Education Finance & Equity

From Concepts to Indicators to School Finance Reform

Bruce D. Baker

MIAMI

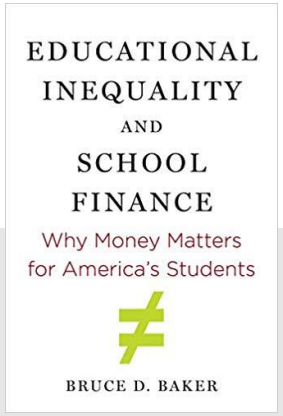
Overview

- Background & Long Term Trends
- School Finance Systems
- National Education Cost Model
- National Indicator System
  - School Finance Indicators Database
  - National and Within State Comparisons & DataViz
  - Closer look at Nebraska
- Using Empirical Evidence to Recalibrate School Finance Formulas

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"

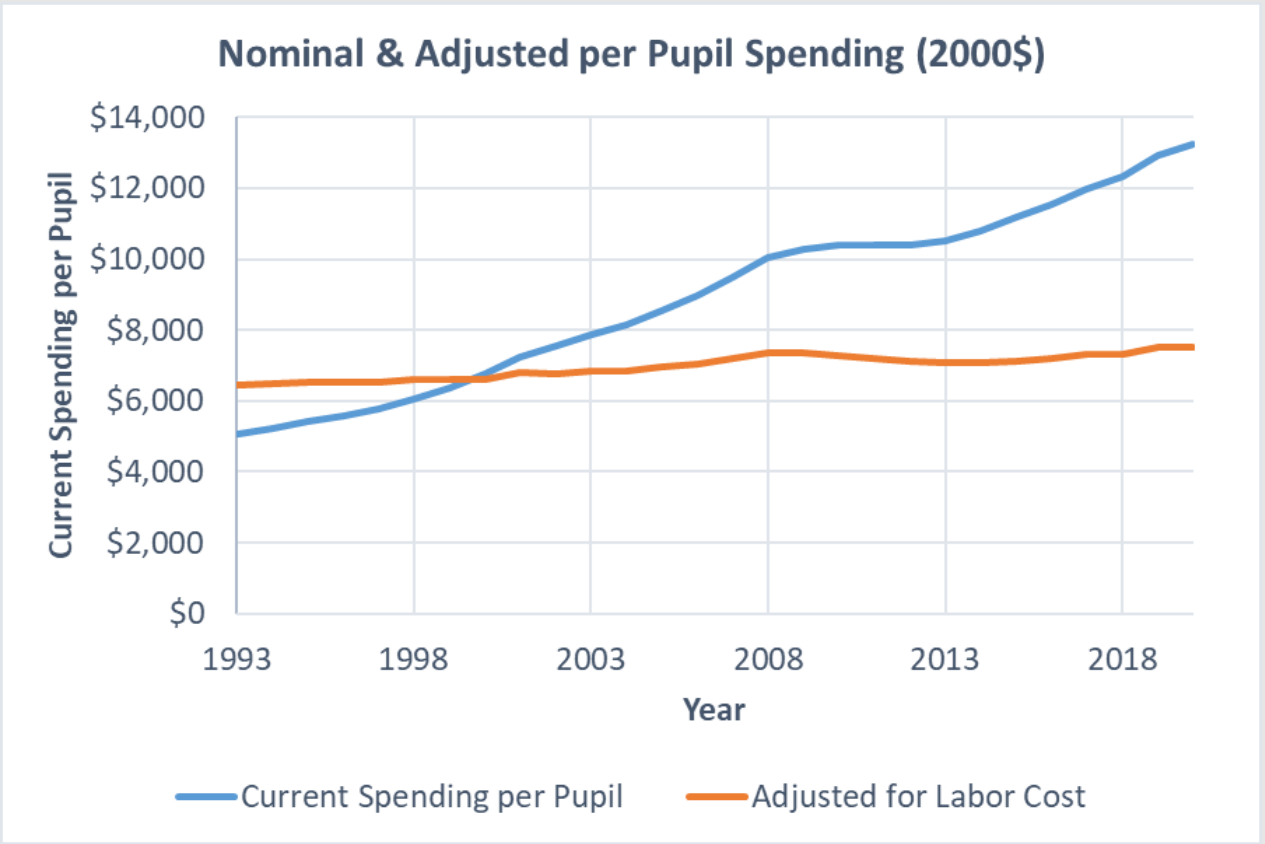


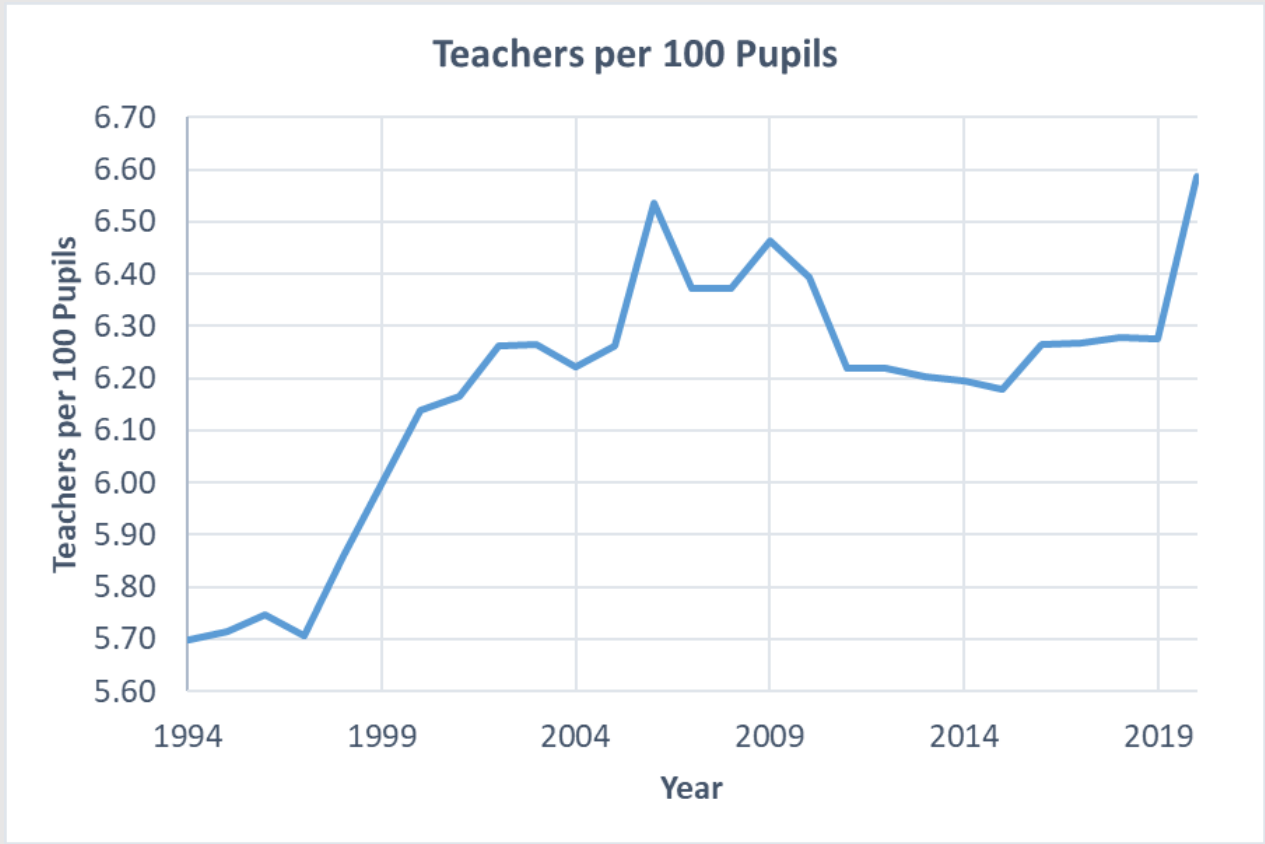
- Clouds of doubt
  - Weak correlation between spending and outcomes?
    - **More thorough statistical analysis finds otherwise!**
- The Long Term Trend
  - Spending has doubled and performance is flat?
    - **But a) spending hasn't doubled and b) performance isn't flat!**
    - **AND, more thorough 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

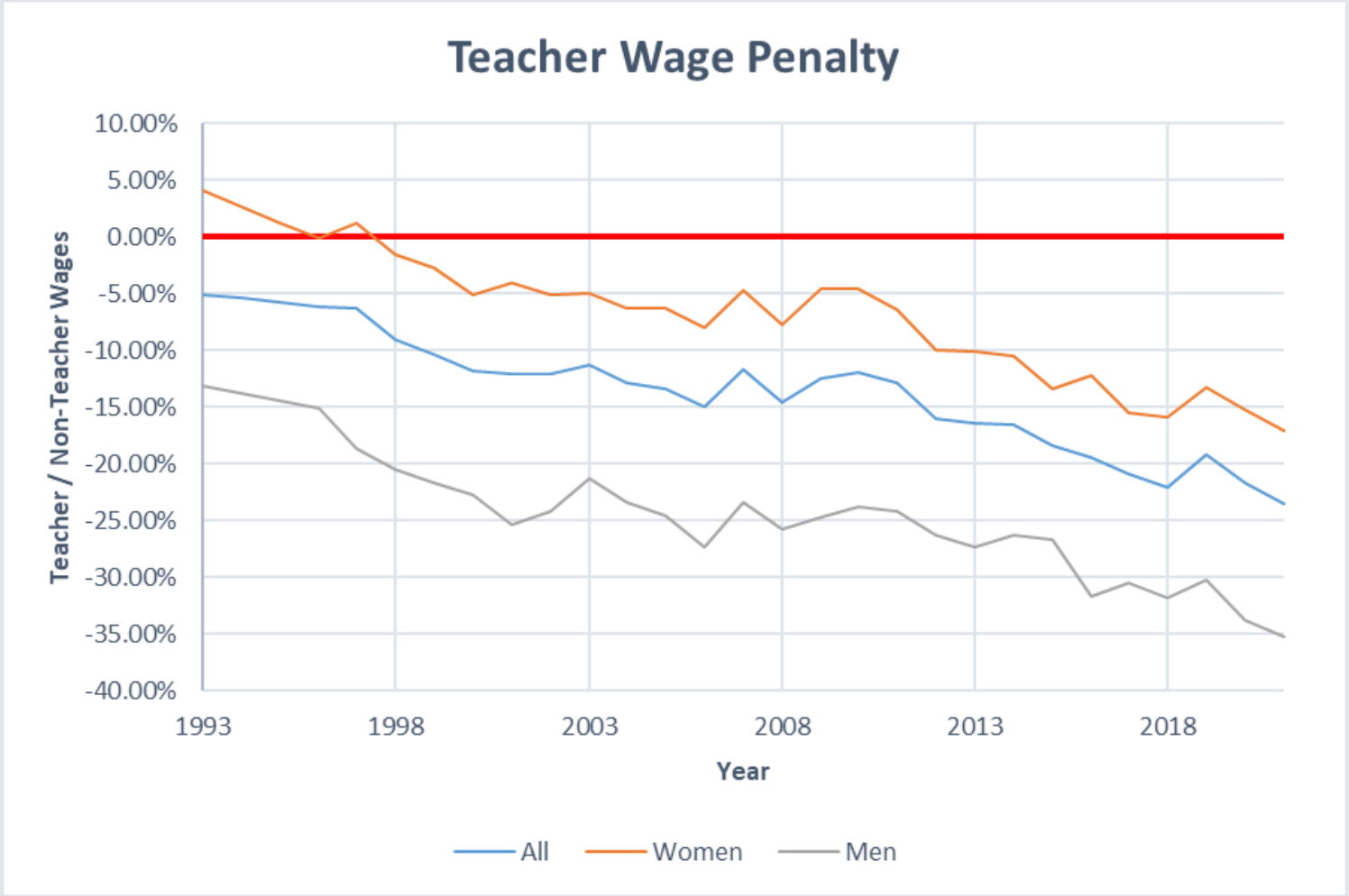
- **Recent national school finance studies** (Jackson et al., Lafortune & Rothstein, Candelaria & Shores)
  - Substantial and sustained state school finance reforms have led to improved short term and long term student outcomes
    - The funding increases which led to improved student outcomes generally 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/

Long Term Trends





Long Term Trends



From https://www.epi.org/publication/teacher-pay-penalty-2022/

State School Finance Systems

Conceptual Framing

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Goals of School Finance Systems

- 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 what 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 goals (which are often used for articulating constitutional rights).

14 Conceptions of Equity and Adequacy in School Finance

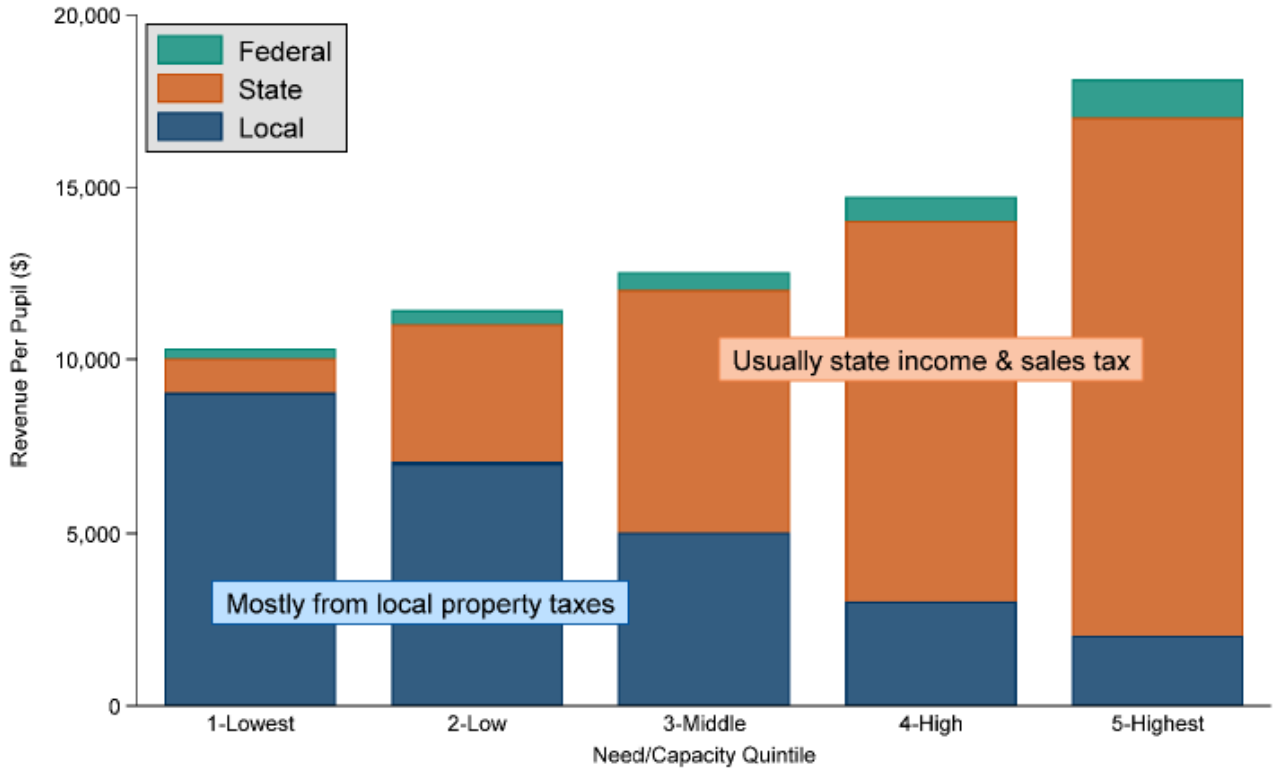
16 Measurement of Cost Differentials

Goals of State Aid Formulas

- Set spending targets (to meet outcome standards)
  - Account for differences in the costs of achieving equal educational opportunity (to achieve desired outcomes) across schools, districts, and the children they serve.
- Determine (state/local) cost sharing to meet those targets
  - 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.

Hypothetical State School Finance System

Figure 2. Hypothetical Progressive Foundation Aid Formula

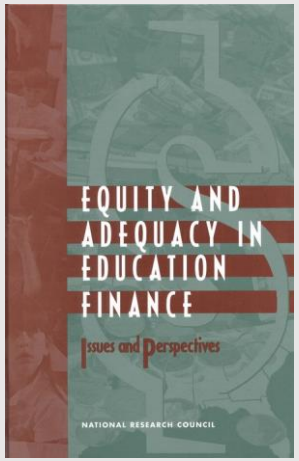


Notes: The share of revenue contributed by the state increases as local revenue capacity decreases. The target state and local spending level is based on student need and geographic cost adjustments.

Basic Principles of “Costs” & “Equal Opportunity”

- It costs more to achieve higher than lower outcomes
  - All else equal, the per pupil spending required to achieve higher, and broader outcome goals is higher than the per pupil spending required to achieve narrower and/or lower goals
- It costs more to achieve the same outcomes…
  - With some children than others
    - Collective, social context effects (poverty)
    - Specific student needs (ELL, Disability)
  - In some settings than others
    - Economies of Scale – Small, sparsely populated remote school districts
    - Regional variations in the competitiveness of wages (labor market effects)

16 Measurement of Cost Differentials



8 Performance Standards and Educational Cost Indexes: You Can't Have One Without the Other

National Funding Adequacy & Outcomes

figure 1

Map of district funding gaps

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

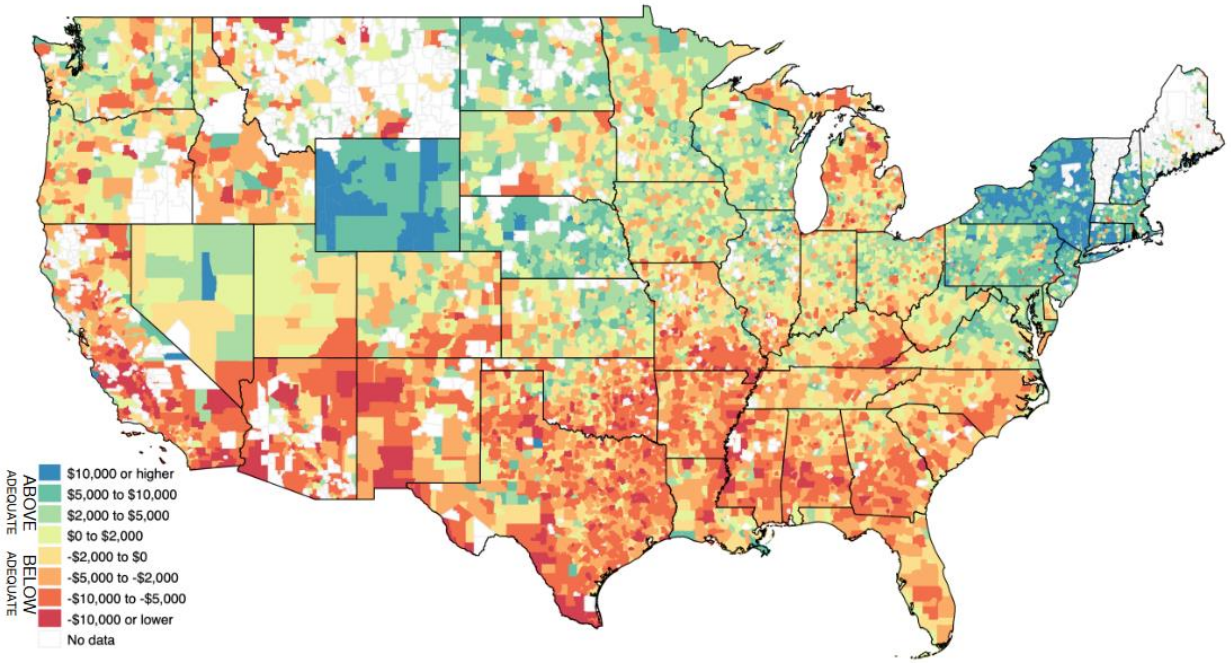
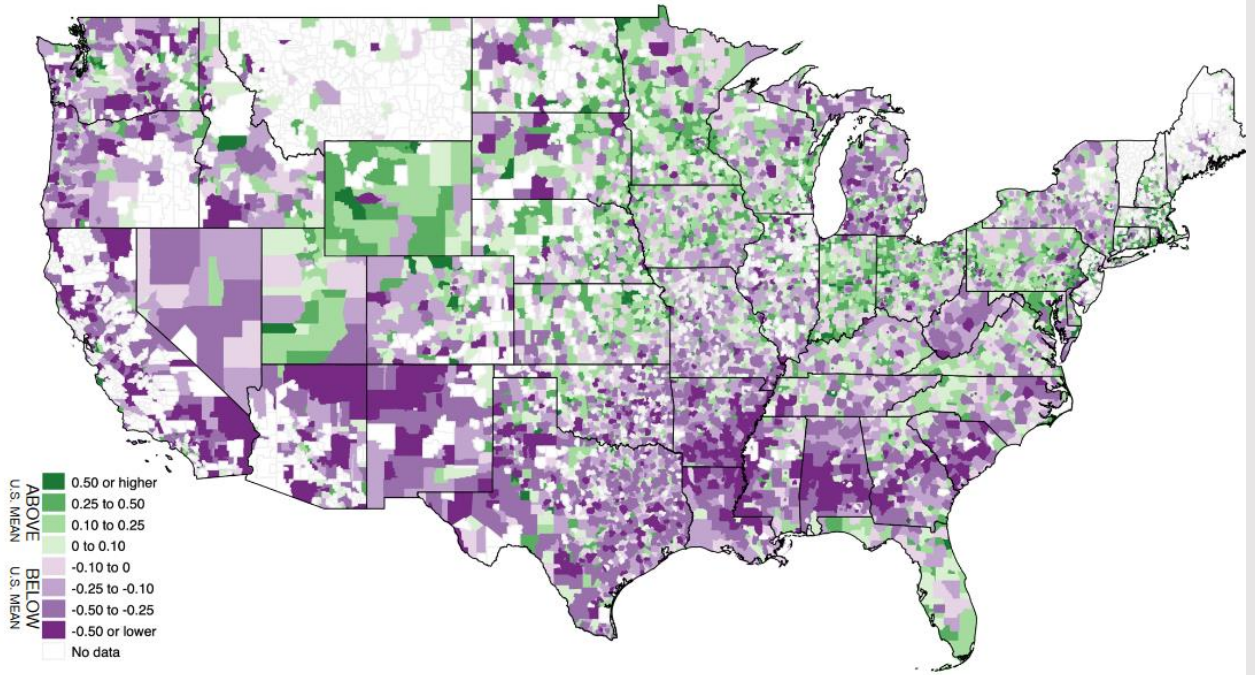


