FEBRUARY 2026

THE ADEQUACY AND FAIRNESS OF STATE SCHOOL FINANCE SYSTEMS

Bruce D. Baker | Matthew Di Carlo | Mark Weber

Eighth Edition

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THE ADEQUACY AND FAIRNESS OF STATE SCHOOL FINANCE SYSTEMS

Eighth Edition

SCHOOL YEAR 2022-23

schoolfinancedata.org

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Report design by Megan Gilmore

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EXECUTIVE SUMMARY

In the United States, K-12 school finance is largely controlled by the states. Good school finance systems compensate for factors states cannot control (e.g., student poverty, labor costs) using levers that they can control (e.g., driving funding to students who need it most). We have devised a framework that evaluates states based largely on how well they accomplish this balance. We assess each state's funding while accounting directly for the students and communities served by its public schools.

These funding systems carry enormous implications for public school students. Decades of empirical research has confirmed that investing in K-12 education improves student outcomes, and funding cuts hurt those outcomes. In other words, **money matters in education, and it matters a lot.**

Yet how much a given district or state spends on its schools, by itself, is a rather blunt measure of how well those schools are funded. For example, high-poverty districts require more resources to achieve a given learning outcome goal—e.g., a particular average score on a standardized test—than do more affluent districts. Put differently, education *costs* vary depending on student populations, labor markets, and other factors. That is a fundamental principle of school finance. Simply comparing how much states or districts spend ignores this enormous variation in how much they *must* spend to meet their students' needs.

Our approach, then, is to compare states and districts in terms of not only how much they spend, but also whether that funding is adequate for students from all backgrounds to achieve common outcome goals.

Accordingly, we use a national cost model to calculate adequate funding levels for the vast majority of the nation's public school districts. We then use these estimates to evaluate each state—*relative to other states or groups of states*—based on the overall adequacy of funding across all its districts (**statewide adequacy**) as well as the degree to which its high-poverty districts are more or less adequately funded than its affluent districts (**equal opportunity**). Finally, because states vary in their ability to raise revenue (e.g., some states have larger economies than others), we also assess whether states are leveraging their capacity to fund schools by measuring total state and local revenue as a percentage of states' economies (**fiscal effort**).

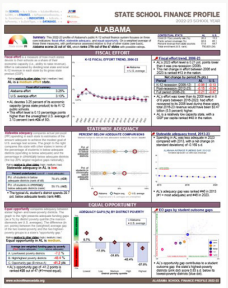
These three "core indicators"—effort, statewide adequacy, and equal opportunity—offer a foundational overview of whether states' systems are accomplishing their primary goal of providing adequate and equitable funding for all students. In this report, as well as the ***one-page state profiles*** that accompany the report, we present results on these three measures for each state.

In this eighth edition of our annual report, we evaluate the K-12 school finance systems of all 50 states and the District of Columbia. Due to the lag in the publication of federal data, the latest year of results we present is for the 2022-23 school year.

STATE SCHOOL FINANCE SYSTEM PROFILES

Accompanying this report are single-page profiles summarizing the performance of the school finance systems of all 50 states and the District of Columbia.

DOWNLOAD YOUR STATE'S PROFILE



The measures presented in the profiles and in this report, and many others going back 30 years, are freely available, along with online data visualizations, supplemental research reports, and other resources, at the project website: schoolfinancedata.org.

Here are a few of our **major national findings**:

- **There are 42 states (including the District of Columbia) that devote a smaller share of their economies to their K-12 schools than they did before the 2007-09 recession.** This seems to be a permanent disinvestment in public education. Had states invested at least the same share of their economies between 2016-2023 as each did in 2006, they would have had $575 billion more for their schools, which is roughly 10 percent of total state and local school revenue during those eight years.
- **There are 10 states in which at least half of students are in districts that we identify as "chronically underfunded" districts—the 20 percent of districts with the most inadequate funding in the nation.** These states (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, Nevada, North Carolina, South Carolina, and Texas) serve 65 percent of the nation's chronically underfunded students, but only 32 percent of all students.
- **African American students are twice as likely as white students to be in districts with funding below estimated adequate levels, and three times more likely to be in chronically underfunded districts.** The discrepancies between Hispanic and white students, as well as those between Native American and white students, are also substantial.
- **Educational opportunity is unequal in every state.** The size of the gaps varies, but in every single state, higher-poverty districts are funded less adequately than lower-poverty districts. This effectively means that students in the latter (more affluent) districts are funded to achieve higher outcomes than their peers in the former (higher-poverty) districts.

