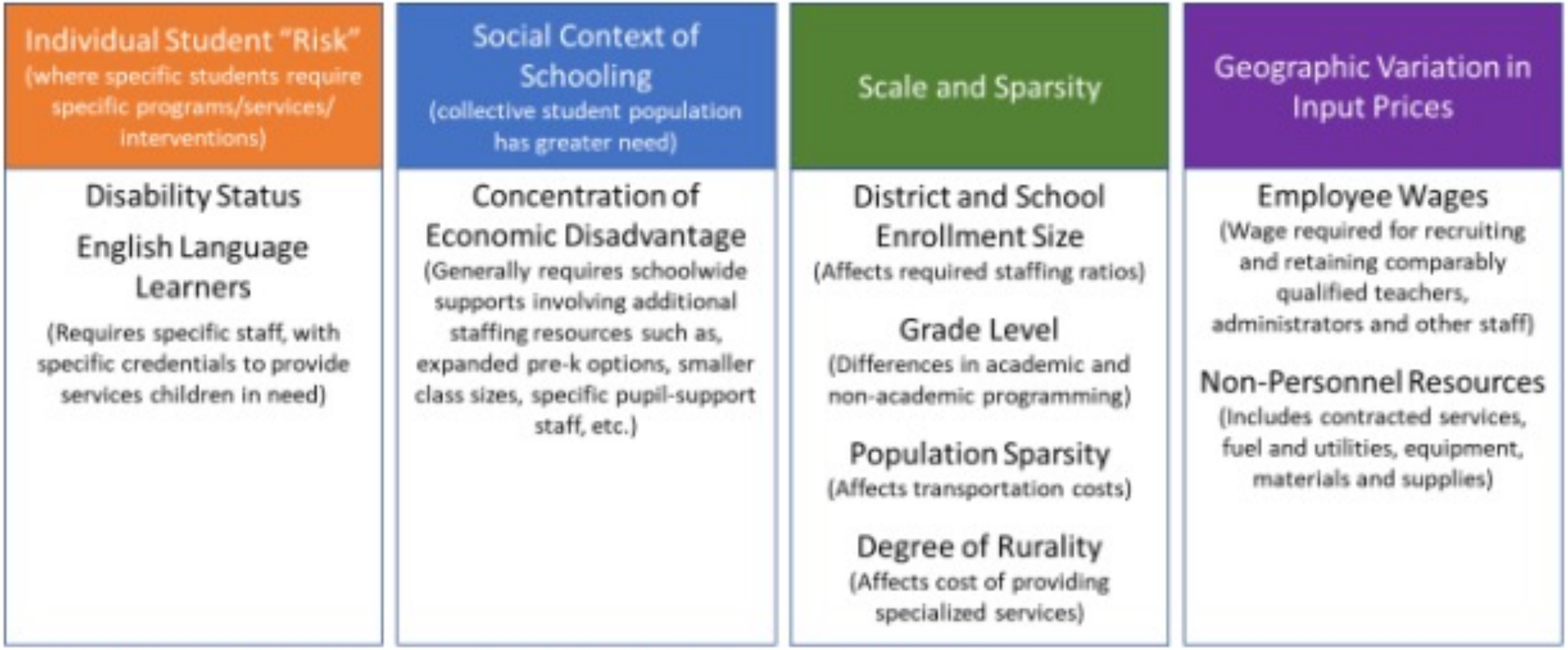


Notes: The share of revenue contributed by the state increases as local revenue capacity decreases. The target state and local spending level is based on student need and geographic cost adjustments.

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.

Figure 2.1. 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

Adequacy and Outcomes

Findings from Ongoing Work

RESEARCH BRIEF

THE ADEQUACY OF SCHOOL DISTRICT SPENDING IN THE U.S.

Bruce D. Baker
Matthew Di Carlo
Mark Weber

March 2021

ABSTRACT

We present an overview of spending adequacy among individual K-12 school districts in the U.S. Our results are from a new database of over 12,000 public school districts that allows users to compare each district's actual per-pupil spending levels to estimates of adequate spending levels—i.e., spending required to achieve the common goal of national average math and reading scores. The data are for the 2017-18 school year. Predictably, we find substantial heterogeneity, with many districts spending well above our estimated adequacy targets and many others spending well below, in some cases shockingly below. Districts with negative (i.e., inadequate) funding gaps are especially prevalent in the southeast and southwest, but they are also found throughout the entire U.S., including in states, such as Massachusetts and Connecticut, which include generally high-spending districts. The sum of these negative gaps across all districts (ignoring districts with positive gaps) is $104 billion, and the average negative gap is $4,254 per-pupil. Conversely, even in states where underfunding is widespread and typically severe, there are numerous districts in which resources exceed our adequate spending estimates. Finally, we show that the extent of funding inadequacy increases with district child poverty rates and with the proportion of Black and especially Hispanic (Latinx) students served by districts. These results illustrate that most states are failing in their job of filling the holes between districts' costs and their capacity to pay those costs, as well as how, even in states that are more successful, many districts slip through the cracks. An effort to rectify these discrepancies could consist of a strategic expansion of the federal role in education finance, as well as a recalibration of how states fund their schools. High-quality district adequacy measures can help guide this process by identifying where resources are needed most.