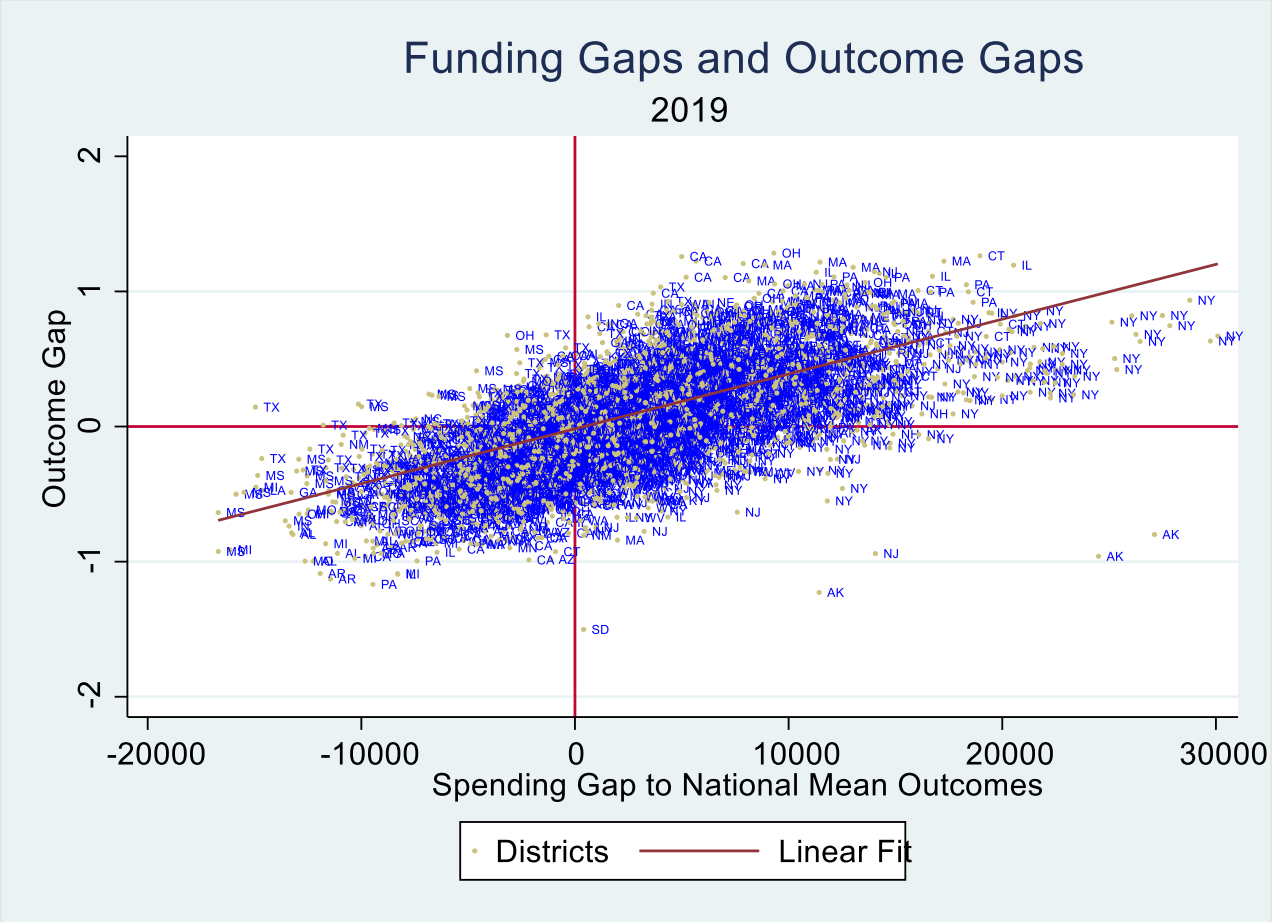
figure 2

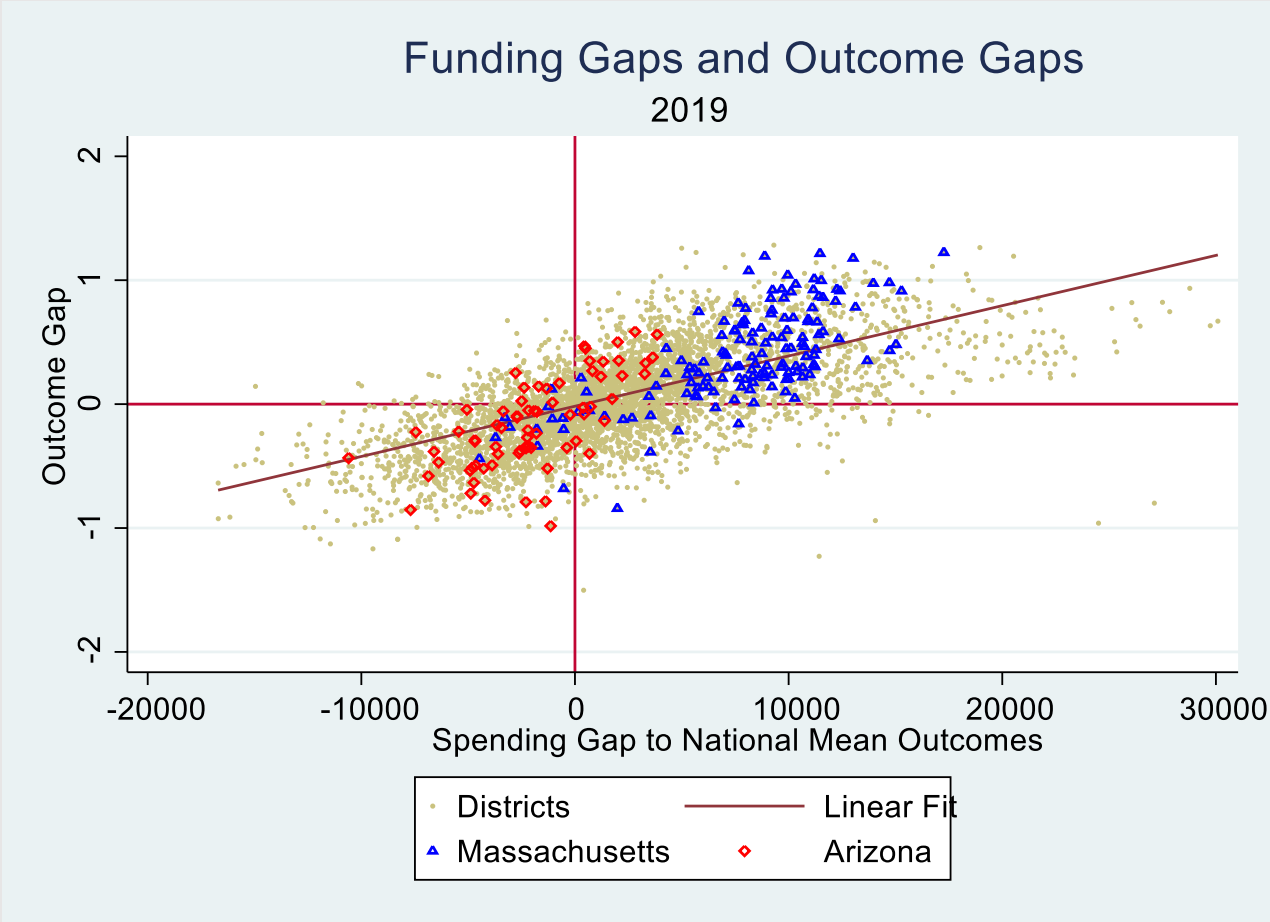
Map of district testing outcome gaps

Gap between district average and national average test scores (in standard deviations), 2018



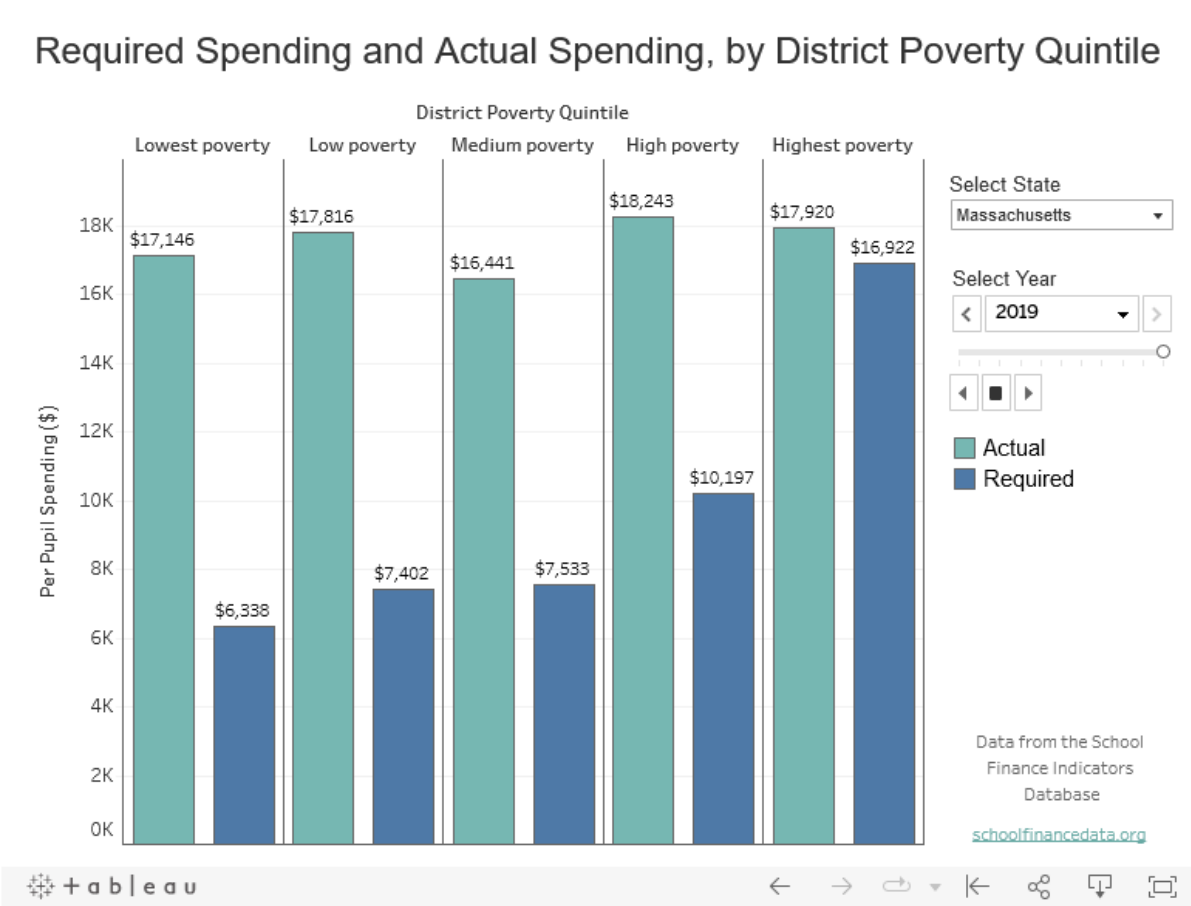
Districts & States with more adequate funding have higher outcomes



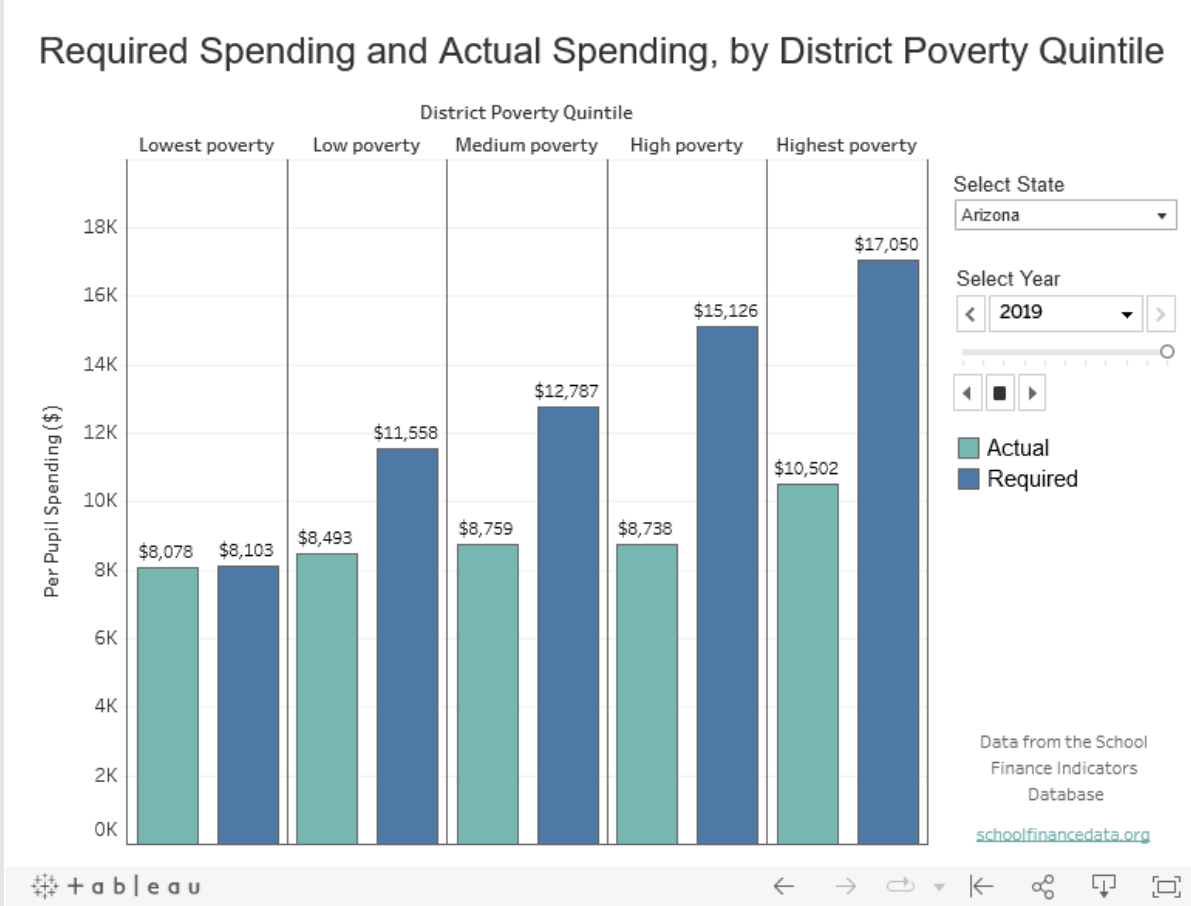


State Comparisons

Massachusetts

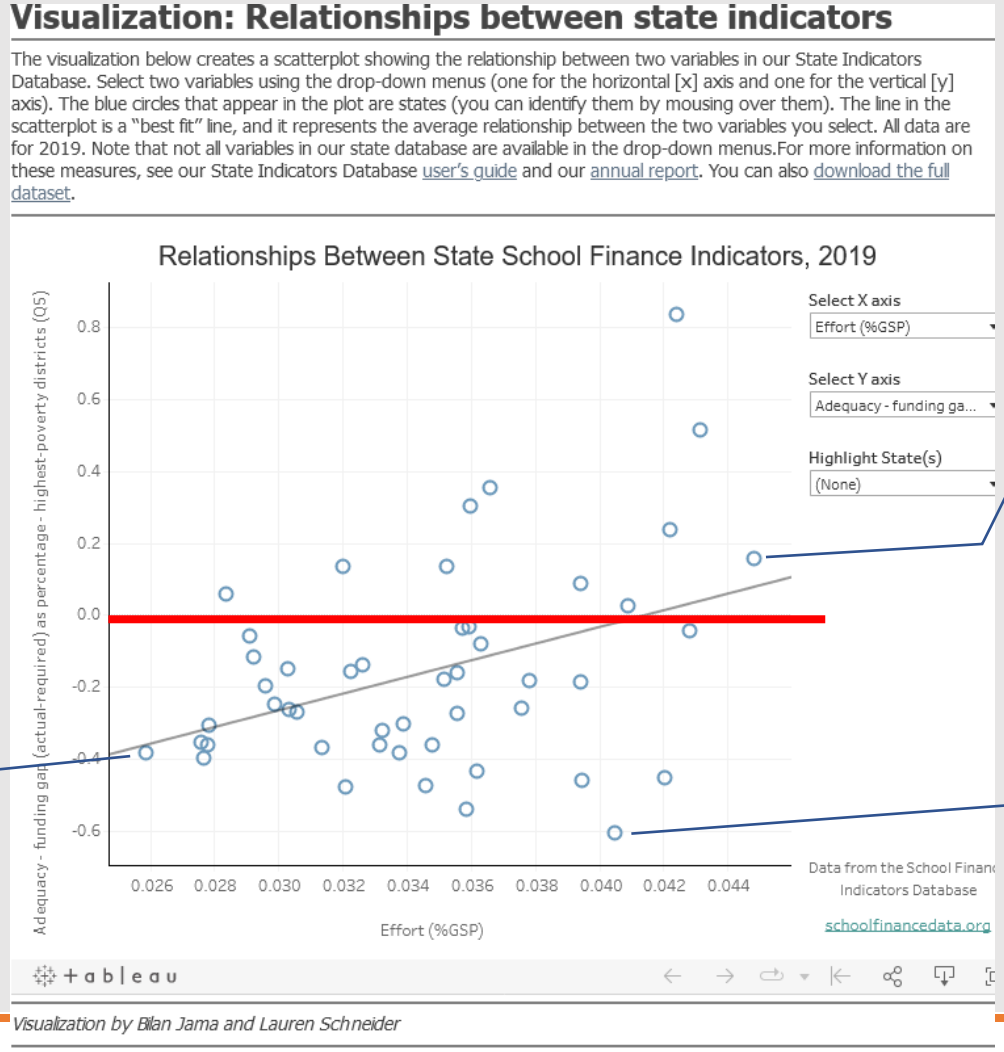


Arizona



How is effort related to “equal opportunity?”