Based on the results of this report, we conclude with a set of basic, research-backed principles that should guide the design and improvement of all states' systems.

These **policy recommendations** include:

- **Better targeting of funding.** If the amount of funding each district needs for its students to succeed is not determined rigorously by states, resources may appear adequate and equitable when they are not (and policymakers may not even realize it). All states should routinely conduct studies to ensure that they are accounting for differences in the needs of the students served by each of their school districts.
- **Increase funding to meet student needs where such funding is inadequate.** The point here is for states to ensure that funding is commensurate with costs/need. In some states, adequate and equitable funding might require only a relatively moderate increase in total funding (particularly state aid) along with better targeting. In other states, particularly those in which funding is inadequate and effort is low, larger increases are needed, and may include both local and state revenue.
- **Enhance federal monitoring of school funding adequacy, equity, and efficiency.** We propose that the U.S. Department of Education establish a national effort to analyze the adequacy and equity of states' systems and provide guidance to states as to how they might improve the performance of those systems.

Our findings as a whole highlight the enormous heterogeneity of school funding, both within and among states. Such diversity is no accident. So long as school finance is primarily in the hands of states, the structure and performance of systems is likely to vary substantially between those states.

This heterogeneity has allowed researchers to study how different systems produce different outcomes and, as a result, we generally know what a good system looks like. Our framework for evaluating states is based on these principles. It is our hope that the data presented in this report and accompanying resources will inform school finance debates in the U.S. and help to guide legislators toward improving their states' systems.

HOW WE EVALUATE STATES' K-12 FINANCE SYSTEMS

A state school finance system is a collection of rules and policies governing the allocation of state and local K-12 school funding. On average, about 90 percent of school funding comes from a combination of local and state revenues, with the remainder coming in the form of federal aid. Many states' systems are exceedingly complicated, with numerous formulas, rules, and regulations that have evolved over decades of political wrangling, advocacy, and litigation. Yet all systems can be described—and evaluated—in terms of the following two goals:

- **Account for differences in the costs of achieving equal educational opportunity across school districts.** Proper determination of districts' costs—setting "funding targets" for each district, whether implicitly or explicitly—is the foundation of any state's system. If that is done poorly, then the entire funding process may be compromised. *Cost* refers to the amount of money a school district needs to meet a certain educational goal, such as a particular average score on a standardized test or a graduation rate. Costs vary within states because student populations vary (e.g., some districts serve larger shares of disadvantaged students than others) and also because the economic and social characteristics of school districts vary (e.g., some districts are located in labor markets with higher costs of living than others). School funding formulas should attempt to account for these differences by driving additional state aid to districts with higher costs.
- **Account for differences in fiscal capacity, or the ability of local public school districts to pay for the cost of educating their students.** Although the extent varies, school districts in all states rely heavily on local revenue (mostly from property taxes) to fund schools. Wealthier communities, of course, can raise more and tax themselves at lower rates. School funding formulas attempt to compensate by directing more state aid to districts with less capacity to raise local revenues.

Whether or not states accomplish these goals carries serious consequences for millions of public school students. Over the past 10-15 years, there has emerged a growing consensus, supported by high-quality empirical research, that additional funding improves student outcomes and that funding cuts hurt those outcomes, particularly among disadvantaged students and districts in which states have historically underinvested (Baker 2017, 2018; Baker and Knight 2025; Candelaria and Shores 2019; Handel and Hanushek 2023; Jackson 2020; Jackson, Johnson, and Persico 2016; Jackson, Wigger, and Xiong 2021; Jackson and Mackevicius 2024; Lafortune, Rothstein, and Schanzenbach 2018).

There are, of course, important debates about how education dollars should be spent. Yet schools cannot spend money they do not have, and proper funding is one necessary requirement for improving student outcomes. Understanding, assessing, and reforming states' funding systems is therefore a crucial part of any efforts to bring about such improvement.

EVALUATION FRAMEWORK

Our framework for evaluating the K-12 finance systems of all 50 states and the District of Columbia begins with two basic premises, both discussed above:

1a. Higher student outcomes require more resources; and

1b. The cost of achieving a given outcome varies by context.

The importance of context (1b) is critical to understanding and measuring costs, and thus to our approach to evaluating states' systems. By context, we mean not only the population a district serves (e.g., poverty), but also the labor market in which it is located, its size (economies of scale), and other factors that can affect the "value of the education dollar." Any serious attempt to compare funding between states—or between districts within a given state—must address the fundamental reality that the "cost of education" is far from uniform.