SCHOOL FINANCE INDICATORS DATABASE

ALBERT SHANKER INSTITUTE

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Research Brief 02-2021

www.schoolfinancedata.org

Journal of Education Finance

VOLUME 47 NUMBER 1 SUMMER 2021

Informing Federal School Finance Policy with Empirical Evidence
Bruce D. Baker, Mark Weber, and Ajay Srikanth

An Examination of the Relationship between Capital Outlay Inequalities and Cost-Cutting General Funding Measures During the Great Recession
Jeffrey Maiden, H. Michael Crowson, and Tammie Reynolds

Understanding the External Social Benefits of Education in Ethiopia: A Contextual Analysis Using Young Lives
Ricardo Sabates, Yiran Vicky Zhao, Rafael Mitchell, and Sonia Ilie

Addressing the Gender Pay Gap: The Influence of Female and Male Dominant Disciplines in Gender Pay Equity
David G. Buckman and Tommy E. Jackson

Generating Stable University Funding Mechanisms: Income Contingent Loan Structure Choice within the Irish Education System
Charles Larkin and Shaen Corbet

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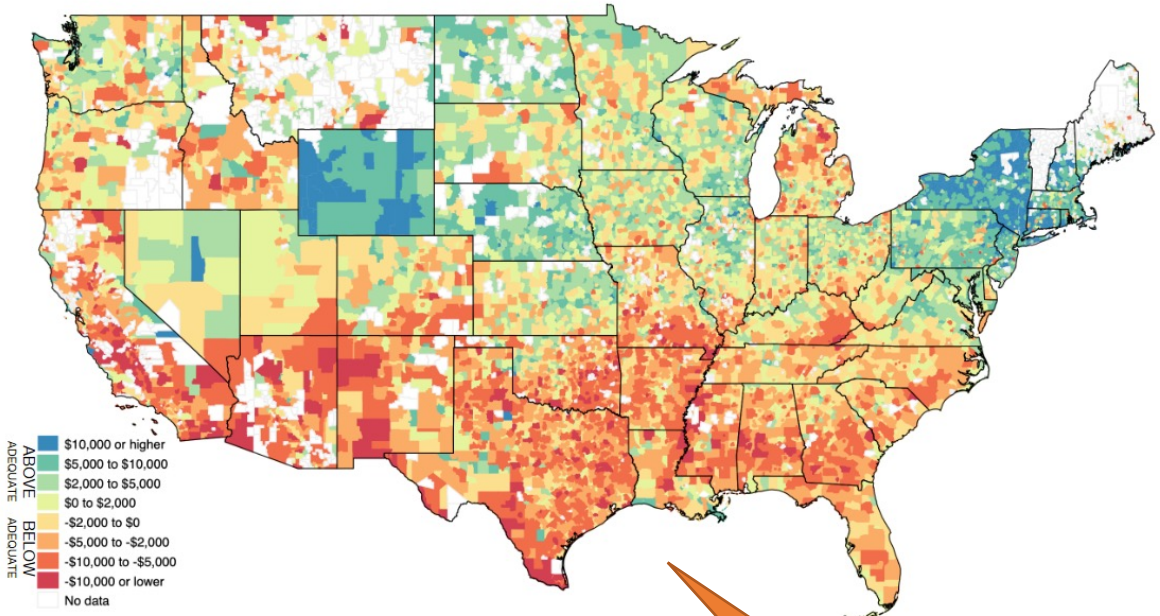
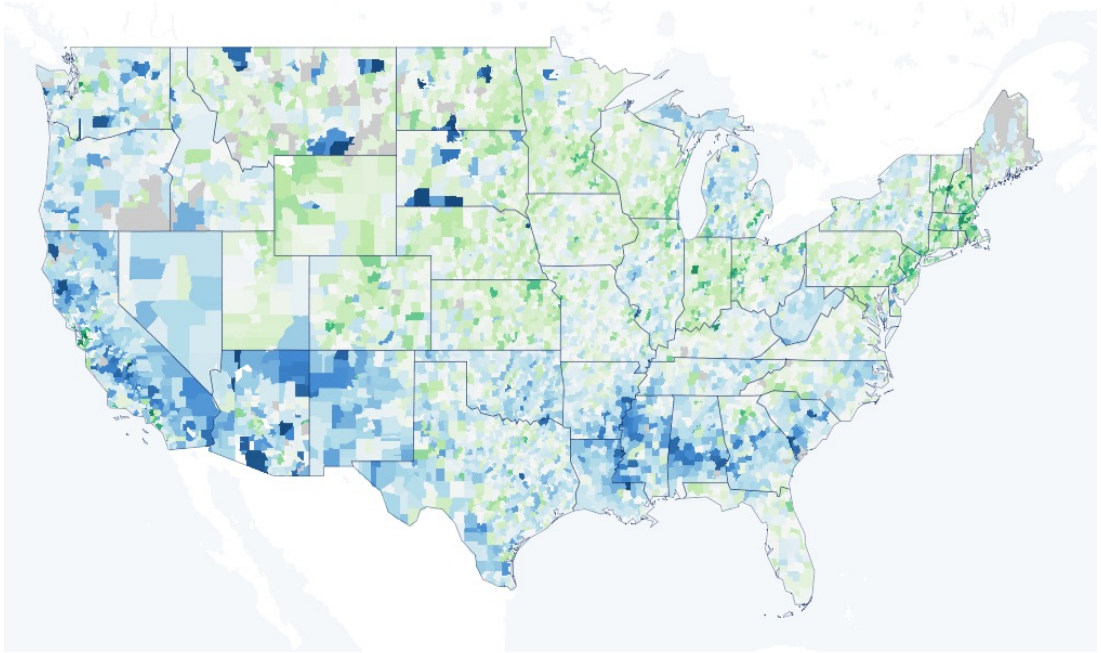
Funding Gaps (SFID) & Outcome Gaps (SEDA)