- https://www.schoolfinancedata.org/visualization1/



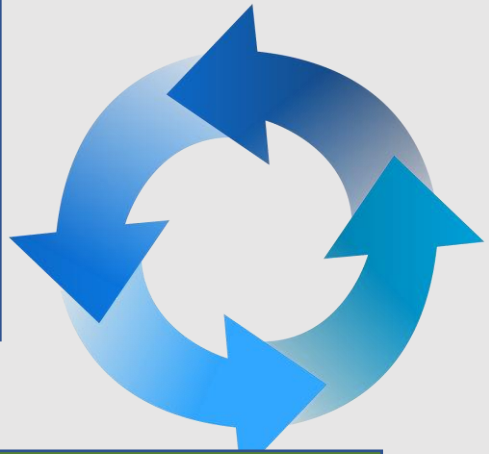
State that tries (puts up effort) and raises enough of money to achieve outcomes (NJ)

State that tries (puts up effort) but simply can’t raise adequate funding (MS)

State that doesn’t try, and falls short on adequate funding to achieve national average outcomes (AZ)

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!*

A National Indicator System

Linking Conceptual and Empirical Rigor to Evaluate State School Finance Systems

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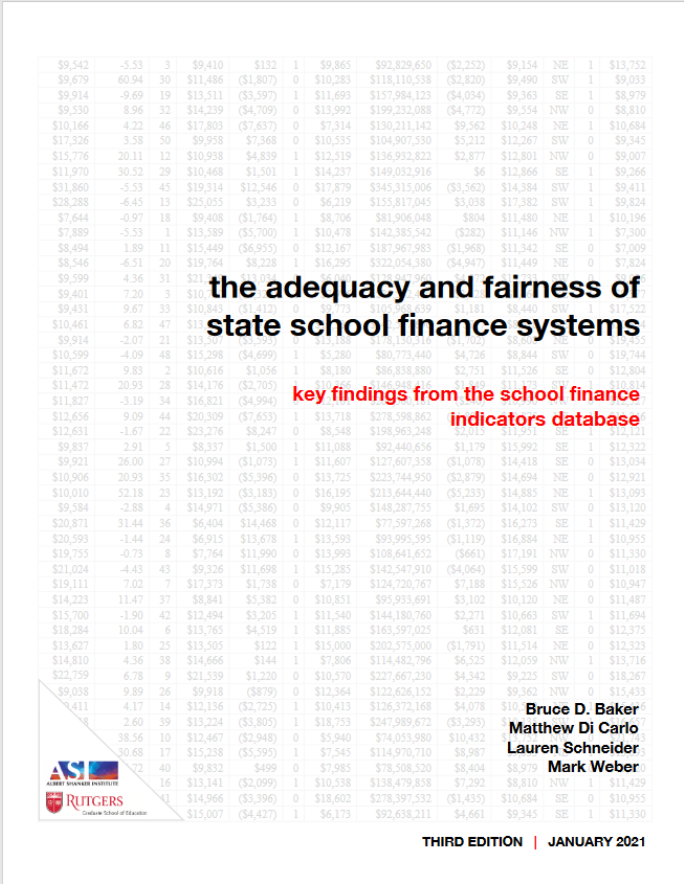
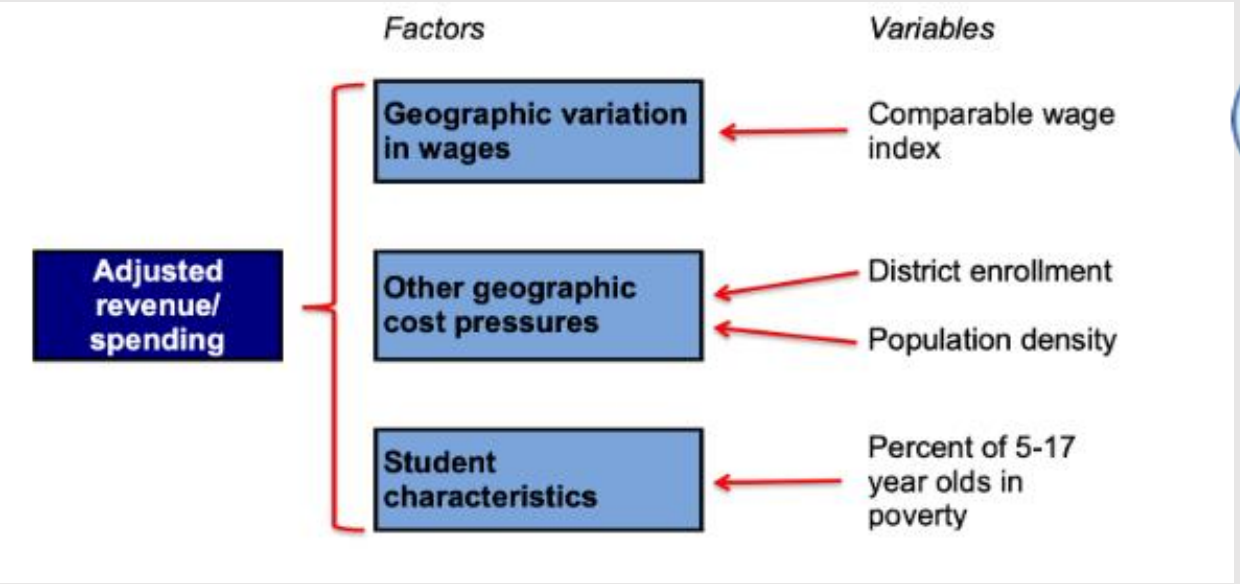
Indicators of State School Finance Systems

- **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”



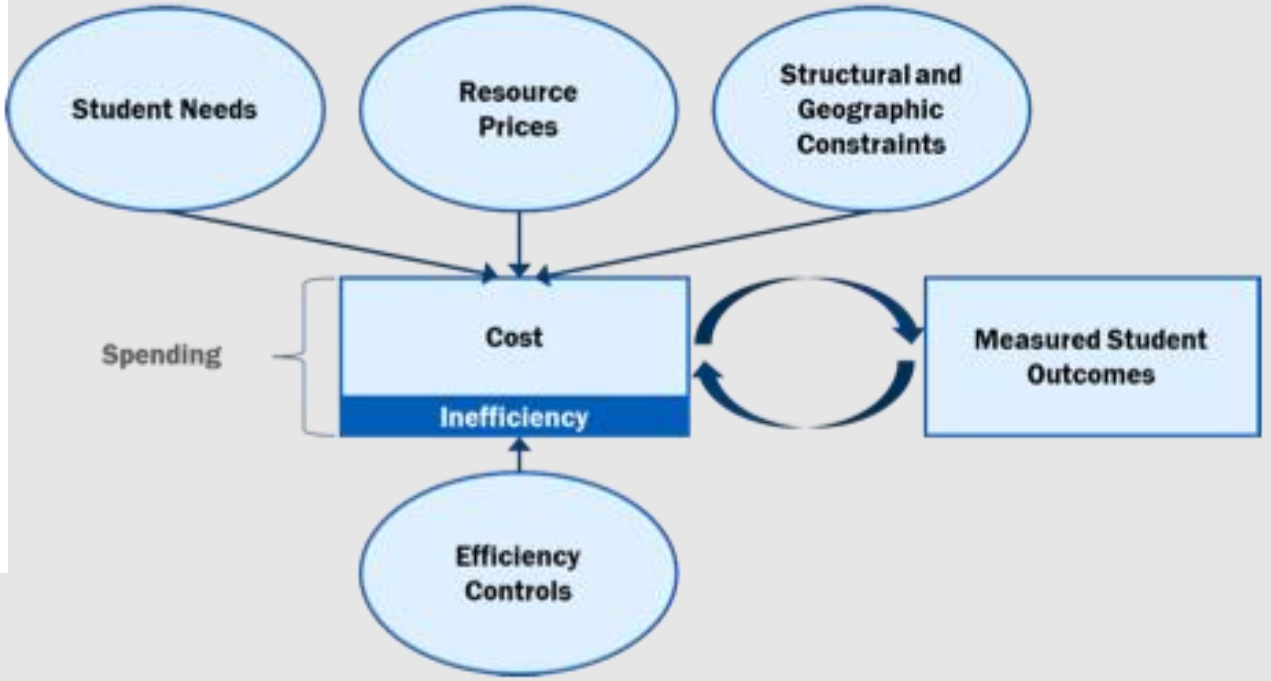
Modeling Differences in Spending & Cost

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

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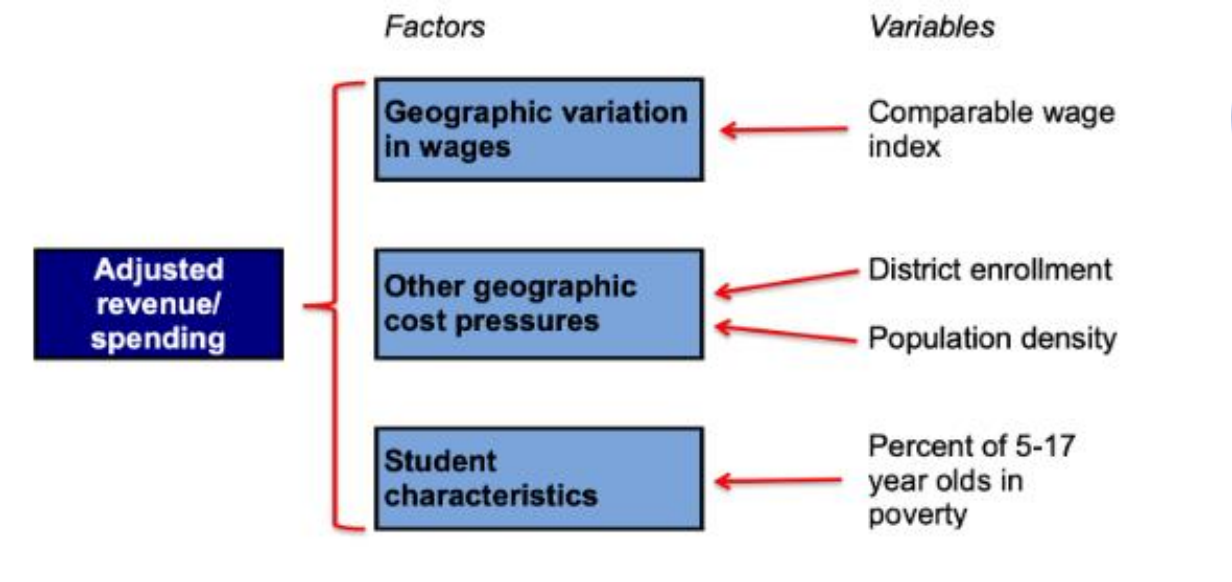

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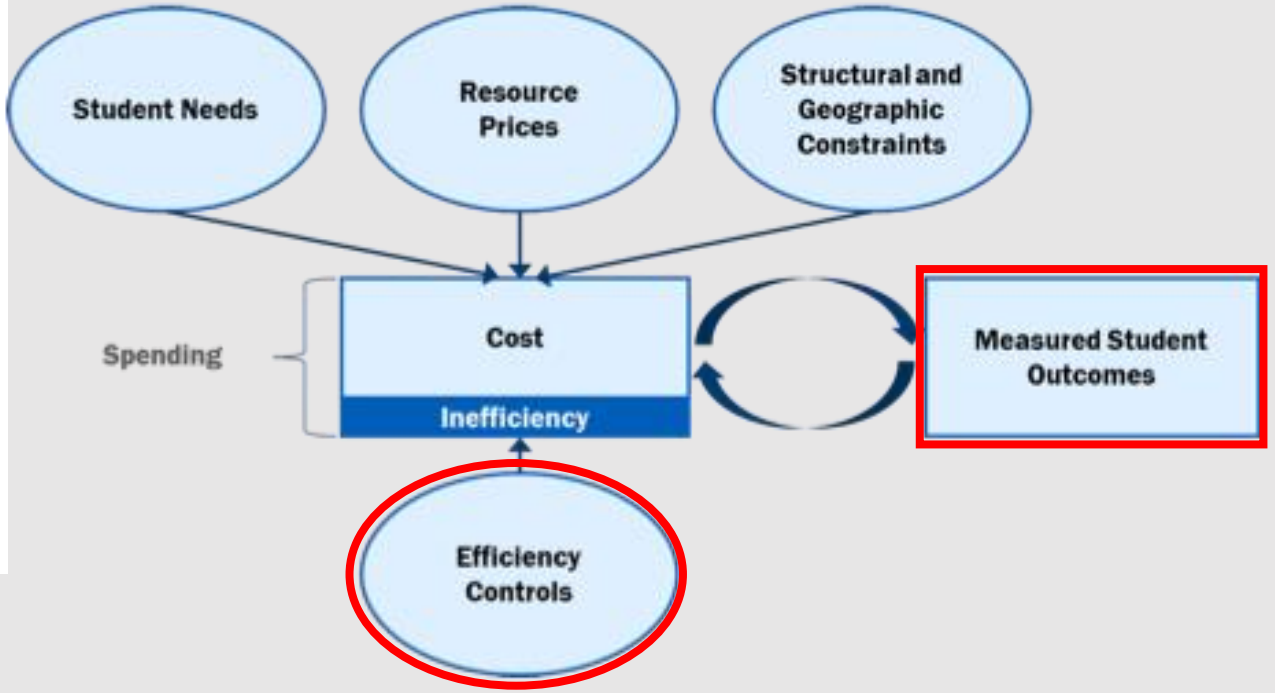

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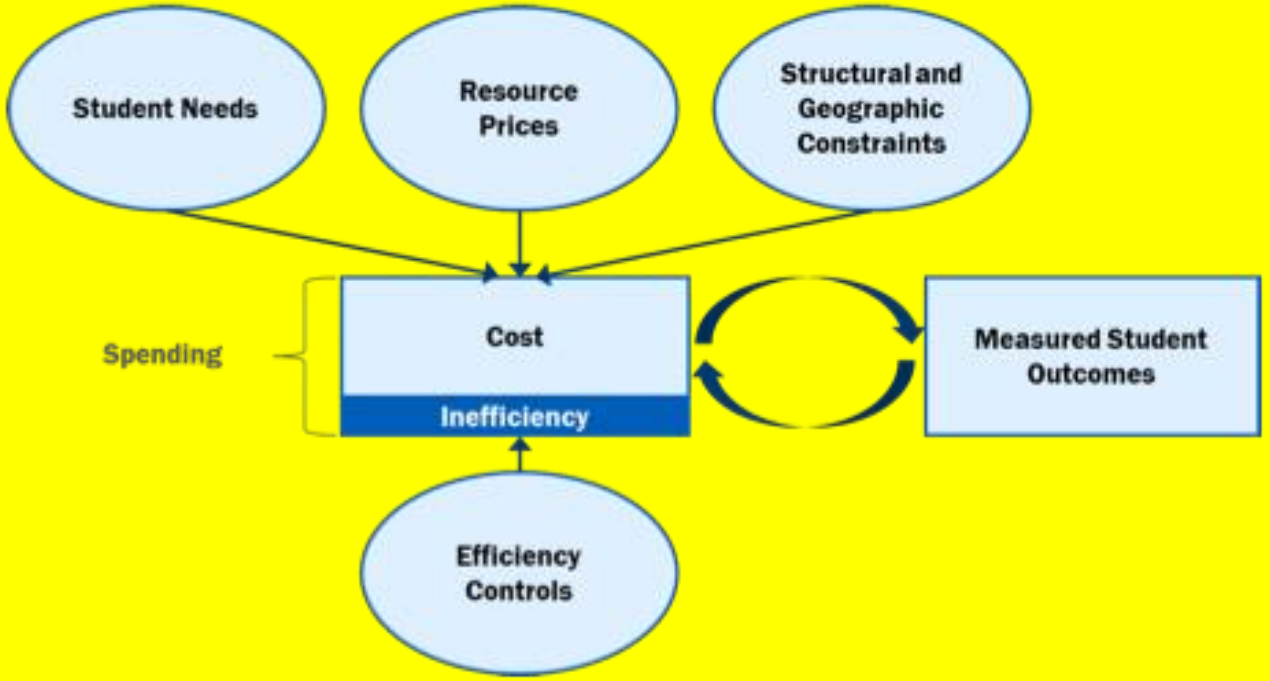


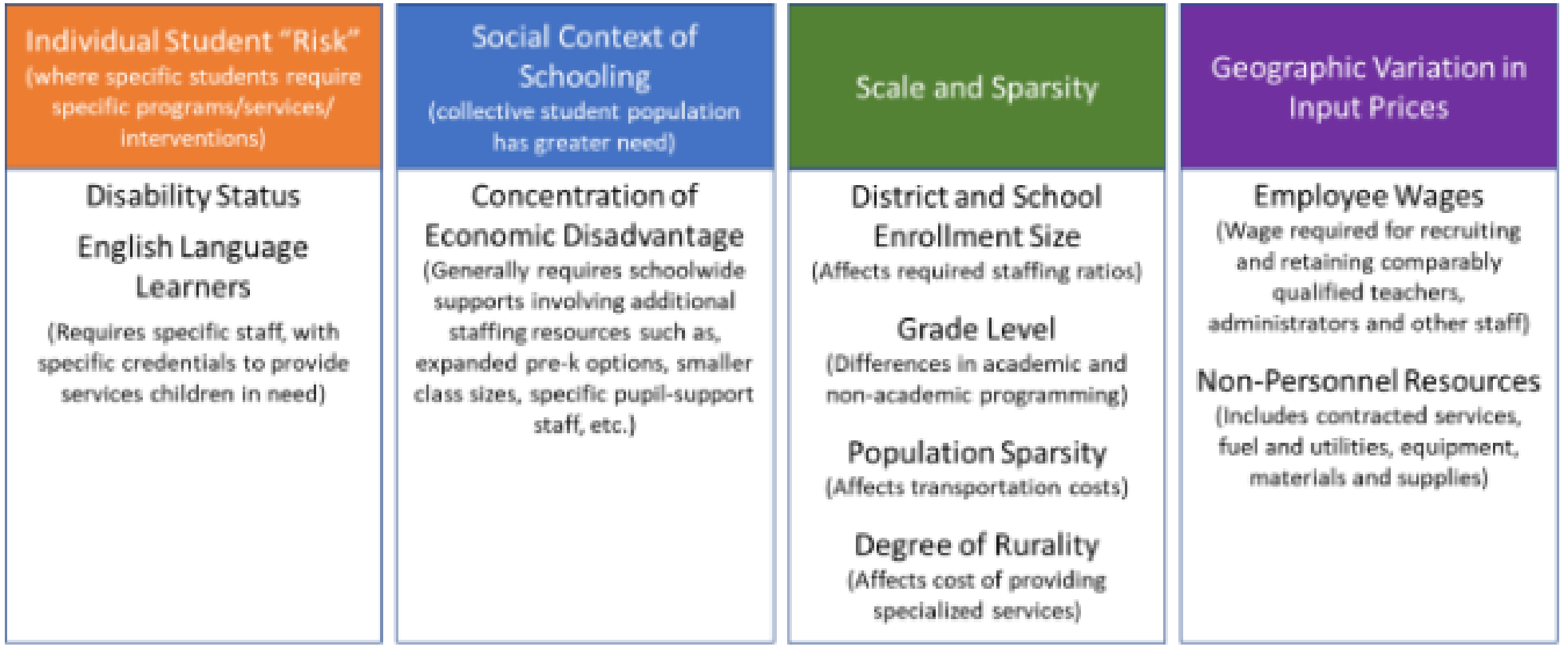
Q: How much spending is needed, controlling for need and cost factors (and inefficiency), to achieve specific outcome goals?

More Basics

- We can identify those factors – and the best measures of those factors – which most accurately predict "risk" that students will achieve lower outcomes (or have more difficulty achieving high/desired outcomes)
  - There's a large body of rigorous empirical evidence on this
- We can estimate the additional costs associated with offsetting that risk (via appropriate statistical methods)
  - There's also a large body of rigorous empirical evidence on this
- States (or the Federal Gov't) can use these estimates to:
  - Evaluate whether and to what extent existing school funding systems provide equal opportunity
  - Guide the reform and redesign of those systems

From related work in Vermont (2018)

Figure 2.1. Factors Affecting the Costs of Achieving Common Outcome Goals



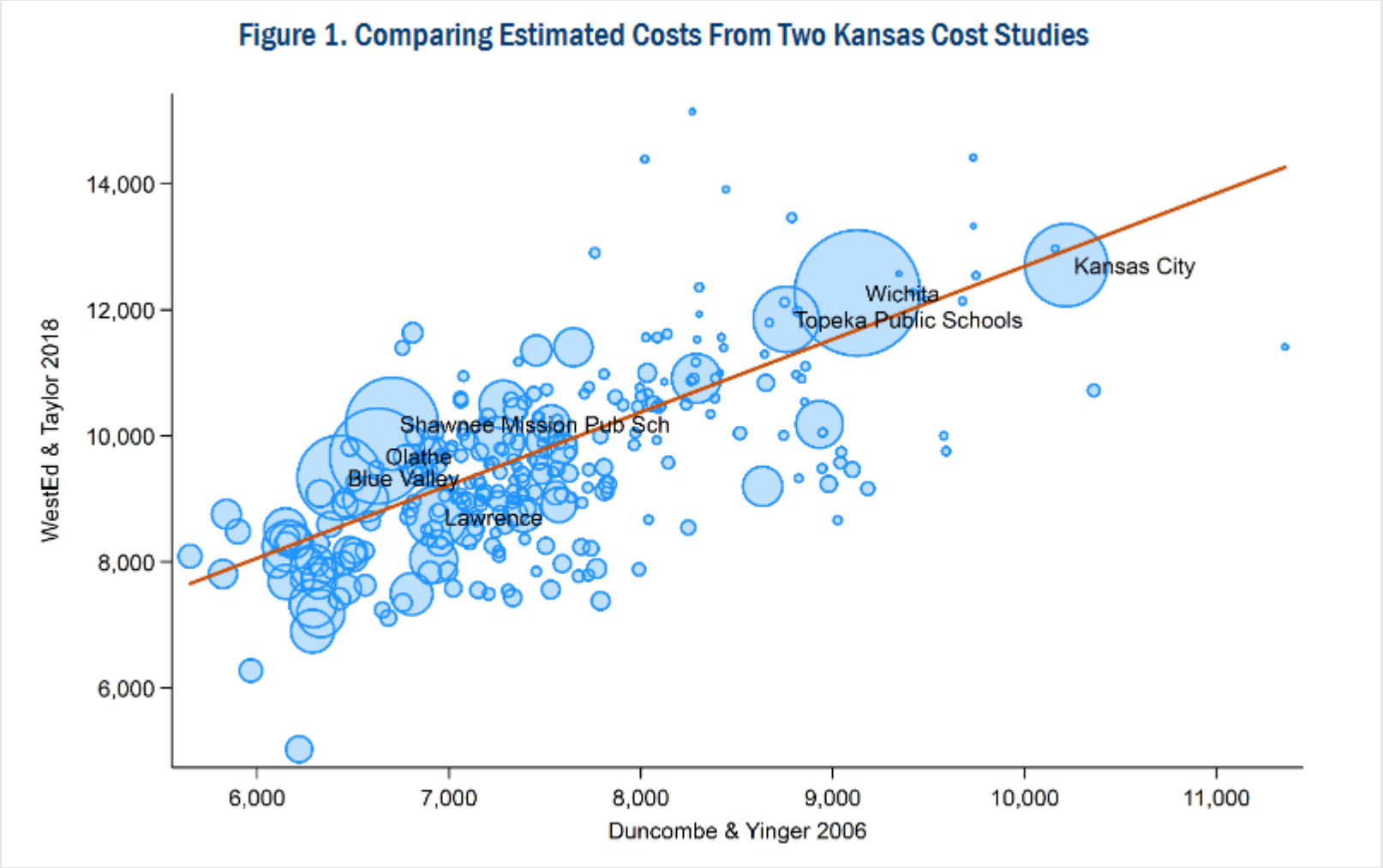
Note. Cost is the spending required, less inefficiency, to achieve any specific set of outcome goals

https://legislature.vermont.gov/assets/Legislative-Reports/edu-legislative-report-pupil-weighting-factors-2019.pdf

Recent State Policy Applications of Cost Modeling

- KANSAS
  - Taylor, L., Willis, J., Berg-Jacobson, A., Jaquet, K., & Caparas, R. (2018). Estimating the costs associated with reaching student achievement expectations for Kansas public education students: A cost function approach. San Francisco, CA: WestEd. Retrieved from https://probstforprogress.com/wp-content/uploads/2018/03/kansas_adequacy_study_cost_function_approach_20180315_final.pdf
  - Duncombe, W., Yinger, J. (2006) Estimating the Costs of Meeting Student Performance Outcomes Adopted by the Kansas State Board of Education. Prepared for the Kansas Legislative Division of Post Audit https://www.maxwell.syr.edu/uploadedFiles/cpr/research/cpr_research_education_finance_policy/Kansas_Report.pdf
- VERMONT
  - Kolbe, T., Baker, B.D., Atchison, D., Levin, J. (2019) Pupil Weighting Factors Report. State of Vermont, House and Senate Committees on Education. https://legislature.vermont.gov/assets/Legislative-Reports/edu-legislative-report-pupil-weighting-factors-2019.pdf
- NEW HAMPSHIRE
  - Baker, B.D., Atchison, D., Levin, J., Kearns, C. (2020) New Hampshire Commission to Study School Funding, Final Report: https://carsey.unh.edu/sites/default/files/media/2020/09/20-12685_nh_final_report_version_v5_draft_1.pdf

Kansas



Cost model results by two separate authors, 12 years apart, produced similar cost predictions for Kansas public school districts.

https://carsey.unh.edu/sites/default/files/media/2020/06/20-11882_5._primer_statevignettes_kansas_air_formatted_v5.pdf

Selected Peer Reviewed Cost Modeling Studies

- **Recent**
  - Kolbe, T., Baker, B. D., Atchison, D., Levin, J., & Harris, P. (2021). The additional cost of operating rural schools: Evidence from Vermont. *AERA Open*, *7*, 2332858420988868.
  - Zhao, B. (2022). Estimating the cost function of Connecticut public K–12 education: implications for inequity and inadequacy in school spending. *Education Economics*, 1-32.
  - Gronberg, T. J., Jansen, D. W., & Taylor, L. L. (2017). Are charters the best alternative? A cost frontier analysis of alternative education campuses in Texas. *Southern Economic Journal*, *83*(3), 721-743.
- **Older major works**
  - Duncombe, W., & Yinger, J. (2005). How much more does a disadvantaged student cost?. *Economics of Education Review*, *24*(5), 513-532.
  - Baker, B. D. (2011). Exploring the sensitivity of education costs to racial composition of schools and race-neutral alternative measures: A cost function application to Missouri. *Peabody Journal of Education*, *86*(1), 58-83.
  - Duncombe, W., & Yinger, J. (1998). School finance reform: Aid formulas and equity objectives. *National Tax Journal*, *51*(2), 239-262.
  - Duncombe, W., & Yinger, J. (2000). Financing higher student performance standards: the case of New York State. *Economics of Education Review*, *19*(4), 363-386.
  - Duncombe, W., & Yinger, J. (1997). Why is it so hard to help central city schools?. *Journal of Policy Analysis and Management: The Journal of the Association for Public Policy Analysis and Management*, *16*(1), 85-113.
  - Imazeki, J., & Reschovsky, A. (2004). Is No Child Left Behind an un (or under) funded federal mandate? Evidence from Texas. *National Tax Journal*, *57*(3), 571-588.
  - Gronberg, T. J., Jansen, D. W., & Taylor, L. L. (2012). The relative efficiency of charter schools: A cost frontier approach. *Economics of Education Review*, *31*(2), 302-317.

Data & Tools for School Finance Research, Exploration & Teaching

School Finance Indicators Database & Reports

MIAMI

Let's Explore "Equal Opportunity"

- National Education Cost Model
  - Predicts the per pupil spending levels needed for each district in the country to provide its students *equal opportunity to achieve national average outcomes*
    - Does not assume that goal to be adequate
  - Uses data on nearly every school district in the country, from 2009 to 2019 including nationally equated outcomes in reading and math (SEDA), school spending and a variety of economic and demographic characteristics
  - Applies statistical methods outlined by Duncombe & Yinger in their 1999 National Research Council chapter (and published in numerous peer reviewed economic, public policy and education journals over the decades)

My 2 Favorite Tools…

- https://www.schoolfinancedata.org/dcdviz1/
- https://www.schoolfinancedata.org/visualization1/

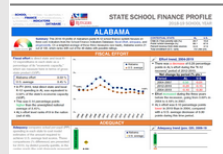
Data visualization tools

The links below direct to different data visualizations, all of which present data from either our State Indicators Database or District Cost Database. The visualizations are all updated annually with the latest data, and they are divided into three categories:

1. **One-page state profiles:** view one-page PDF summaries of each state's system
2. **District visualization:** display adequacy estimates for over 12,000 individual school districts
3. **State visualizations:** display individual states' estimates for a selection of measures

Additional information about each visualization can be found on its webpage. You can also download the full datasets in Excel or Stata format.

One-page state profiles

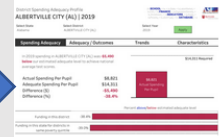


One-page state finance profiles

Single-page summaries of the effort, adequacy and fairness of each state's school finance system.

SFID data source: State Indicators Database

District visualization

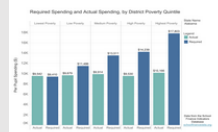


District spending adequacy profiles

Compare actual and estimated adequate spending levels for 12,000 U.S. public school districts between 2009-19.

SFID data source: District Cost Database

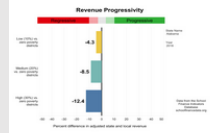
State visualizations



State spending adequacy

Compare actual and estimated adequate spending within states, by district poverty quintile (2009-2019).

SFID data source: State Indicators Database



State funding progressivity

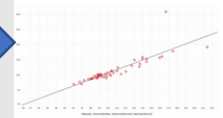
Differences in revenue between high and zero poverty districts for each state (1993-2019).

SFID data source: State Indicators Database

State fiscal effort

State and national trends in GSP- and income-based fiscal effort (2004-2019).

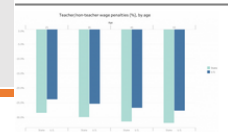
SFID data source: State Indicators Database



Relationships between state indicators

Create scatterplots comparing the relationships between your choice of two state indicators (2019 only).

SFID data source: State Indicators Database



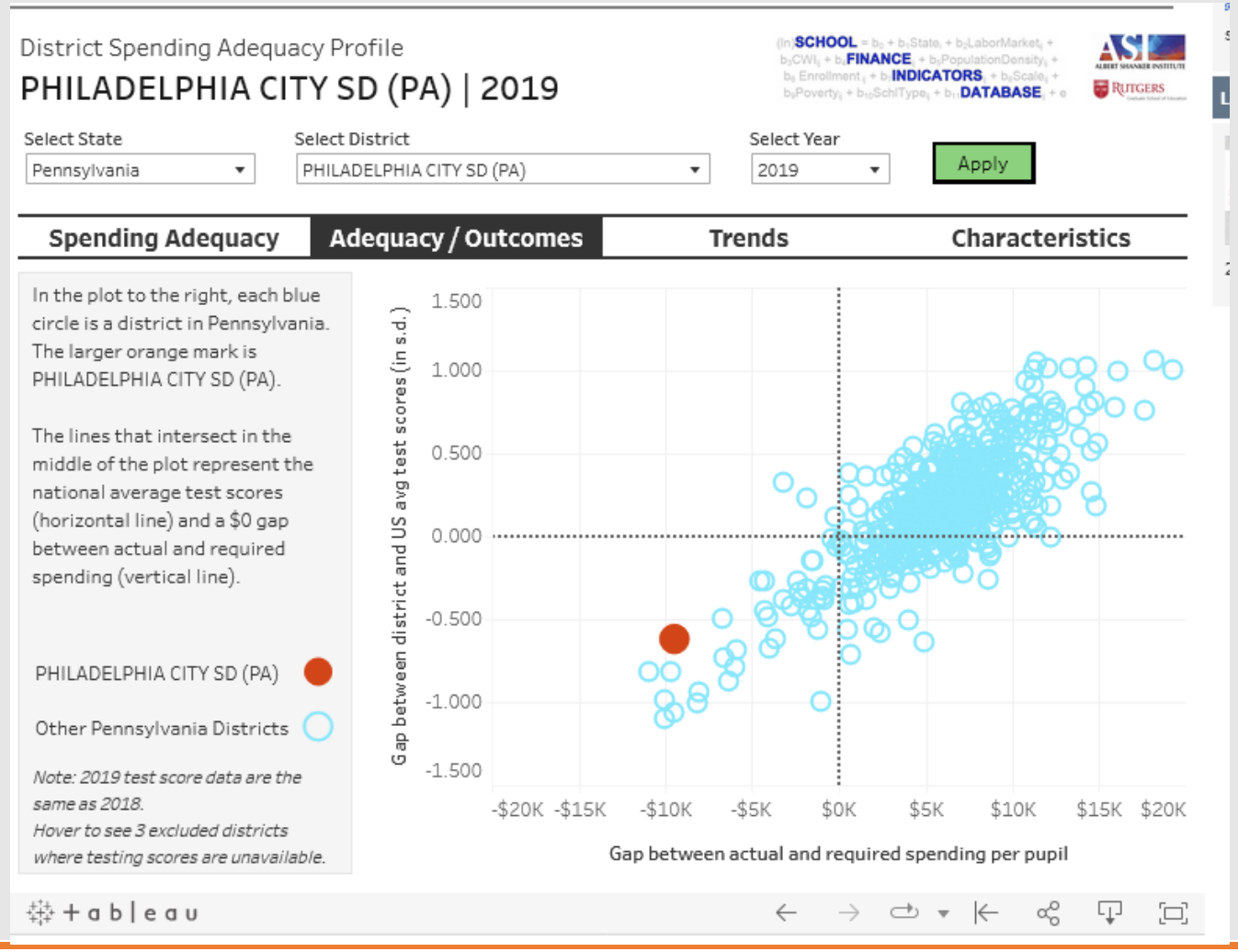
State teacher wage penalties

Teacher/non-teacher wage gaps for each state and nationally, by teacher age (2000-2019).

SFID data source: State Indicators Database

My favorite data visualizations…

- https://www.schoolfinancedata.org/dcdviz1/



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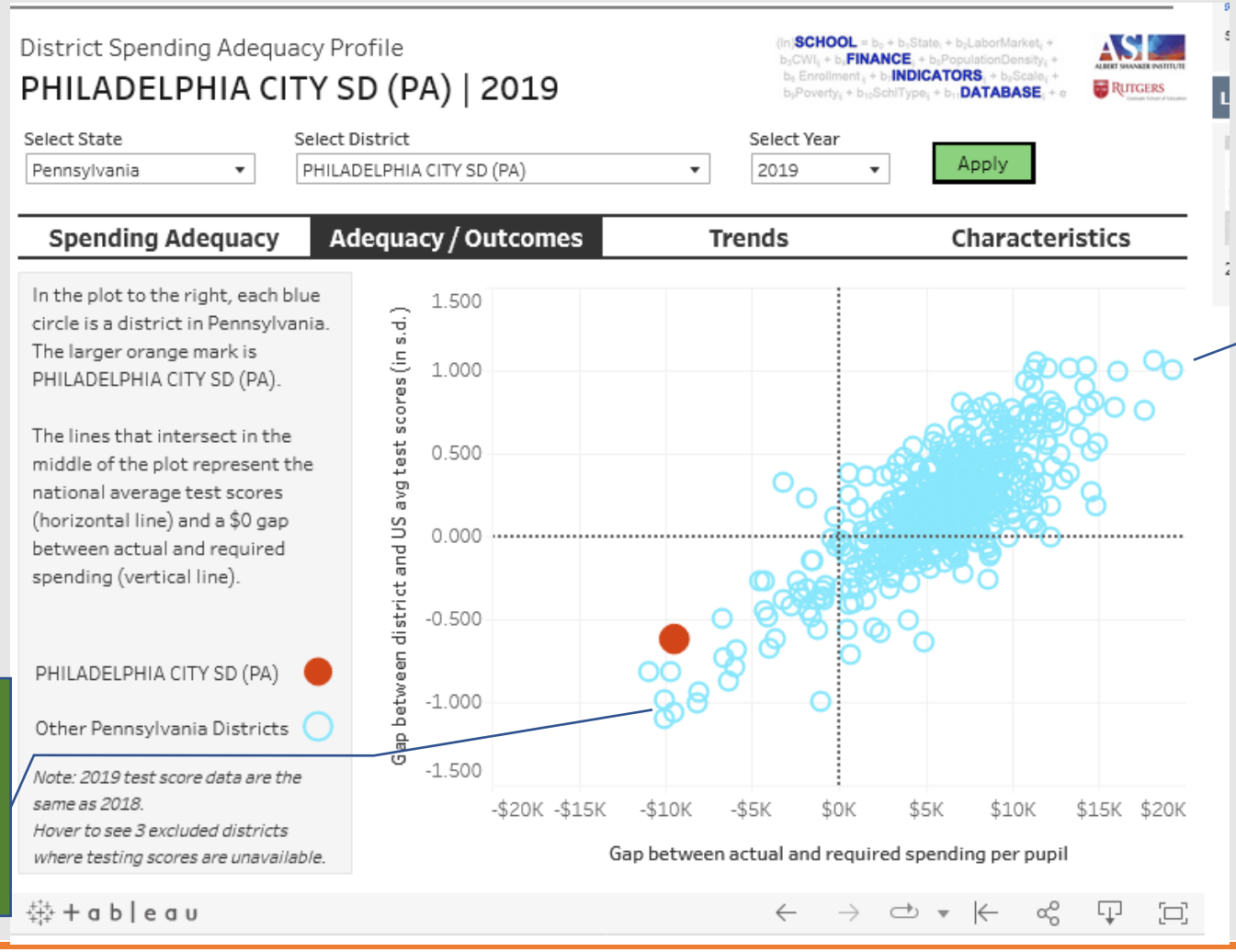

Districts with sufficient spending to meet or exceed national average outcomes, that do exceed national average outcomes

Districts lacking sufficient spending to achieve national average outcomes and fall below national average outcomes

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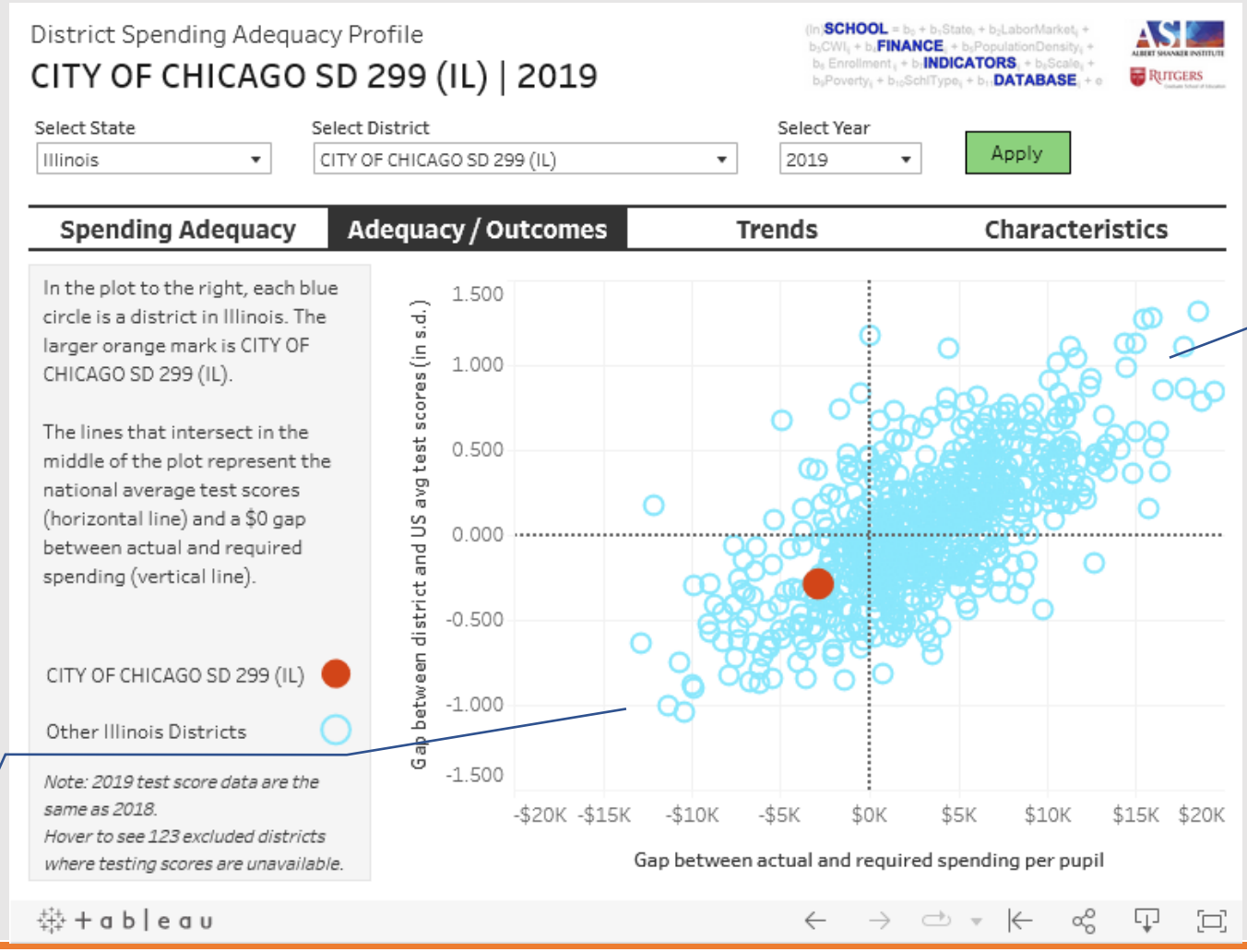

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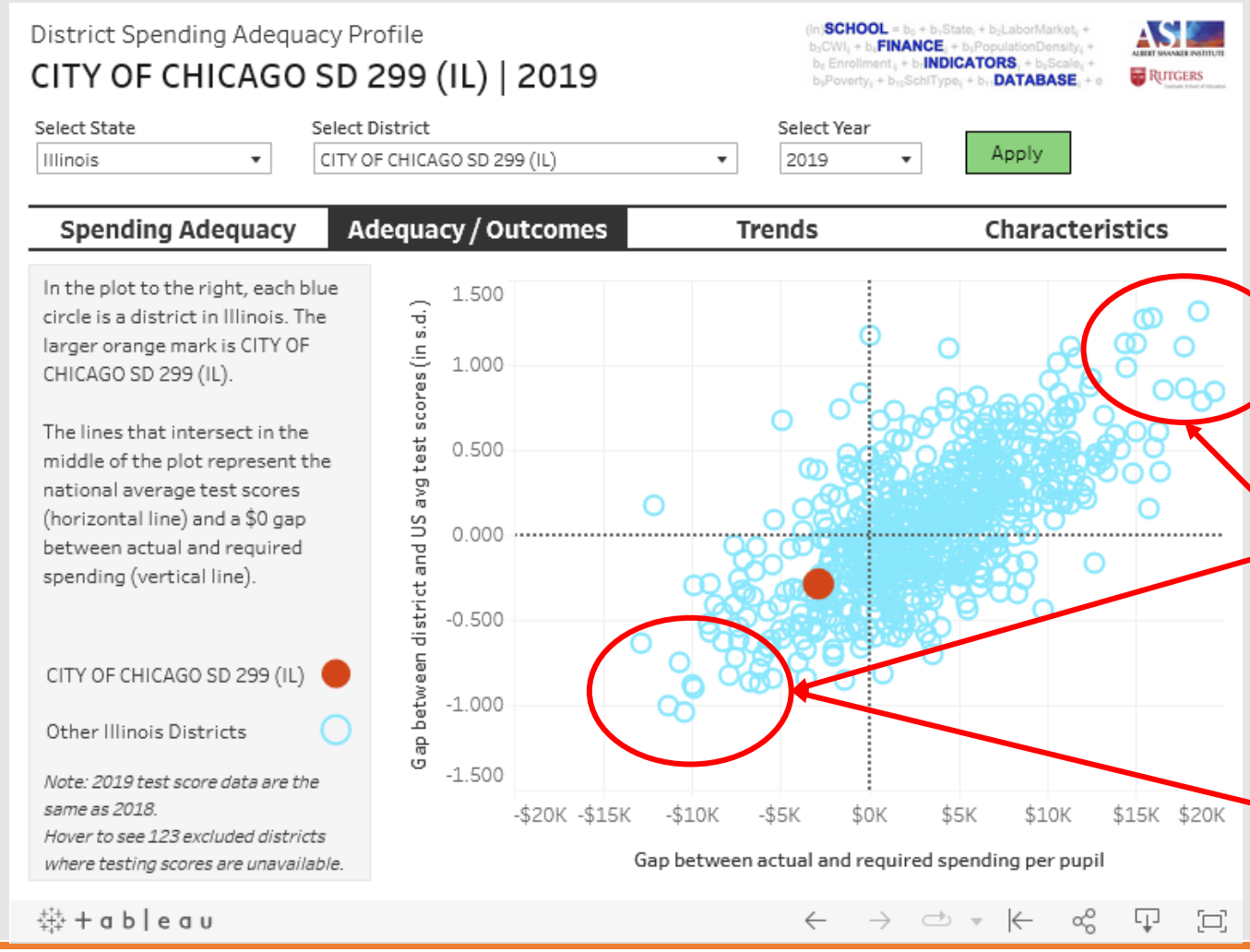
Districts lacking sufficient spending to achieve national average outcomes and fall below national average outcomes