figure **1** **Map of district funding gaps**

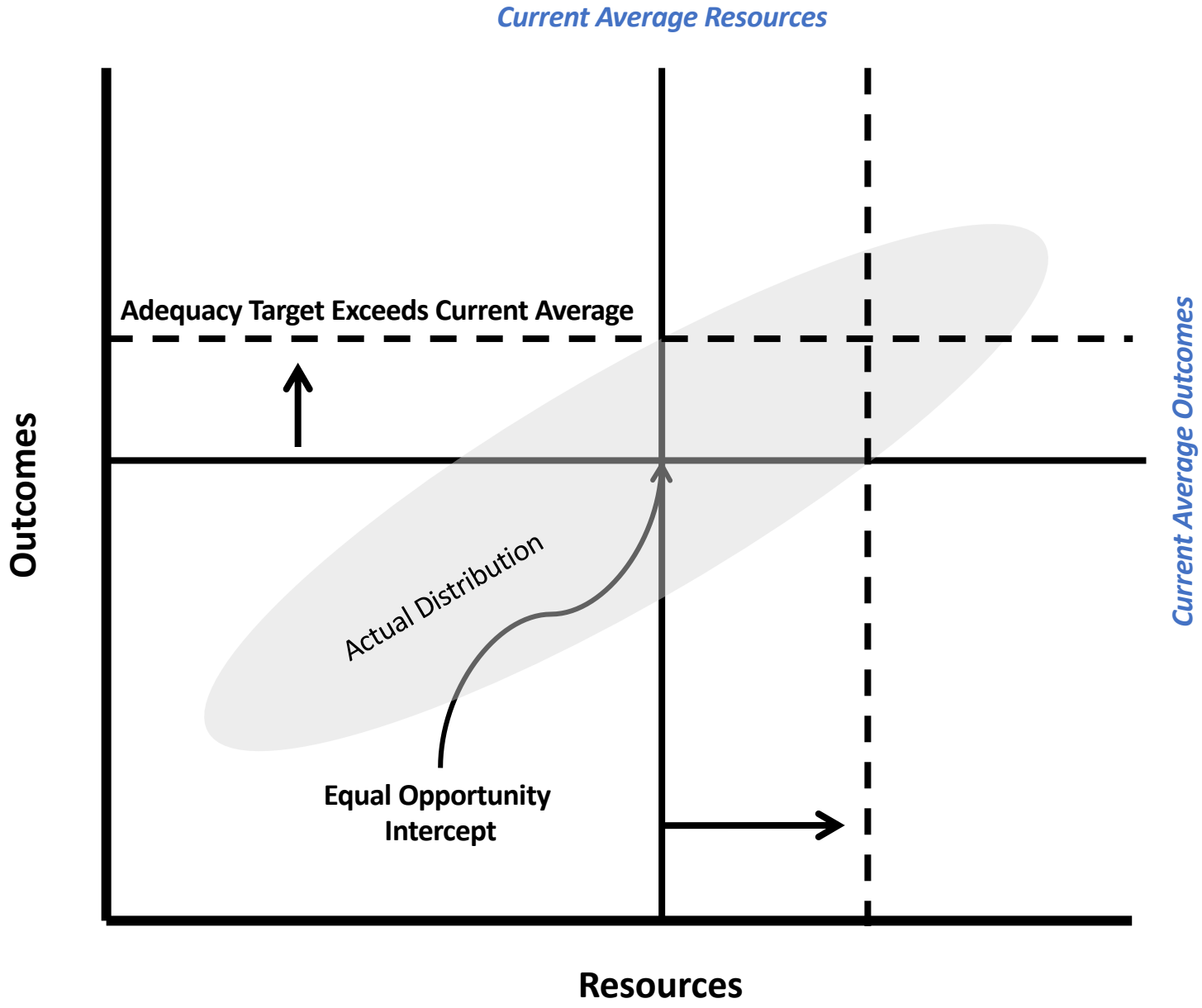
Gap between actual and estimated adequate spending per-pupil, 2018



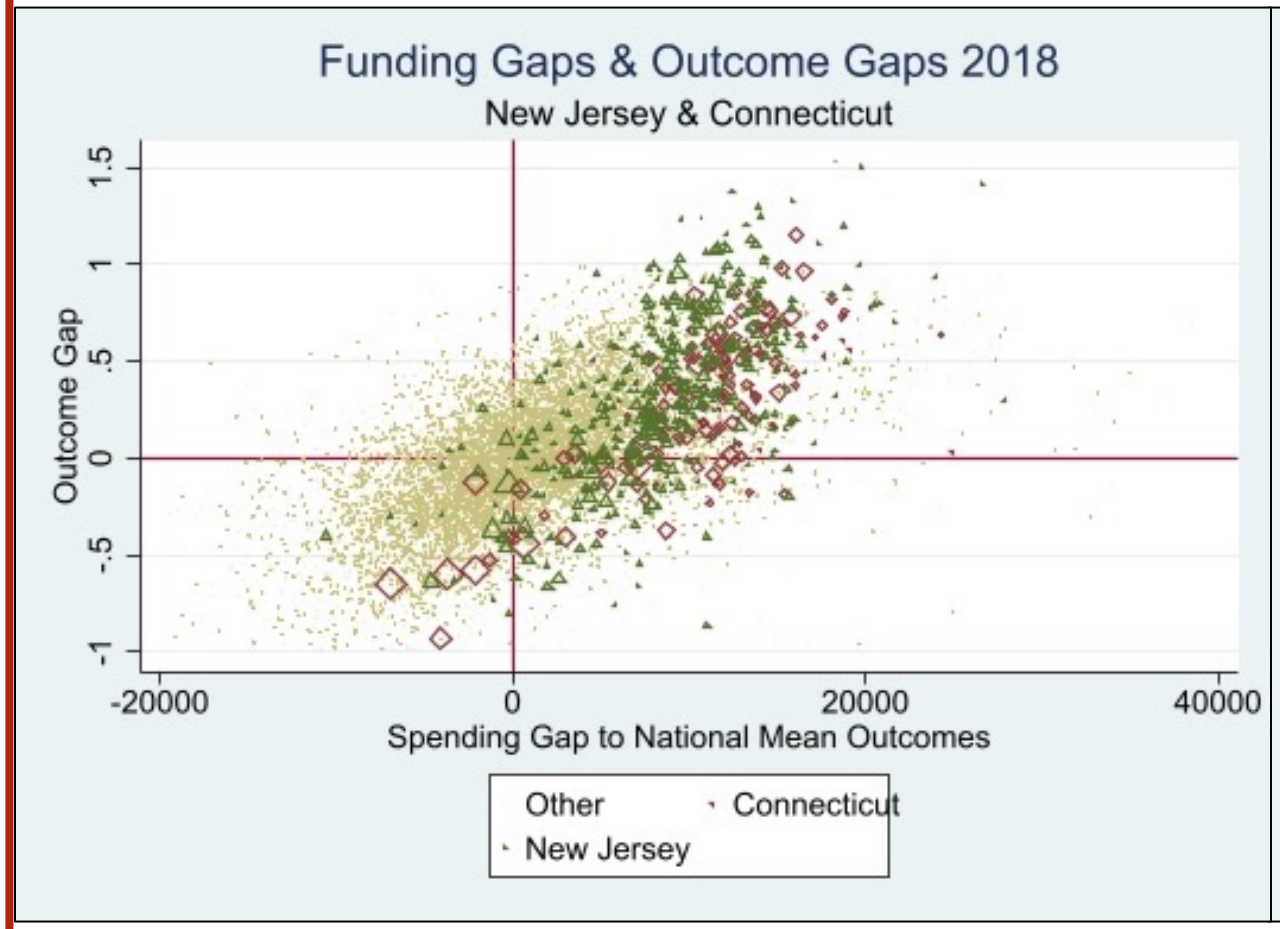
Educational Opportunity In The U.S.
shown by **average test scores** for **all students** by **school district**

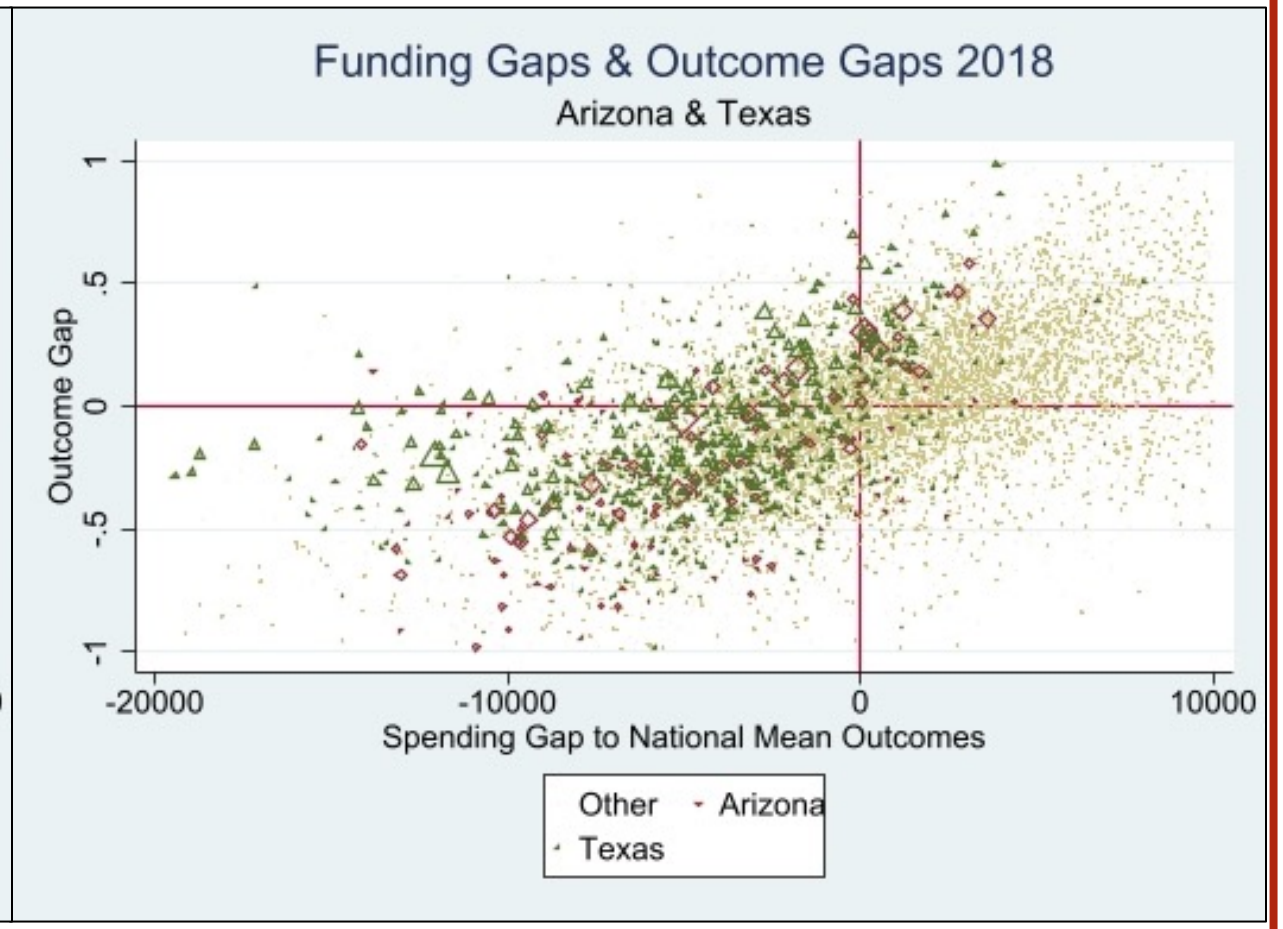


Filling the RED gaps in 2021 = $130b


Current Average Resources
Adequacy Target Exceeds Current Average
Outcomes
Actual Distribution
Equal Opportunity
Intercept
Current Average Outcomes
Resources