Uses of this information

- https://www.schoolfinancedata.org/dcdviz1/

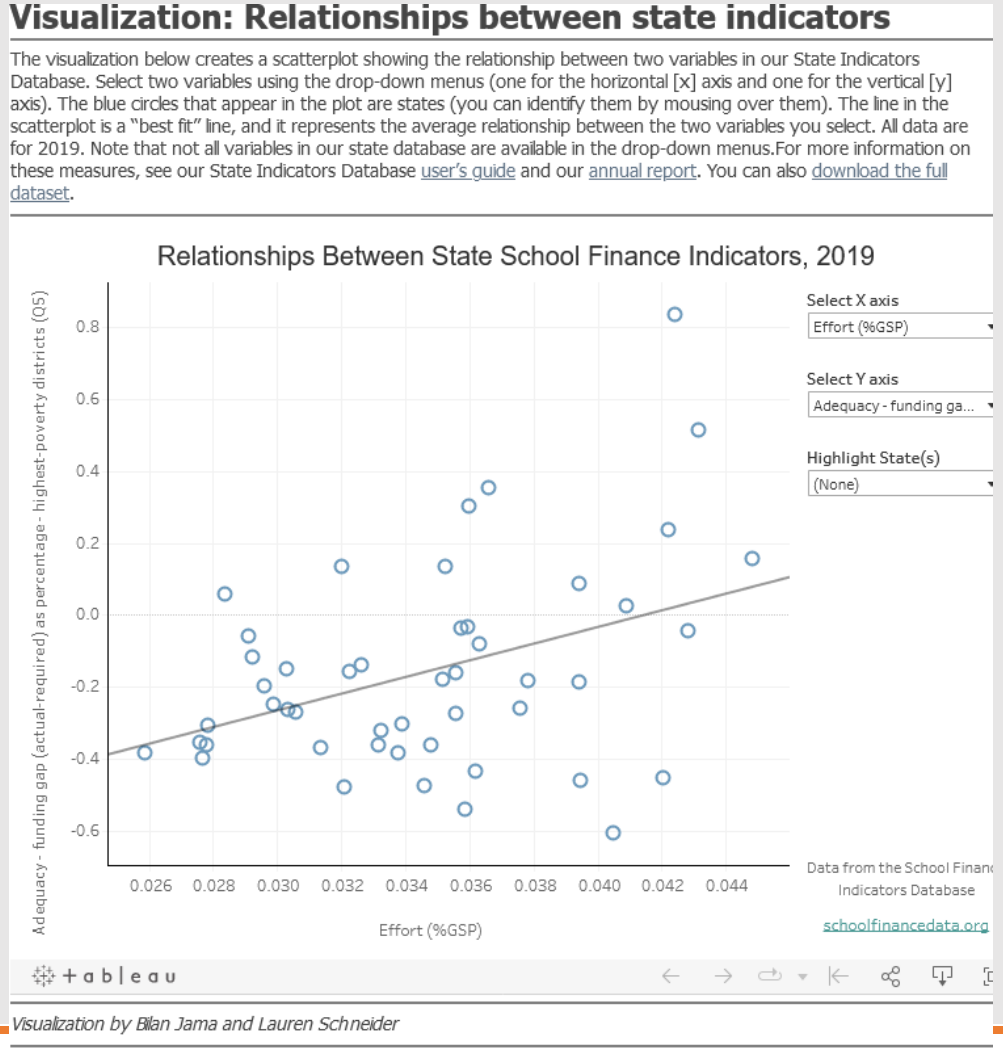


Deep dive stories exploring inequalities?

Who really is "underfunded?" (potential plaintiffs in litigation?)

How is effort related to “equal opportunity?”

- https://www.schoolfinancedata.org/visualization1/



How is effort related to “equal opportunity?”

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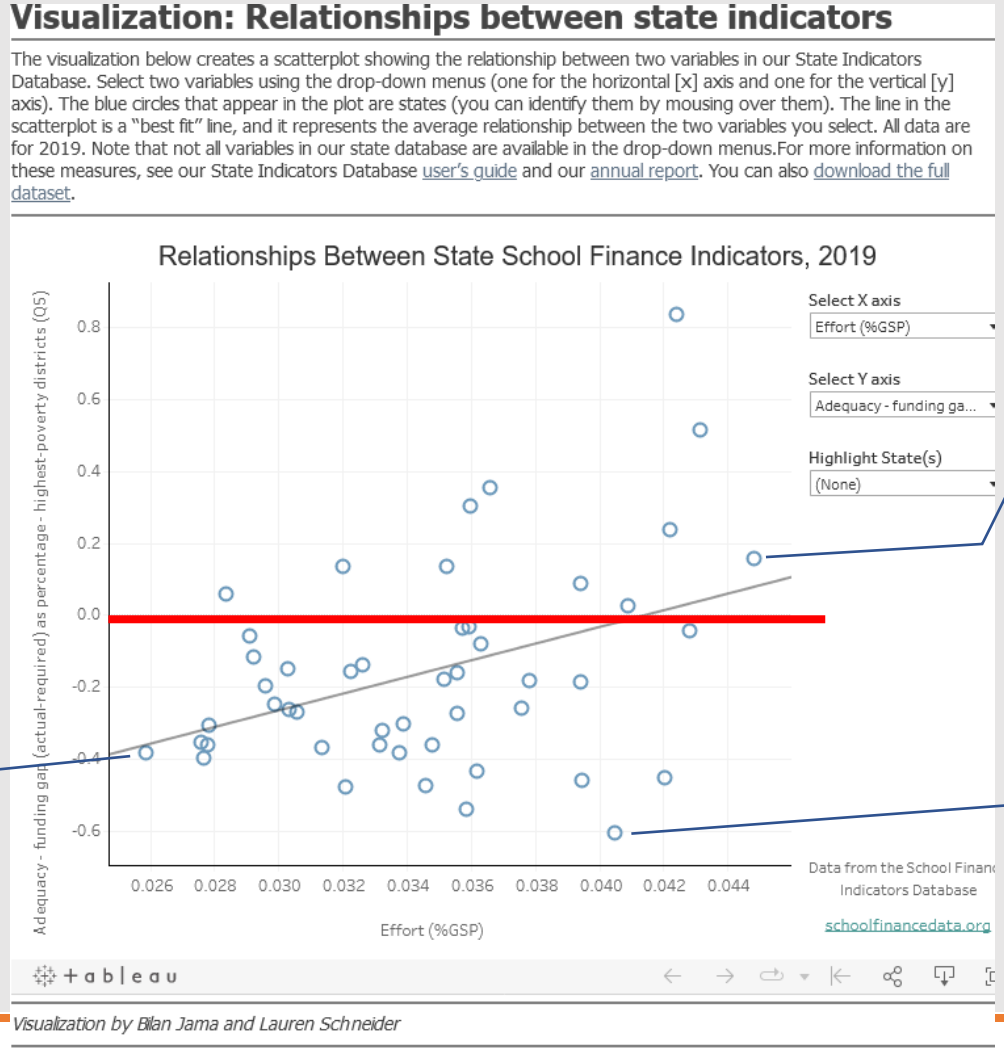
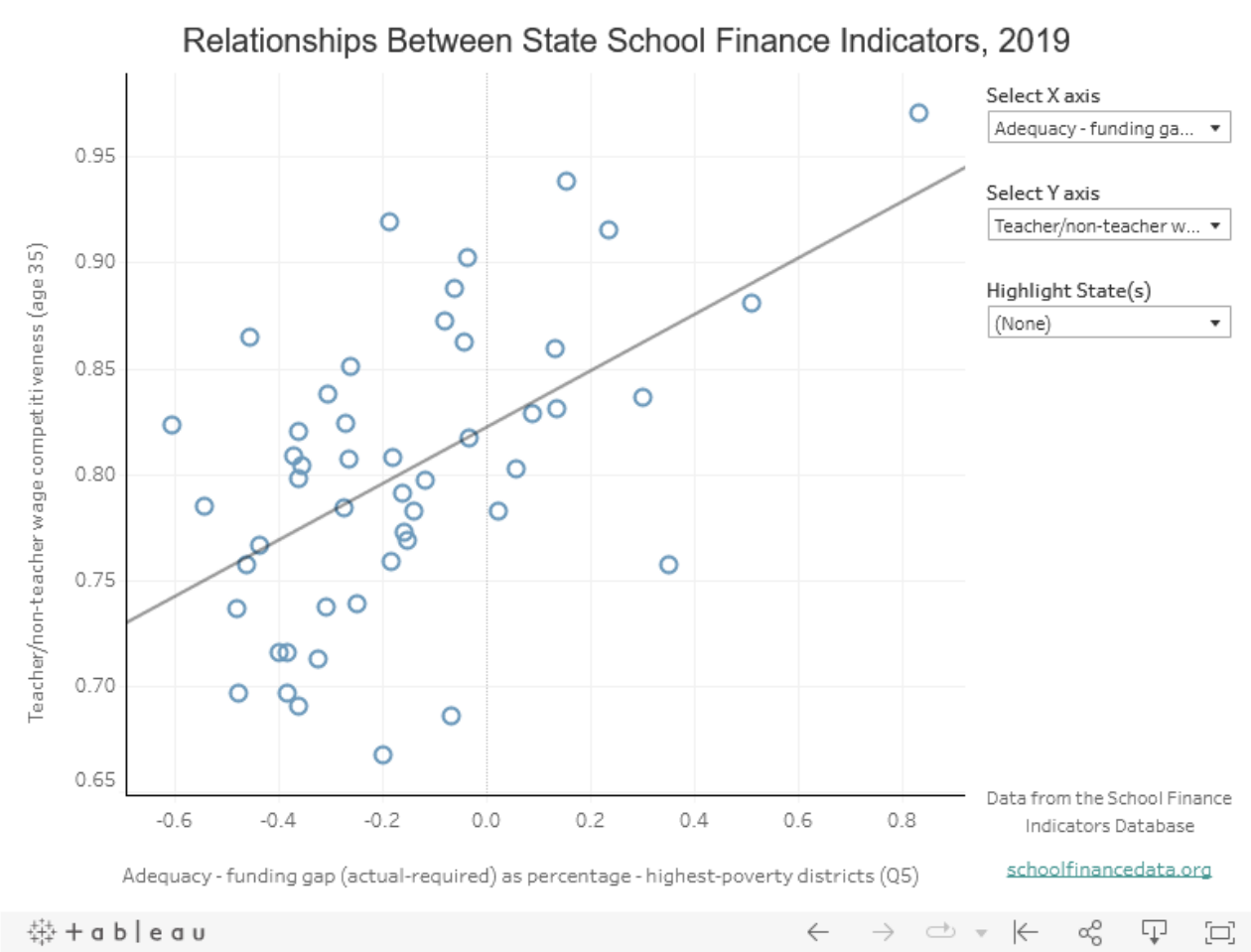


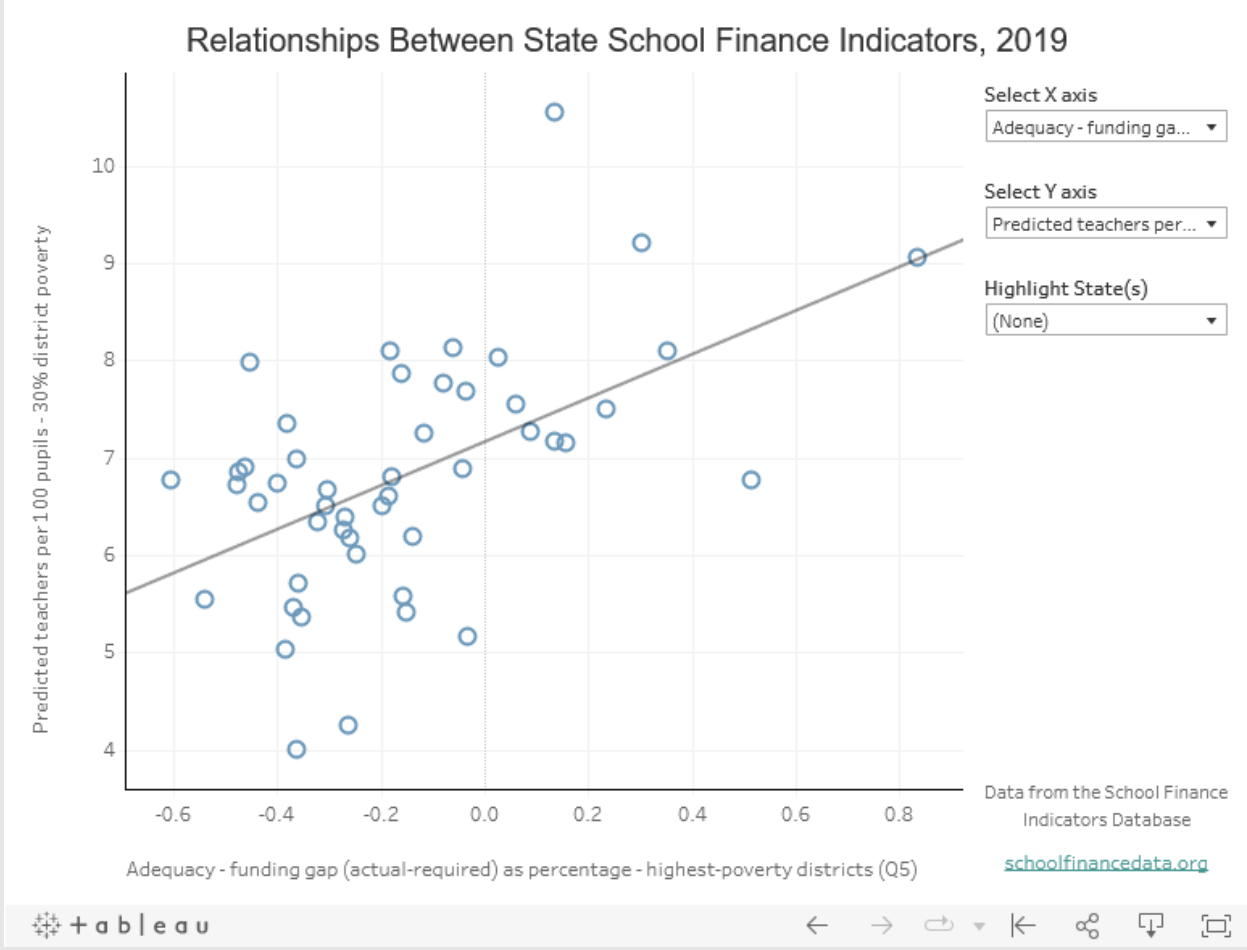
State that tries (puts up effort) and raises enough of money to achieve outcomes (NJ)

State that tries (puts up effort) but simply can’t raise adequate funding (MS)

State that doesn’t try, and falls short on adequate funding to achieve national average outcomes (AZ)