Adequacy and Outcomes



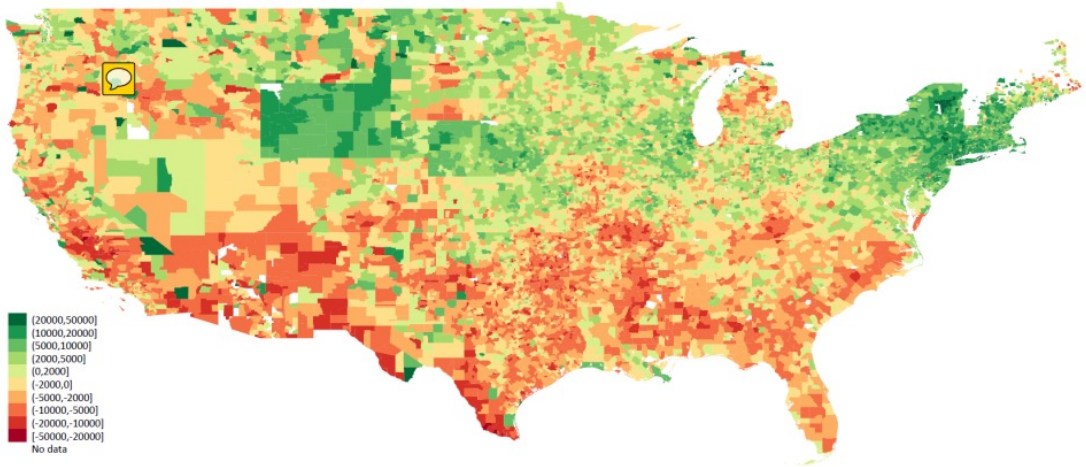


Also – it costs more to achieve higher outcomes!