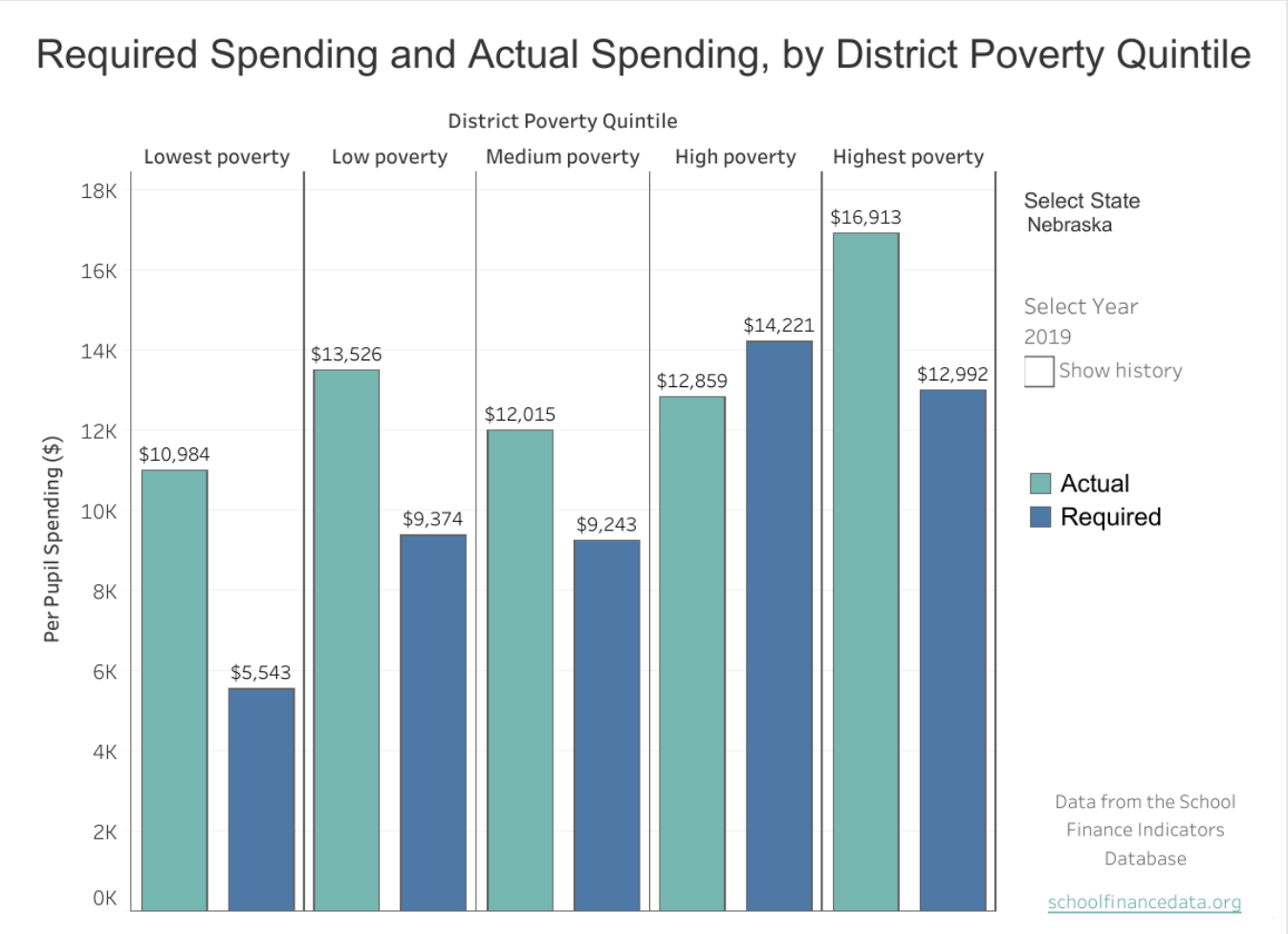
A few more fun examples



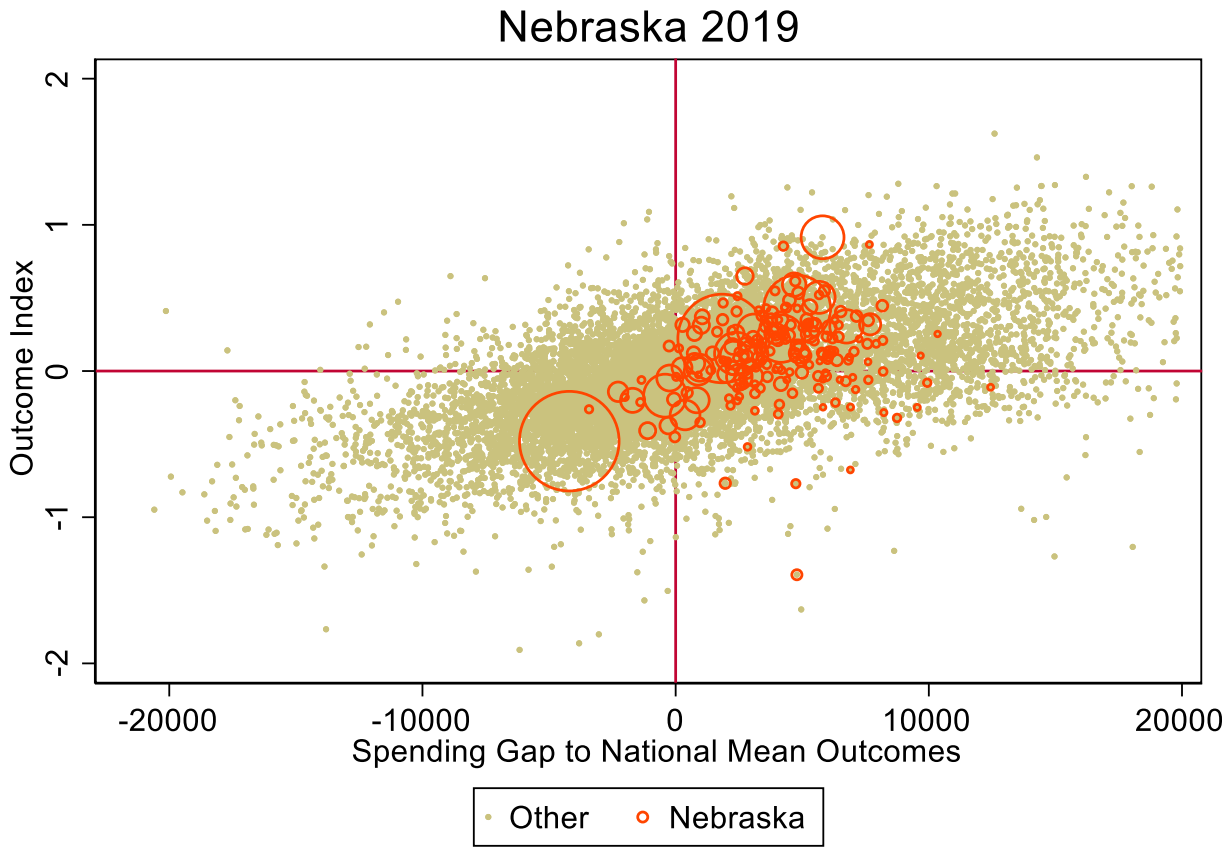


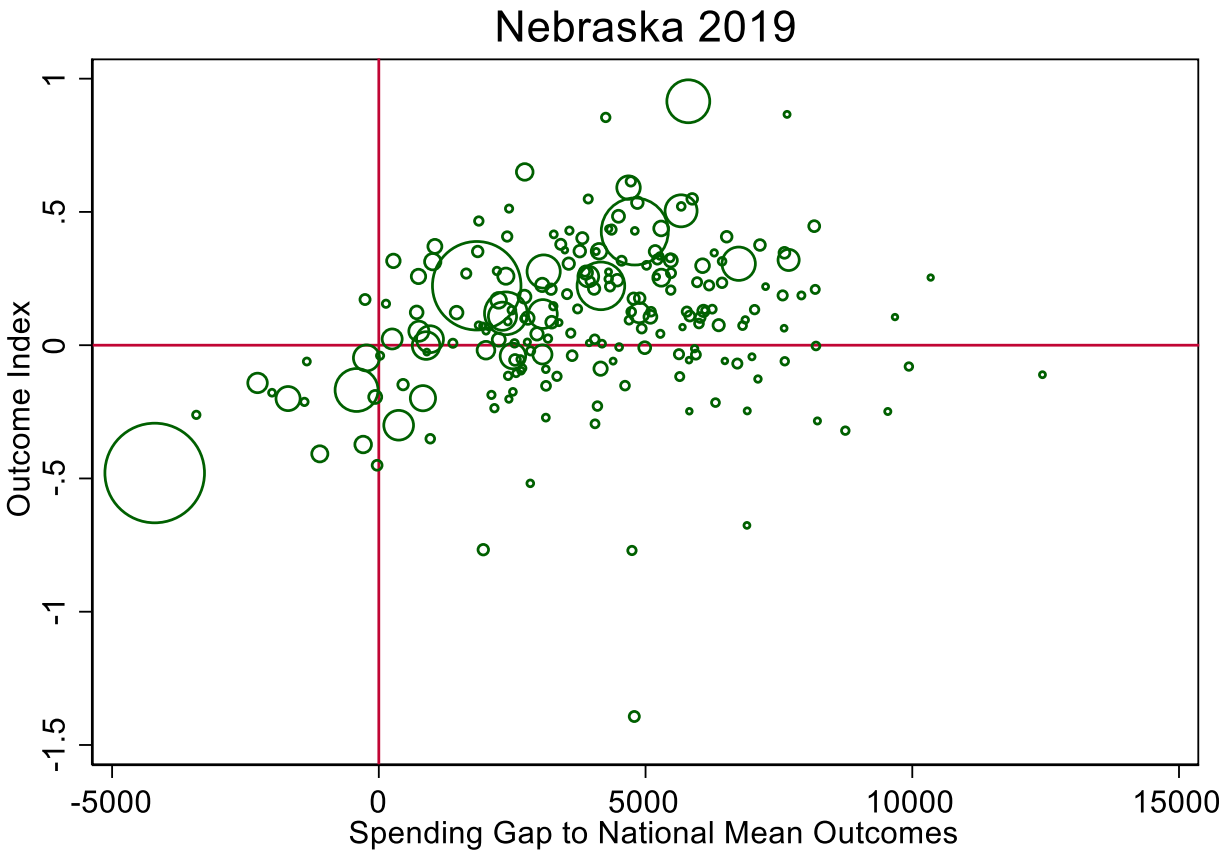
Nebraska

Funding Gaps by Poverty Quintile

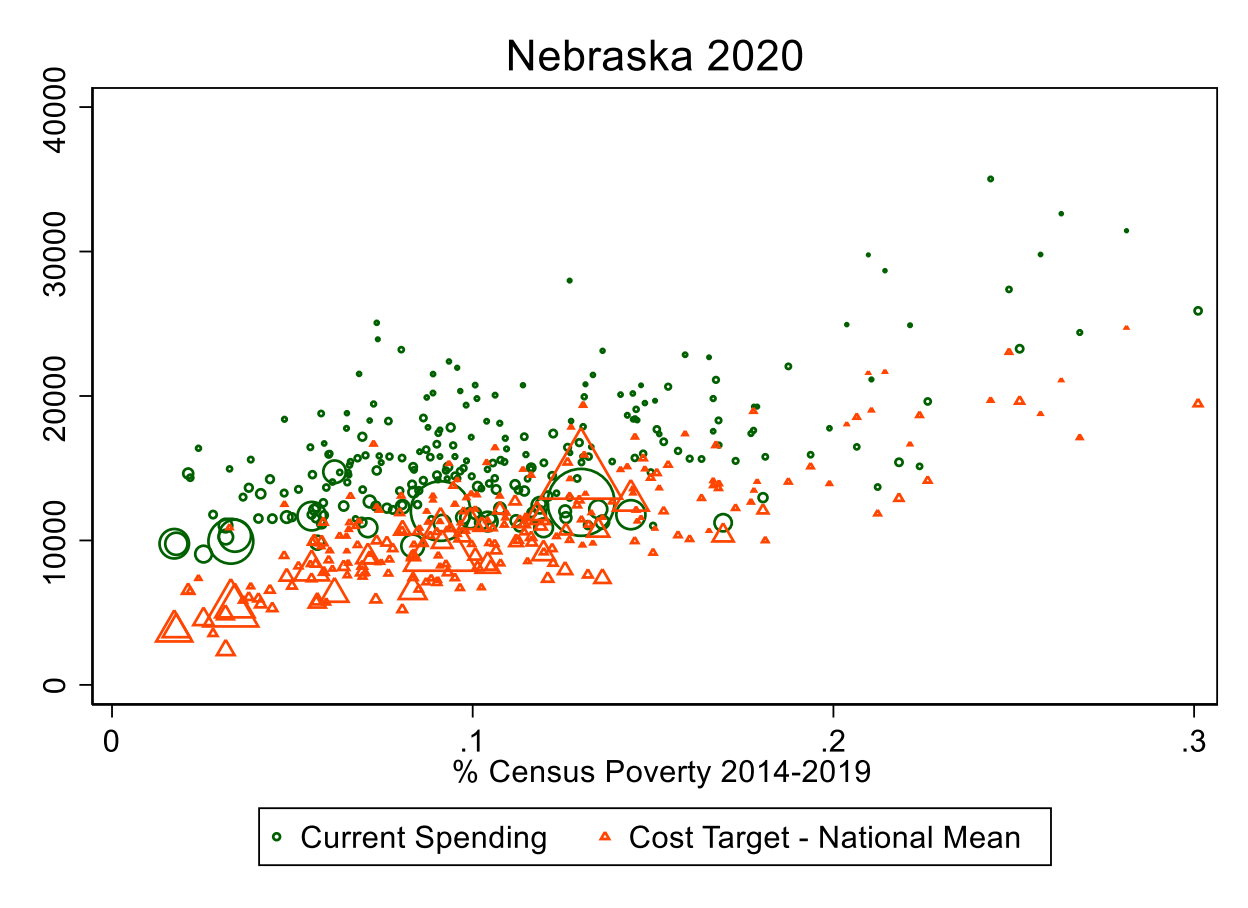


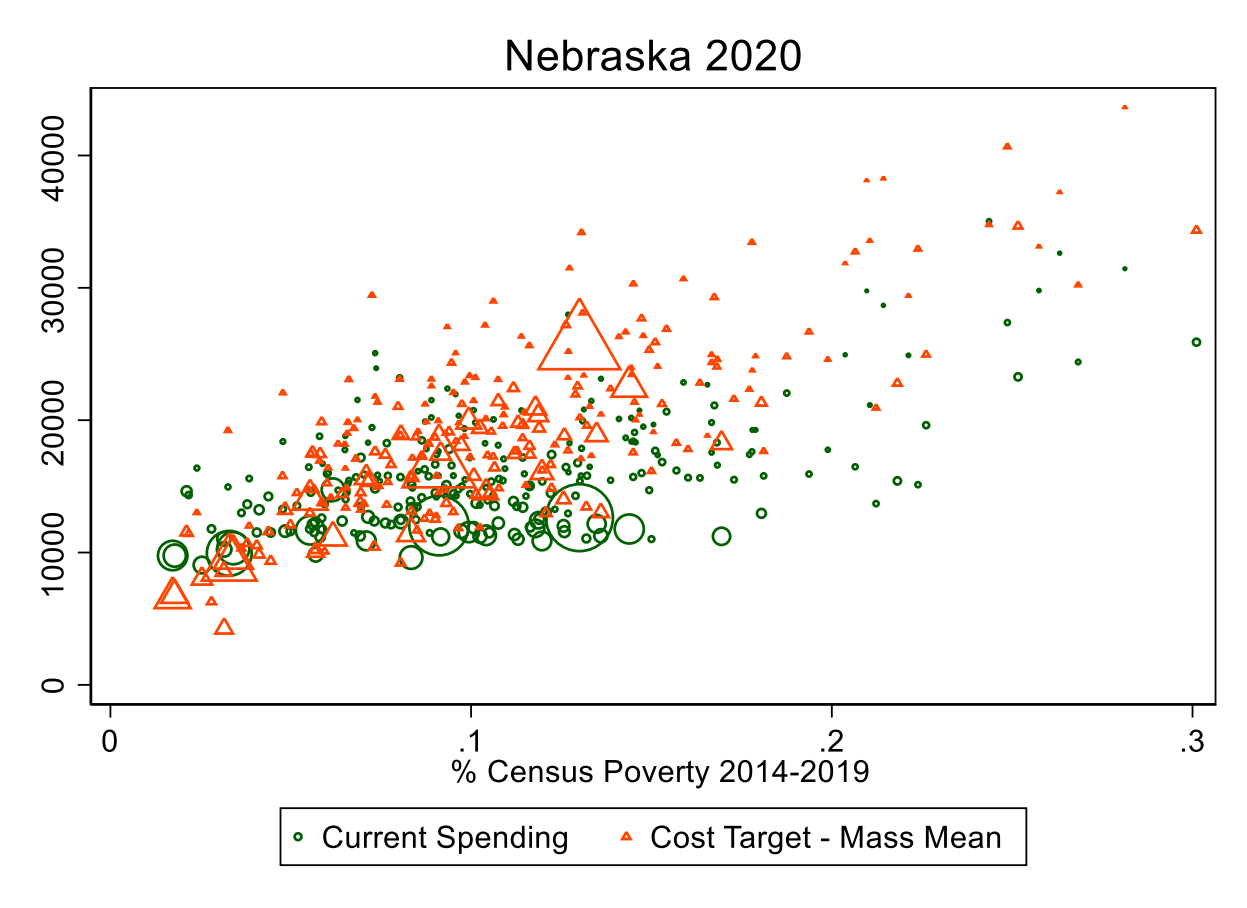
Funding & Outcome Gaps in Context
Updated models





Funding & Outcome Gaps in Context





OPS Funding Gaps in Context & Over Time

District Spending Adequacy Profile

OMAHA PUBLIC SCHOOLS (NE) | 2019

Select State: Nebraska | Select District: OMAHA PUBLIC SCHOOLS (NE) | Select Year: 2019 | Apply

Spending Adequacy | **Adequacy / Outcomes** | Trends | Characteristics

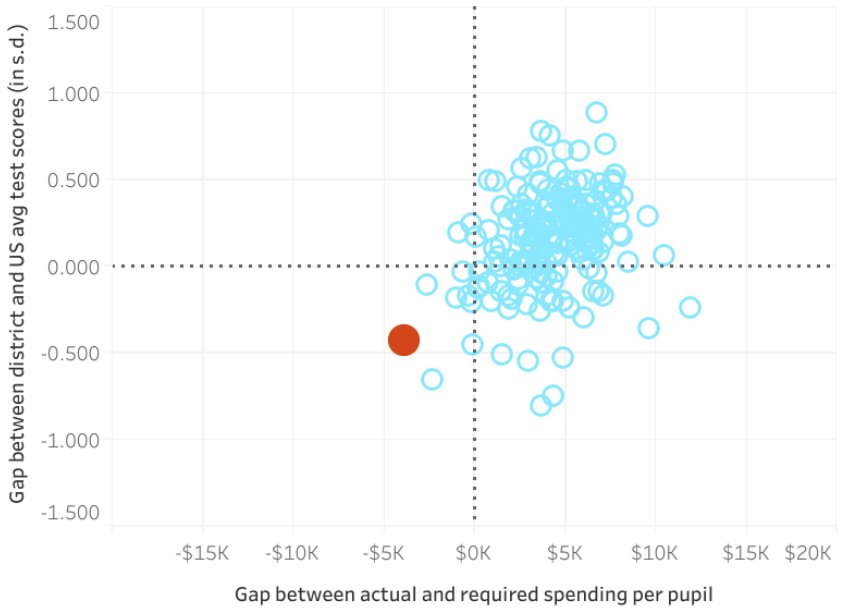
In the plot to the right, each blue circle is a district in Nebraska. The larger orange mark is OMAHA PUBLIC SCHOOLS (NE).

The lines that intersect in the middle of the plot represent the national average test scores (horizontal line) and a $0 gap between actual and required spending (vertical line).

OMAHA PUBLIC SCHOOLS (N..

Other Nebraska Districts

Note: 2019 test score data are the same as 2018.
Hover to see 40 excluded districts where testing scores are unavailable.



District Spending Adequacy Profile

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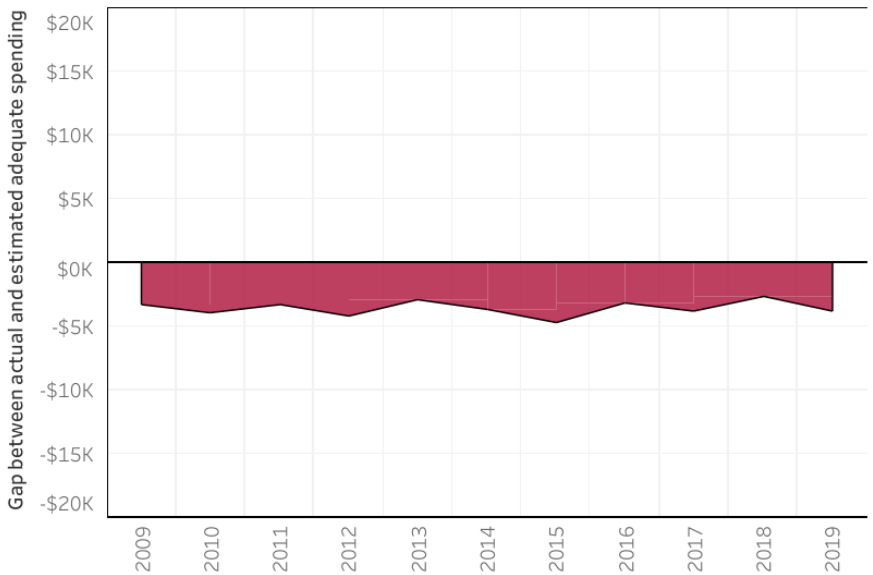
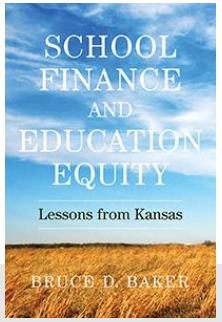


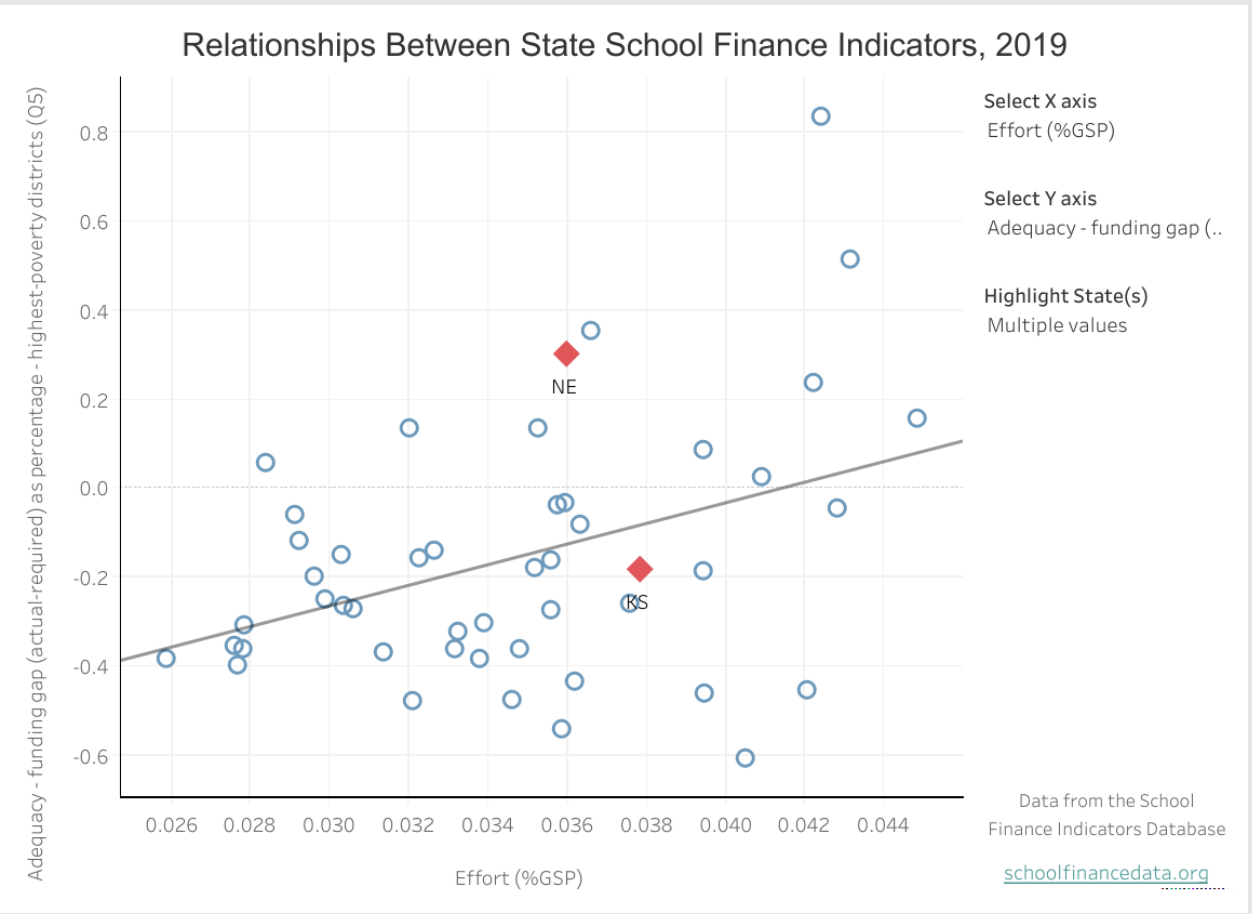
The graph to the left presents the trend in funding adequacy in OMAHA PUBLIC SCHOOLS (NE). If the trend is **below the $0 line, actual spending is lower than adequate levels**; if it's **above the $0 line, spending is above adequate**.

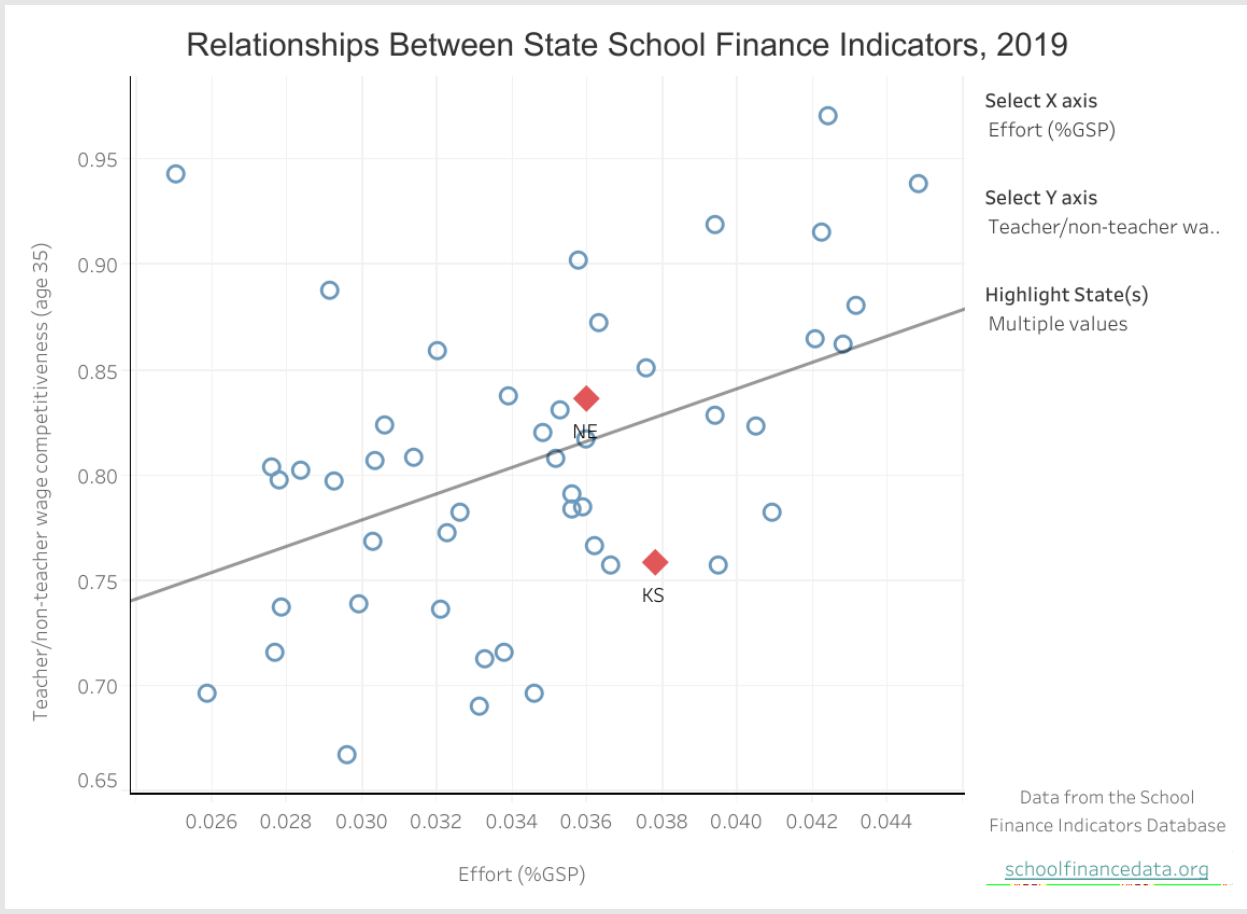
In **2018**, spending per pupil in OMAHA PUBLIC SCHOOLS (NE) was **-$2,696 below** our estimated adequate level to achieve national average test scores.

Hover over chart to switch years.

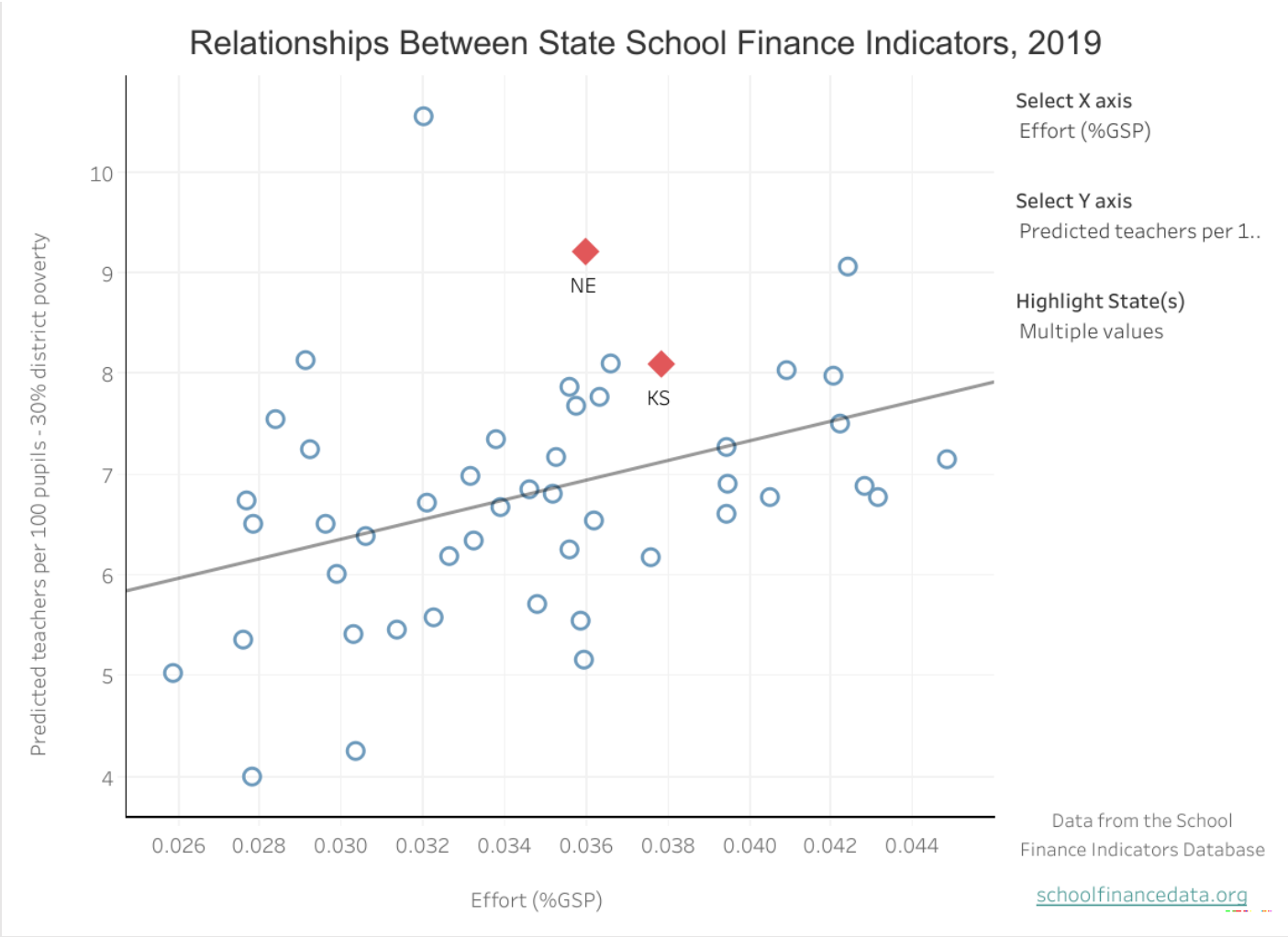
Comparing Nebraska & Kansas

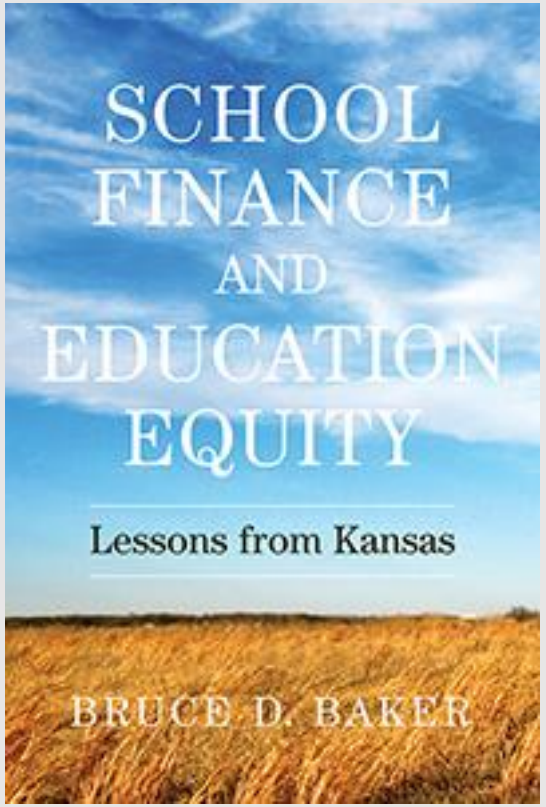




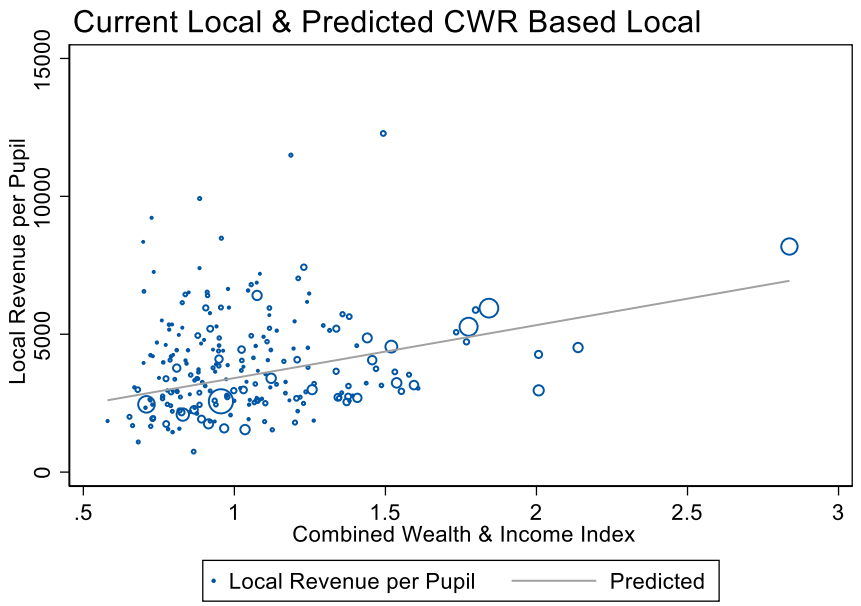


Comparing Nebraska & Kansas

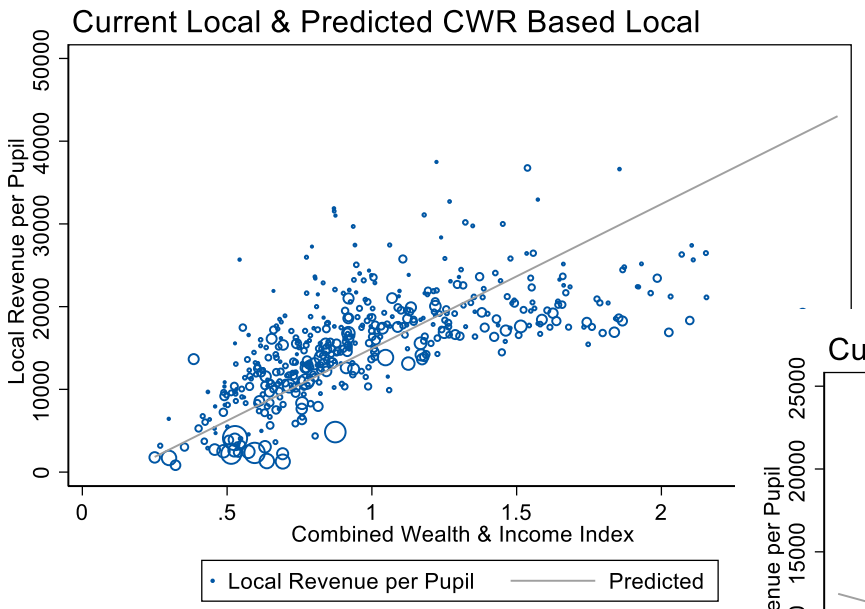




Predicted vs Actual Local Revenue per Pupil

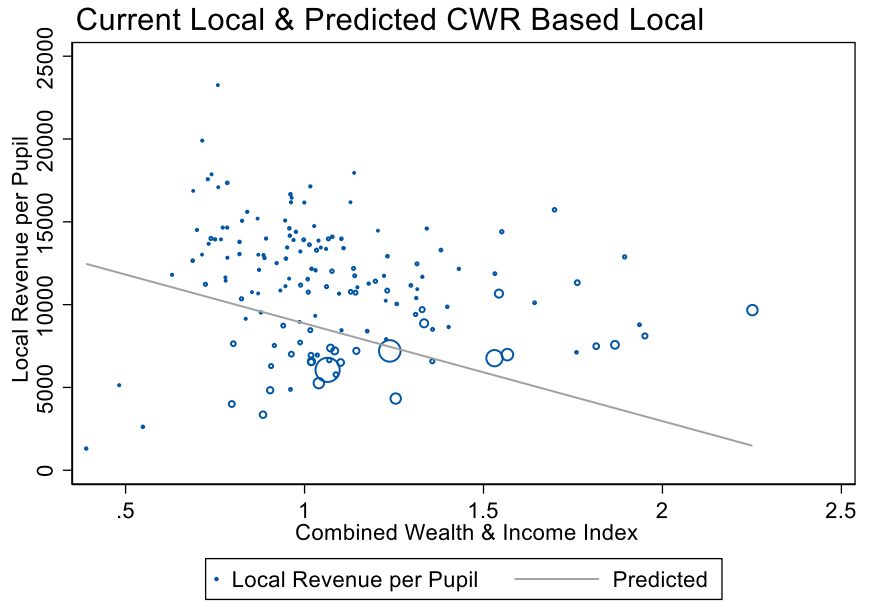


Kansas

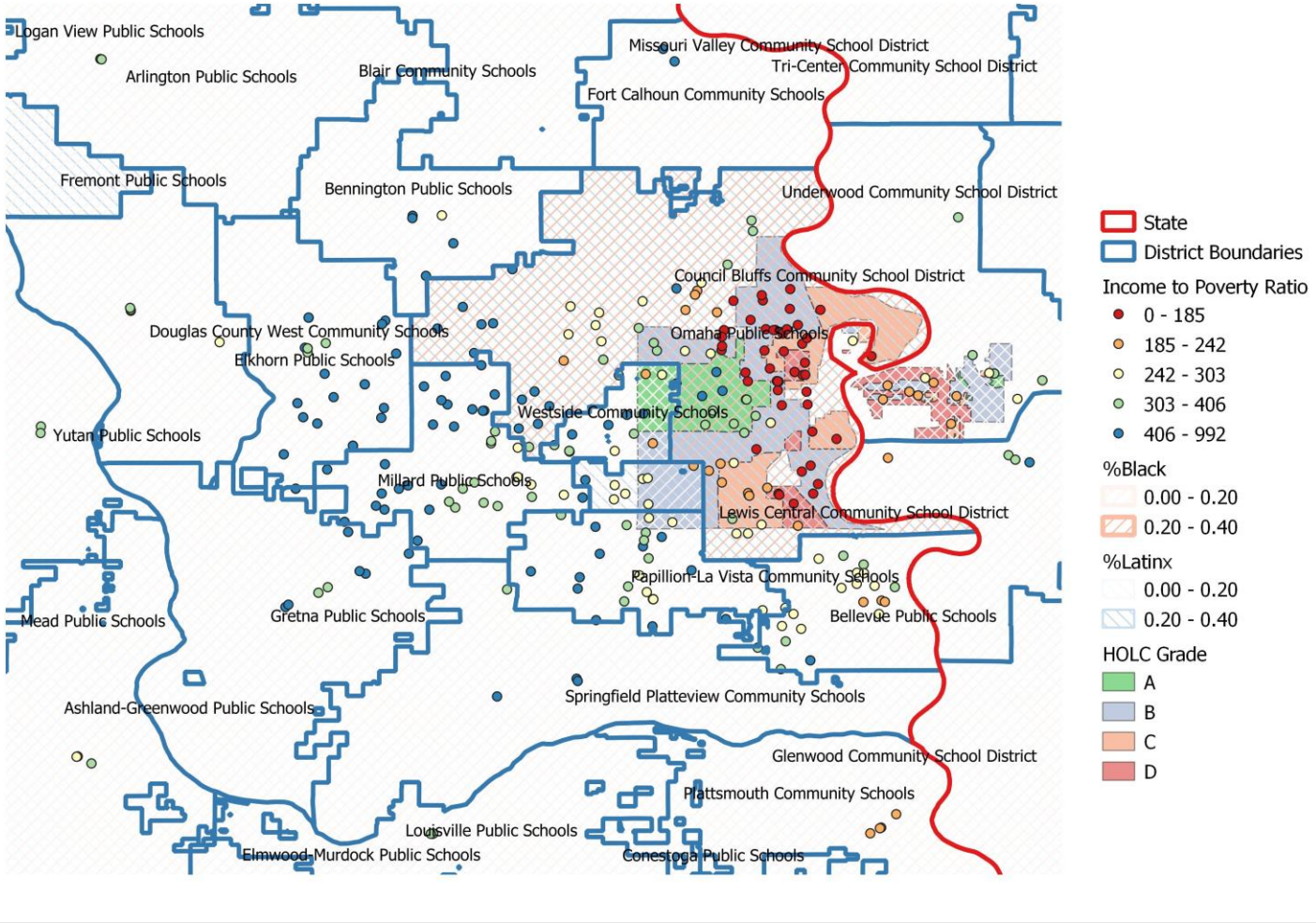


New Jersey

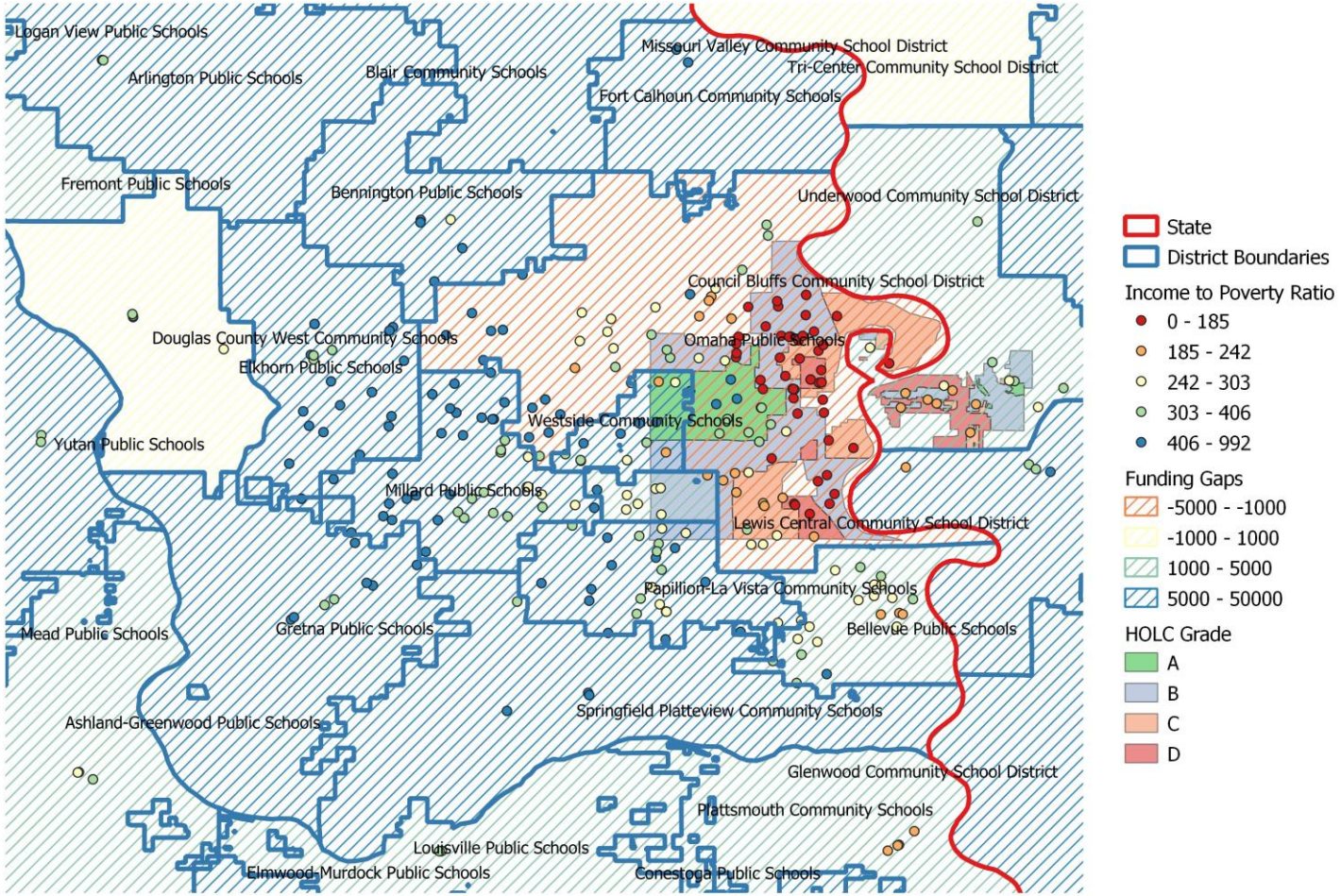
Nebraska



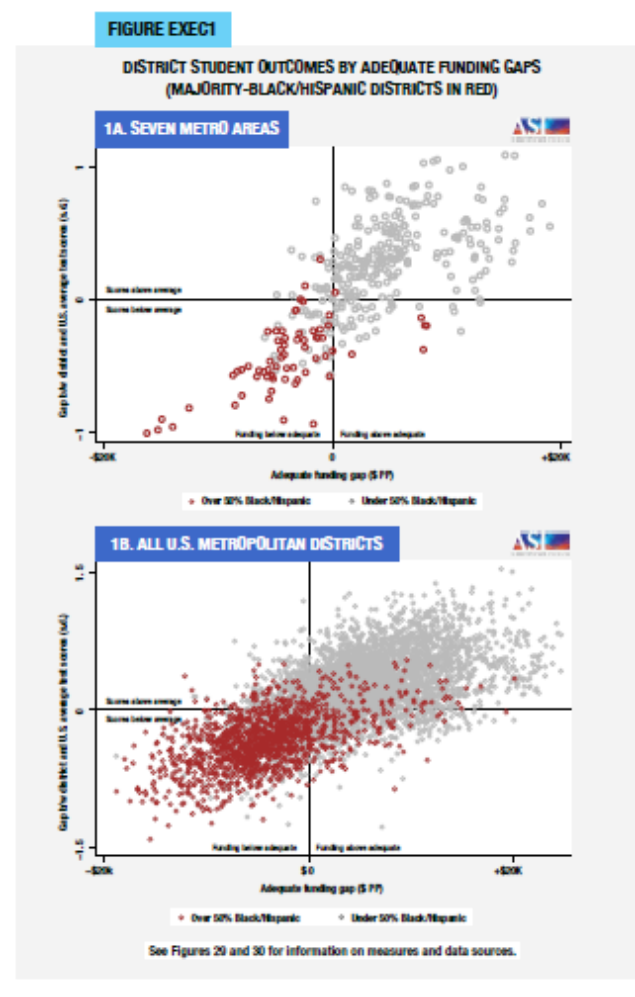
Housing discrimination, race & poverty



Housing discrimination & funding gaps



National Summary



- Across all seven metro areas, 90 percent of majority-Black/Hispanic districts spend below estimated adequate levels, compared with 12 percent of majority-white districts.
- And this matters for student outcomes: 85percent of majority-Black/Hispanic districts are both inadequately funded and score below the U.S. average on math and reading tests, compared with 6 percent of majority-white districts.