Cost gaps to National Average Outcomes

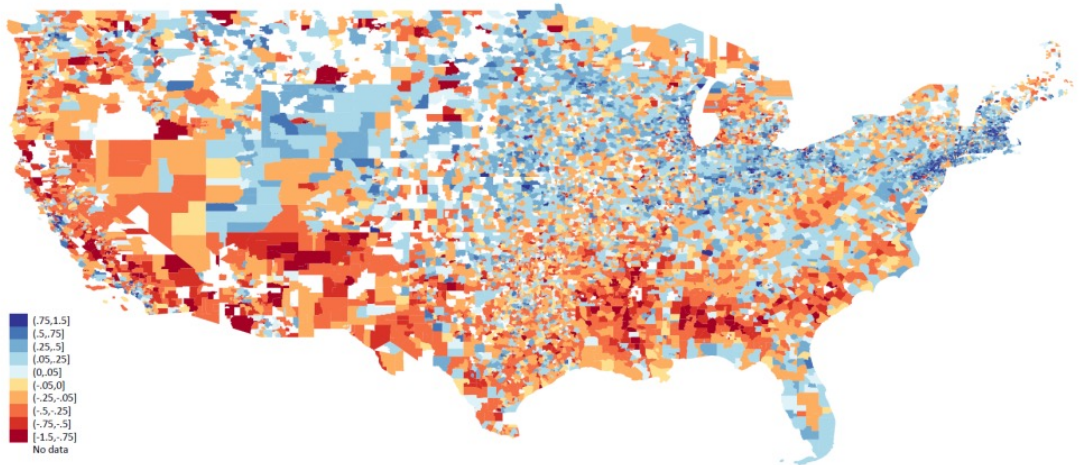
2019

Standard 1



Outcome Gaps 2018

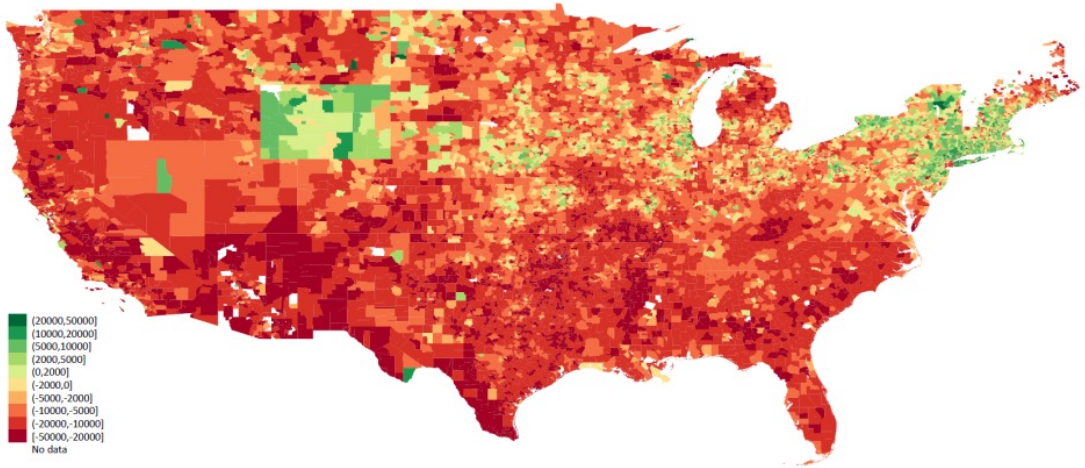
Standard 1



Cost gaps to Massachusetts Average Outcomes

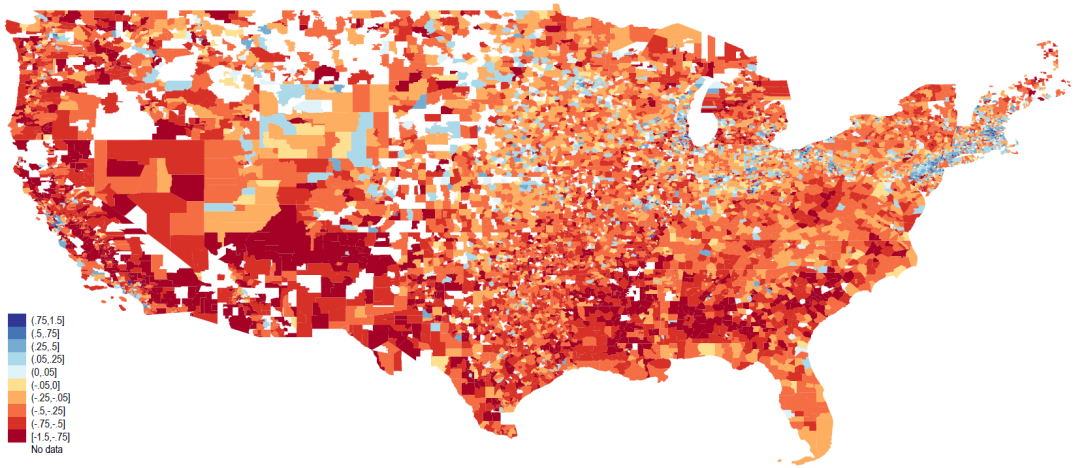
2019

Standard 3



Outcome Gaps 2018

Standard 3



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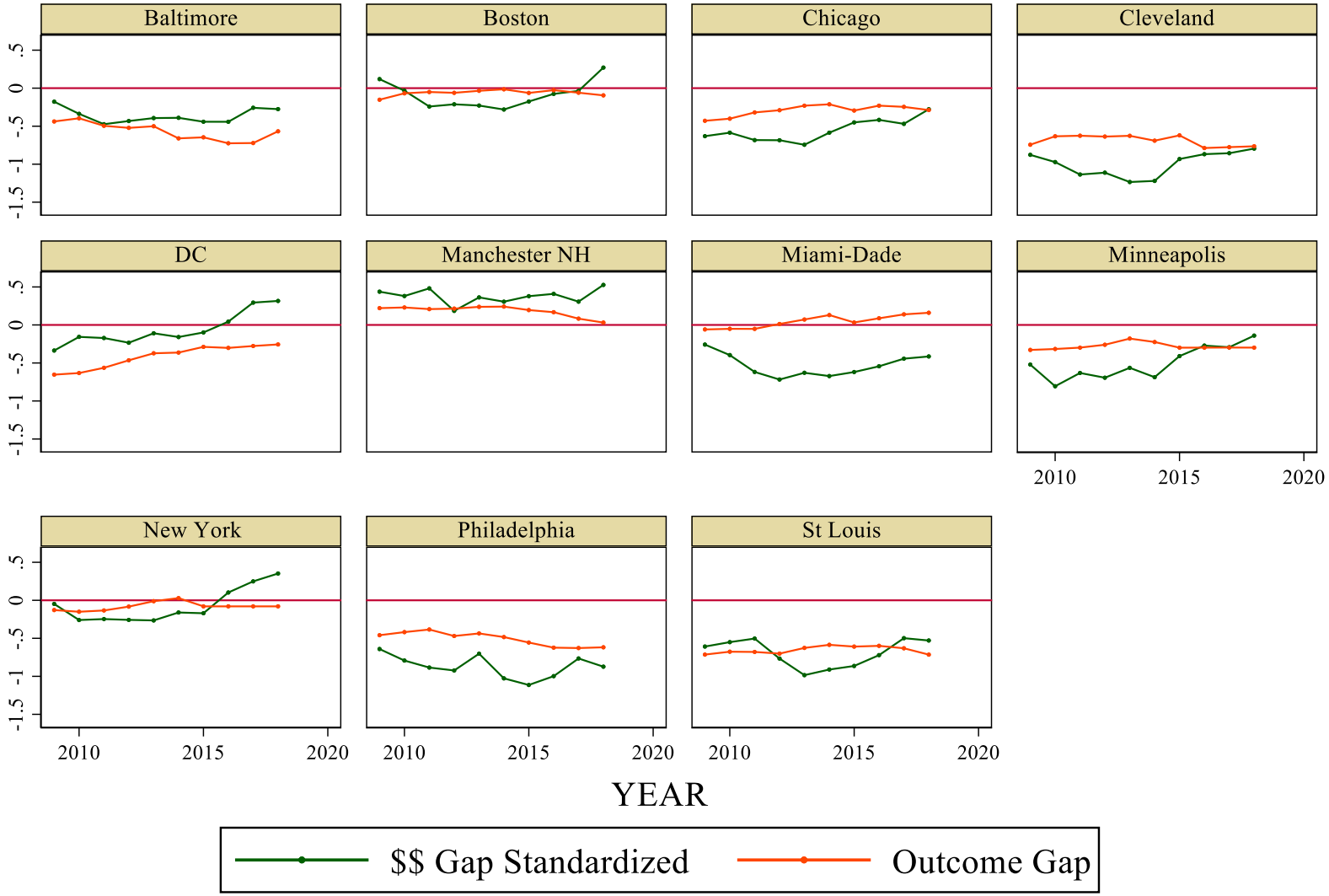
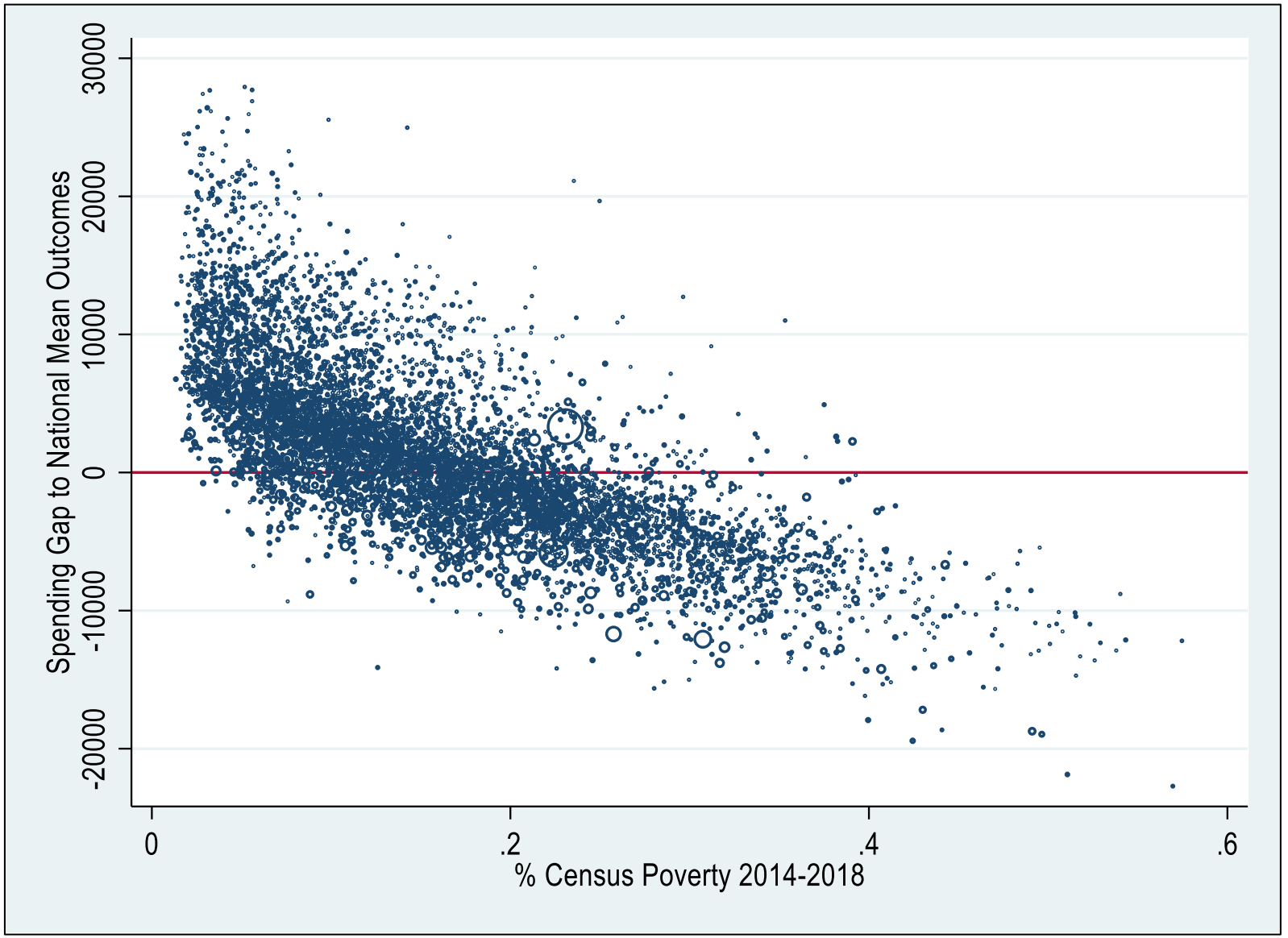
Funding Adequacy & Outcomes in Select US Cities



Graphs by city

Spending Adequacy and Child Poverty



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Effort and Adequacy (High Poverty Districts)

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The Collapse of Effort & the Great Recession

Race to the bottom among Arizona, Florida, North Carolina and Tennessee

What Predicts "Adequacy" for the Highest Poverty Quintile?

VARIABLES	Between Current $ as % of Adequate $-Higest Poverty Quintile	Within Current $ as % of Adequate $-Higest Poverty Quintile	Between Current $ as % of Adequate $-Higest Poverty Quintile	Within 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

1. States putting up more effort have more adequate funding in high poverty districts.
2. Increases in effort increase adequacy.
3. Increased housing values and income increase adequacy (but not between state diffs)
4. States with larger charter shares have less adequate funding in high poverty districts, but increases in charter shares are associated with modest increases in adequacy.

What predicts effort?

VARIABLES	Between Ratio of Total State & Local Education Expenditure to Gross State Product	Within Ratio of Total State & Local Education Expenditure to Gross State Product	Between State & Local Revenue as % of Personal Income	Within State & Local Revenue as % of Personal Income
% 6 to 16 Enrolled in Public School	-0.021	**0.017***	-0.026	**0.030***
Income Ratio Public to Non-Public Enrolled	**0.035***	-0.002	**0.036***	-0.002
Statewide Share Enrolled in Charter Schools	-0.057	**-0.015***	-0.037	**-0.031***
Household Income [ln]	-0.022	**-0.009***	-0.004	**-0.006***
Housing Value [ln]	-0.006	**0.005***	-0.011	**0.009***
Income Ratio Under/Over 130 Poverty Income	-0.132*	-0.007	-0.082	-0.009
Ratio of Black/Brown Youth Share to White Adult Share of Population	0.006	**-0.007***	0.008	**-0.008***
Policy Liberalism Index - Median	**0.003***	**0.003***	**0.003***	**0.003***
Year		0.000		-0.000*
Constant	0.385*	0.036	0.235	0.523*
Observations	960	960	960	960
R-squared	0.476	0.224	0.422	0.425
Number of statefip	48	48	48	48

Standard errors in parentheses

* p<0.05

1. As states increase shares of children in charter schools, they reduce effort to fund schools more generally
2. As the student population becomes more black & brown, white adults reduce their effort to fund schools
3. More liberal states apply higher effort, and as states become more liberal, they increase their effort.