Calibrating Cost-Based Weighted Formulas

From Goal Setting to Formula Implementation

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 set common goals 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).

Two general approaches to determining costs

- **Input-oriented analyses** identify the staffing, materials, supplies and equipment, physical space, and other elements required to provide specific educational programs and services capable of producing the desired educational outcomes for identified student populations being served in various settings.
- **Outcome-oriented analyses** start with student outcomes that are generated by the programs and services offered by existing schools and districts. This type of analysis examines the relationship between spending on these programs and services and specific outcomes, while taking into account different student populations and the characteristics of the settings in which they are being served.

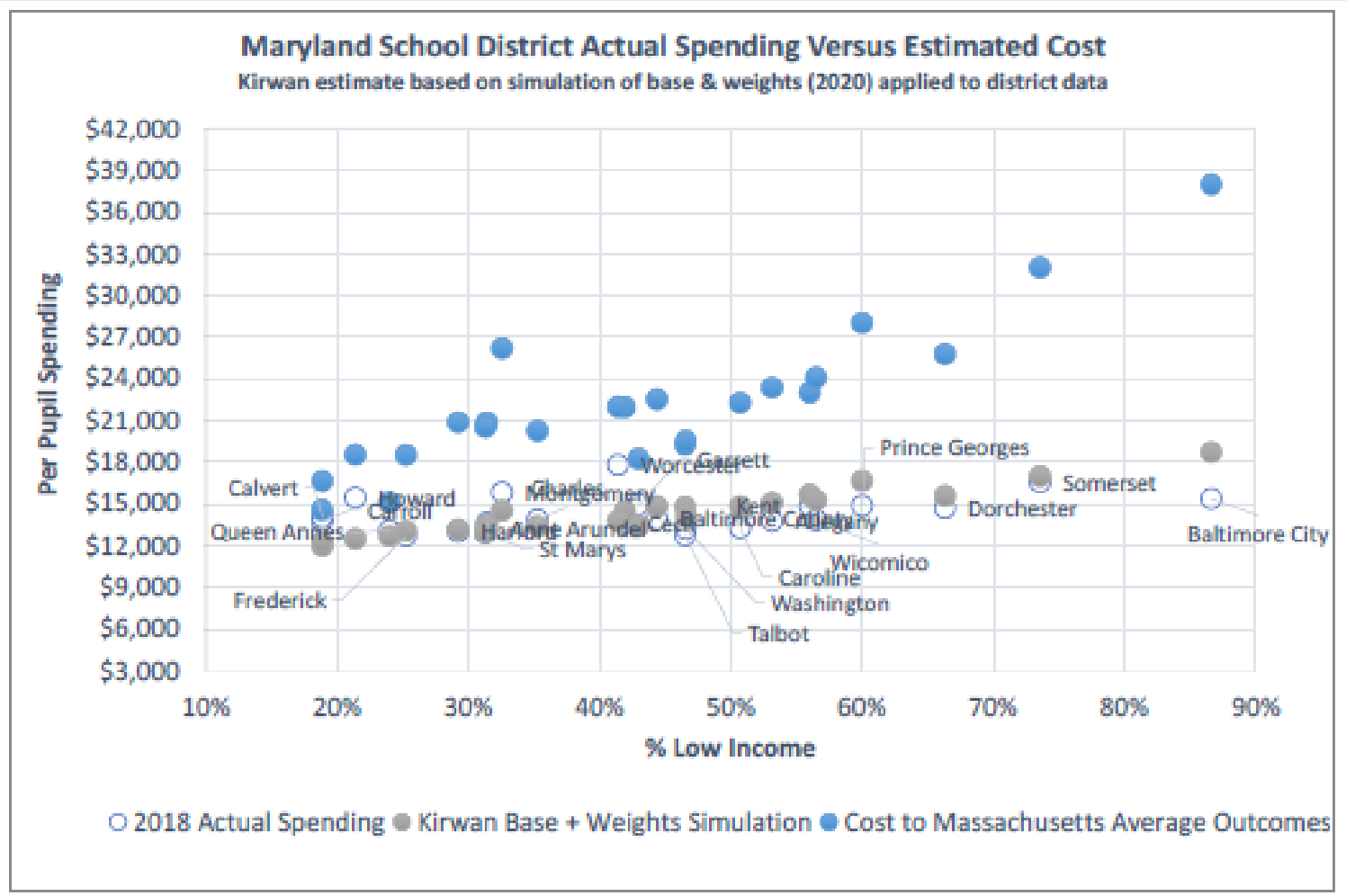
Comments on input-based analysis, equal opportunity & adequacy (of outcomes)

- As a general rule of thumb, input based analyses (or input driven formulas) fail to capture the full additional costs to provide equal opportunity in high need settings, while often overstating the costs of meeting minimum standards in low need settings…
  - In short, they tend to *inflate the base* and *deflate the weights*

Comments on input-based analysis, equal opportunity & adequacy (of outcomes)

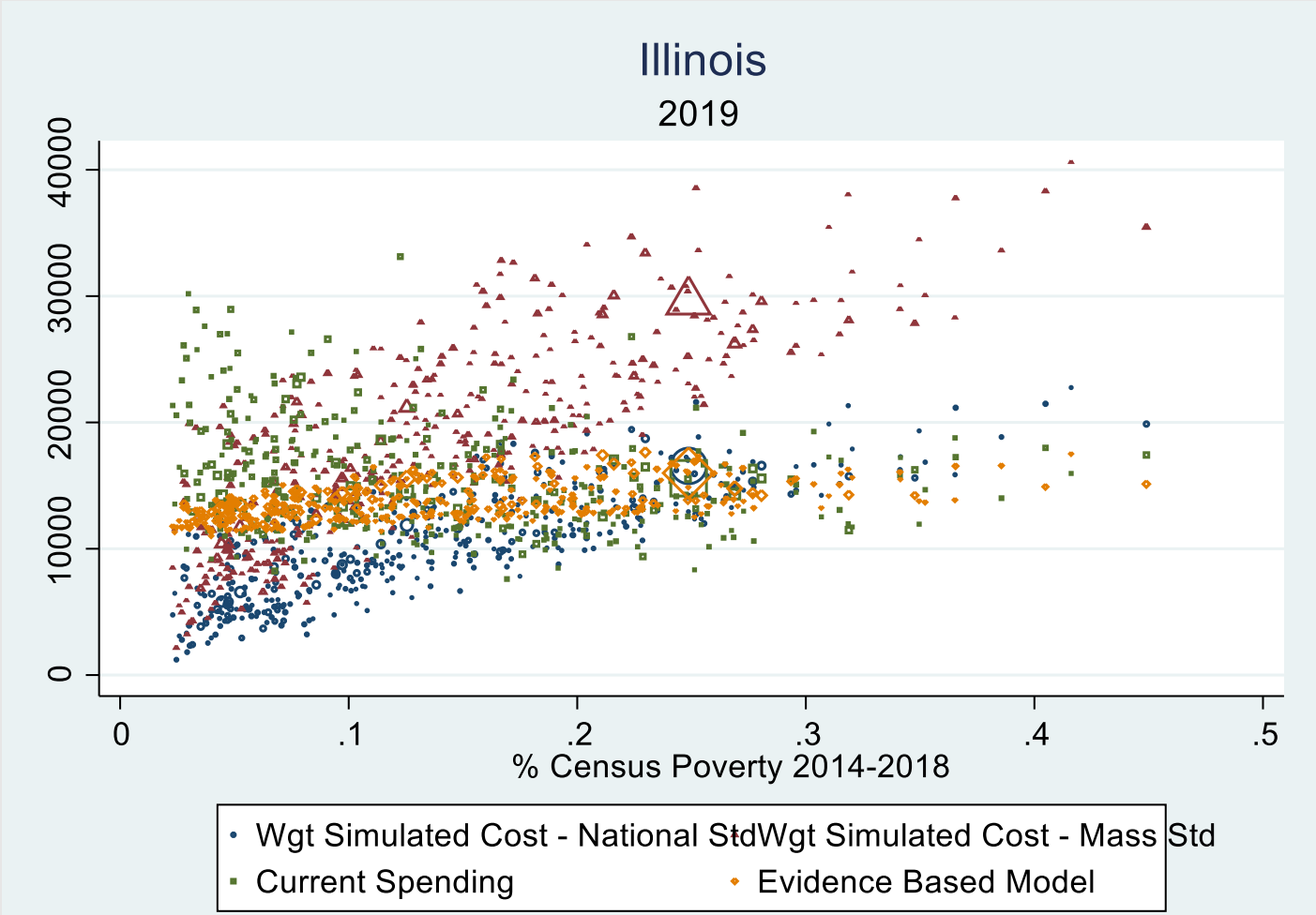
- In one approach, panels of experts and practitioners are asked to populate templates of prototypical schools with resources they believe are needed to achieve a set of outcomes they've been provided
    - Proposals of this type are useful but merely a hypothesis of what might be needed, lacking direct analysis of the relationship between those resources and outcomes
    - Panelists with experience in low need, well resourced districts are hesitant to suggest their districts (or prototypes like them) would need fewer resources to achieve less than they currently do, thus overstating base costs.
    - Panelists with experience in high need, but often under-resourced districts tend to underestimate the full needs/costs to meet outcome targets.
- Supposed "Evidence-Based" approaches are even more problematic in this regard
    - A single "evidence based" model of a prototypical school – designed to meet a state's specific outcome goals – simply doesn't exist
    - There is a dearth of evidence on staffing ratios, specific models and reforms to inform incremental differences in per pupil costs to achieve common (state adopted) outcomes.

Maryland Kirwan/Blueprint



Kirwan/Blueprint spending targets, which are based largely on input oriented analysis, overstate costs and needs in affluent suburbs (Howard County) but understate costs of equal opportunity in Baltimore City.

Illinois “Evidence Based” Model

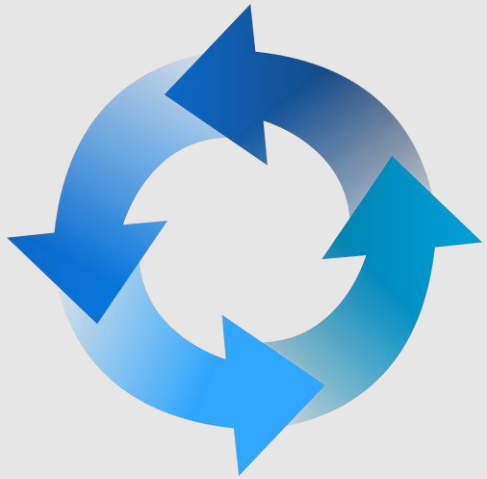


Illinois’ new “Evidence Based” school funding model substantially understates the additional costs of providing equal opportunity in high need settings, setting a spending bar for the City of Chicago that is only marginally higher than that of it’s most affluent suburban neighbors.

EB Model “effective” weight on % Free or Reduced = .273

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).

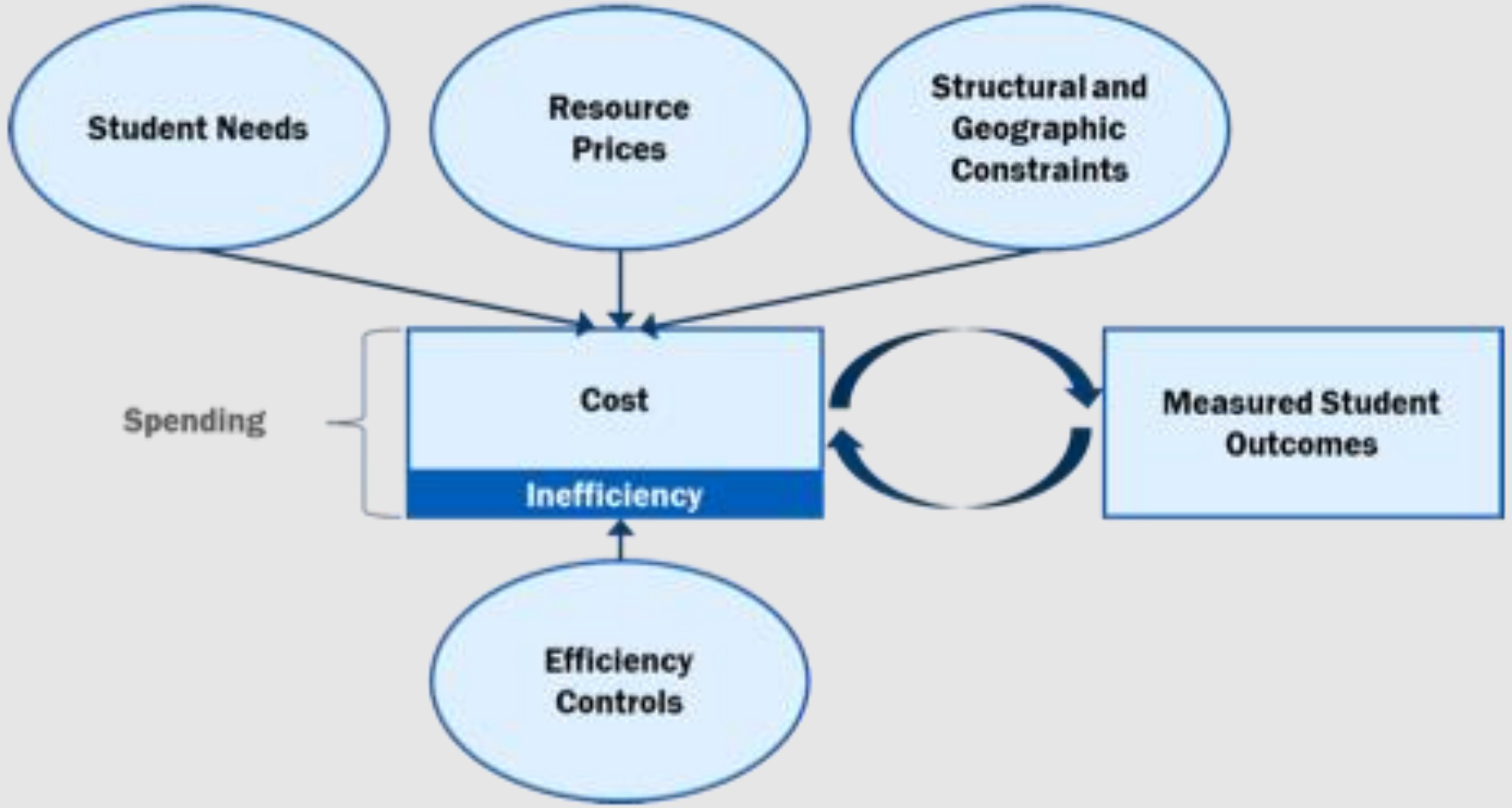
The Process

From Goal Setting to Formula Implementation

Three Step Process from Cost Model to Weighted Formula

- Step 1: Goal Setting
  - Setting outcome goals and selecting measures of those goals for all students
  - Understanding the current position of students in the state with respect to outcome goals
- Step 2: Modeling the cost of meeting goals
  - Using statistical modeling to understand the relationship between existing spending, students served, economic and geographic context, and outcomes attained.
    - Uses multiple years of actual data on school and/or district spending, outcomes, students and context to estimate spending associated with specific outcomes, under specific conditions.
      - Is state specific in terms of outcome measures, expectations and actual district spending and conditions
    - Using the fitted model to predict the spending associated with specific outcome goals (at average efficiency production)
- Step 3: Translating cost model estimates to a weighted funding formula

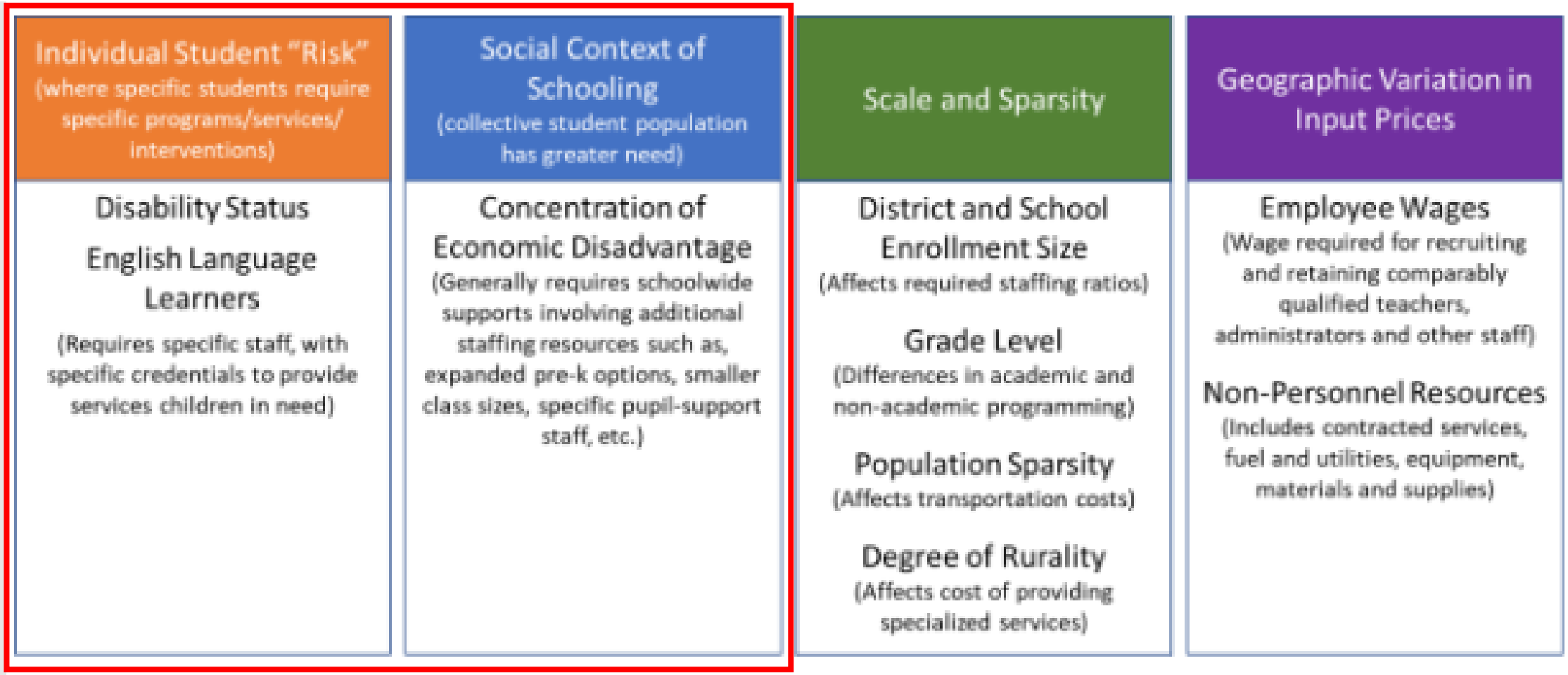
Cost Modeling



Weighing in on weights (& Base)

- **What's the "BASE?"**
  - Per pupil cost in lowest cost setting with no additional needs/costs to achieve the desired outcomes
- **What are the specific categories where you would like to see weights?**
  - First we have to ask why we weight what we weight? Toward what end?
  - Answer: Toward providing equal opportunity to achieve common outcomes
    - Thus, we weight those factors which present "risk" of less than adequate outcomes – risk which may be mitigated with additional resources!
- **Do you have ideas or feedback about how you think about the weights and those amounts?**
  - What to weight is determined by identifying factors, and the best measures of them, which are associated with lower outcomes (***Risk*** and ***Cost*** factors)
  - The magnitude (how much) question is answered by determining the additional resources required to mitigate that risk – to equalize opportunity to achieve common outcomes.
    - This can be estimated directly with sufficiently rich data on schools and systems

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

Summary

Toward a consensus statement on school finance

- **The goal of state and federal school funding policy:**
  - The goal of state school finance systems, coupled with federal aid to states and local school districts, is to provide funding levels that are *reasonably calculated*[BB3] to provide for the programs and services required for all children to have equal opportunity to achieve a common, adequate set of outcome goals.
- **What we know:**
  - The per student costs of achieving either higher outcomes, or a broader set of outcomes, is higher than the cost of achieving lower and/or narrower outcomes.
    - Those outcomes may include test scores, graduation rates, other indicators of college or career readiness, or broader indicators of civic engagement and knowledge as are so critical to our nation's future.
  - The costs to achieve any level or set of outcomes is higher for some individual students and some collective populations of students than others – including children with one or more disabilities, children who are non-English speaking and children from economically disadvantaged backgrounds.
  - The costs to achieve any level or set of outcomes is higher in some settings than others, including in very small, remote rural schools lacking economies of scale and in locations where labor costs are higher.

Toward policy solutions

- Given advancements in data quality and statistical methods, estimating the costs associated with providing equal educational opportunity has become a more readily available reality. We can and have provided reasonably calculated estimates of the costs of meeting alternative outcome standards for every local public school district in the United States based on the children they serve and context in which they are served.

- Reasonably calculated estimates of the costs to achieve common outcome goals can be used to calibrate state school funding formulas or a national school funding formula to improve equal educational opportunity across all children.

- Well designed state or federal school aid policies should ensure both that all local public schools or districts have sufficient funding to provide equal educational opportunity AND that the burden of funding those opportunities is fairly divided between local communities, states and the federal government. That is, a system of this size, funded with taxpayer dollars must ensure both that children are treated equitably in the resources they receive and that taxpayers are treated equitably in how those resources are raised and distributed.

- These principles and methods should not be limited to the provision of elementary and secondary education as we know them, but can be extended in all directions, to more comprehensive early childhood education for setting the stage to elementary schooling through better understanding and publicly financing the full costs of providing free college for all.

Innovations and learnings from the COVID-19 pandemic