Application to Postsecondary Education

Estimating the Real Cost of Community College

https://tcf.org/content/report/estimating-real-cost-community-college/

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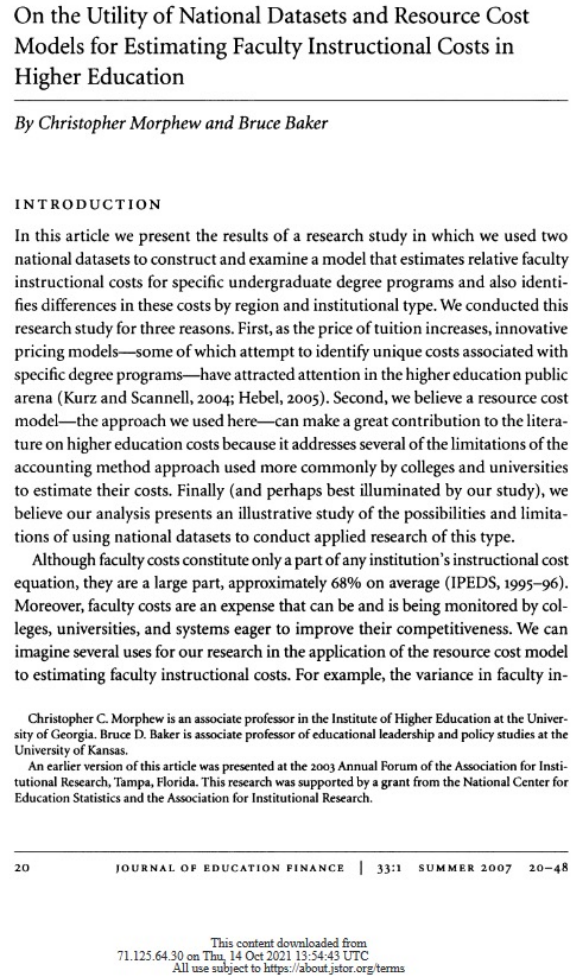
Two approaches

- Institutional (college, campus/program) Extant Data Modeling
  - Risk Modeling
    - Using panel data on student and institutional characteristics to determine measures that best capture variations in outcomes (as potential “cost” factors)
  - Cost Modeling
    - Similar to k-12 approach
    - Using metrics of student by program persistence and completion as outcomes
- Pathways based cost modeling
  - Derivative of 1990s k12 disabilities resource cost analysis (Chambers & Parrish)
  - Identifies common pathways to program (cert, degree, transfer) completion
    - Data mining of student transcripts (for cohorts of completers and starters)
    - Identifies direct and indirect costs of services (and overhead) associated with alternative pathways



On the Utility of National Datasets and Resource Cost Models for Estimating Faculty Instructional Costs in Higher Education

By Christopher Morphew and Bruce Baker

INTRODUCTION

In this article we present the results of a research study in which we used two national datasets to construct and examine a model that estimates relative faculty instructional costs for specific undergraduate degree programs and also identifies differences in these costs by region and institutional type. We conducted this research study for three reasons. First, as the price of tuition increases, innovative pricing models—some of which attempt to identify unique costs associated with specific degree programs—have attracted attention in the higher education public arena (Kurz and Scannell, 2004; Hebel, 2005). Second, we believe a resource cost model—the approach we used here—can make a great contribution to the literature on higher education costs because it addresses several of the limitations of the accounting method approach used more commonly by colleges and universities to estimate their costs. Finally (and perhaps best illuminated by our study), we believe our analysis presents an illustrative study of the possibilities and limitations of using national datasets to conduct applied research of this type.

Although faculty costs constitute only a part of any institution's instructional cost equation, they are a large part, approximately 68% on average (IPEDS, 1995–96). Moreover, faculty costs are an expense that can be and is being monitored by colleges, universities, and systems eager to improve their competitiveness. We can imagine several uses for our research in the application of the resource cost model to estimating faculty instructional costs. For example, the variance in faculty in-

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An earlier version of this article was presented at the 2003 Annual Forum of the Association for Institutional Research, Tampa, Florida. This research was supported by a grant from the National Center for Education Statistics and the Association for Institutional Research.

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Data & Tools for School Finance Research, Exploration & Teaching

School Finance Indicators Database & Reports

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Using our data and resources

- The purpose of this project is to inform and improve school finance debates and policymaking in the U.S.
- All our resources are designed to be used by all stakeholders, regardless of their finance or research backgrounds
- Our state and district datasets are free to download for yourself, along with user-friendly documentation
  - These datasets (and accompanying documentation) include many measures not discussed in this presentation, such as teacher salary competitiveness, staffing ratios, etc.
- But we also have many resources that you can use without analyzing the data yourself, and everything is available at the SFID website:

schoolfinancedata.org

Summary

Summing it all up

- Money matters
  - Increasing funding helps, cutting funding hurts
  - Cuts usually hit low income and racial/ethnic minority students first and worst
- Leaving school funding primarily to states (and by extension local communities) has led to vast disparities in public education investment
  - It will be difficult if not impossible to raise the floor in US public education without a combination of:
    - Increased federal spending
    - Increased federal pressure to require states to provide some minimum effort