Consider, for example, two hypothetical school districts, both of which spend the same amount per pupil. The simple approach to comparing these two districts might conclude that they invest equally in resources, such as teachers, curricular materials, etc., that can improve student performance.

If, however, one of these districts is located in an area where employees must be paid more due to a much more competitive labor market or higher cost of living, or if it serves a larger proportion of students with special needs, then this district will have to spend more per pupil than its counterpart to provide a given level of education quality (i.e., to achieve a common student outcome goal or goals). Failure to account for these factors is likely to lead to misleading conclusions and bad K-12 finance policy.

It follows directly from these first two tenets (1a and 1b) that the key question in evaluating finance systems is not just how much states or districts spend but, perhaps more important, whether it is *enough*—i.e., whether resources are **adequate** to meet costs (note that we use the terms "costs," "adequate funding levels," and "funding targets" interchangeably).

Our second set of principles pertains to how we define this key concept of adequacy. Since the core purpose of public schools is to educate and prepare all students:

2a. We define adequate funding as the cost of achieving student outcome goals; and

2b. We estimate costs in all states and districts with reference to the *same* outcome goals—that is, when evaluating the performance of states' systems, the adequacy of funding should not be judged using a high "benchmark" goal in some states and a more modest goal in other states.

Regarding 2b, we recognize that states vary in terms of their academic standards and/or in the outcome goals that their finance systems are (at least in theory) calibrated to produce. Our purpose, however, is to evaluate all states' systems in a comparable manner, and doing so requires *common* outcome goals within and between states. This means that estimated adequate spending levels will vary by district (see 1b), but those levels represent the cost of achieving the same benchmark goals.

Our third principle is methodological, but it is worth stating directly:

3. The most appropriate approach to a national evaluation of K-12 funding adequacy, which requires the estimation of costs across thousands of heterogeneous districts serving millions of diverse students, is to use statistical cost models (education cost functions).

There are a variety of different approaches that researchers use to estimate costs (or that states use to determine district funding targets). The options include everything from sophisticated statistical models to more *ad hoc* costing studies and formulas to "professional judgment panels" of experts. We use cost modeling, and we argue it's the best option in the context of a national analysis of states' systems.[1] We describe our model in more detail in the next section.

Insofar as the primary goal of any state finance system is to provide all students with an equal shot at achieving common outcomes, we use our cost model estimates to evaluate states on two adequacy-focused dimensions or measures (statewide adequacy and equal opportunity), which represent two of our three "core indicators." They are the degree to which states:

4a. Provide all students with enough funding to achieve common outcome goals (i.e., **statewide adequacy**); and

4b. Ensure that no students have a greater chance of achieving those goals than do their peers elsewhere in the state (i.e., **equal opportunity**).

It is important to note that these two indicators—statewide adequacy and equal opportunity—are conceptually independent. That is, one can exist without the other. There may, for example, be states in which relatively large proportions of students attend districts with funding above estimated adequate levels (i.e., high statewide adequacy), but in which funding is far above adequate levels in some districts and just barely above in others (unequal opportunity). Conversely, states can exhibit

[1] This is not only because cost models have been used extensively in peer-reviewed studies of education costs and cost variation (Downes 2004; Duncombe and Yinger 1997, 1998, 1999, 2000, 2005, 2007; Imazeki and Reschovsky 2004), but also because common alternative approaches, such as "professional judgment panels" or more *ad hoc* costing studies, are both implausible and ill-equipped for national evaluations, as such approaches would have to be replicated for each state (indeed, we would argue they are, *by themselves*, insufficient for setting funding targets even within individual states).

comparatively low adequacy, with wide swaths of underfunded districts, but still maintain equal opportunity, if all districts are generally the same "distance" away from (in this case, below) their estimated adequate funding levels.

States' systems should ideally provide *both* adequate funding and equal opportunity—i.e., funding in all districts is either at adequate levels or above those levels by roughly the same proportional amount.[2] But states can be evaluated on each dimension separately.

The final element of our framework for evaluating states' K-12 finance systems is designed to account for the aforementioned fact that both costs *and the ability to raise revenue to pay those costs* differ between states. Our fifth principle, therefore, is the basis for our third and final core indicator (fiscal effort), and it is:

5. States should also be evaluated on how much of their economic capacity—i.e., their ability to raise revenue—is devoted to their public schools (i.e., **fiscal effort**).

Some states' economies are so small relative to their students' needs that they are essentially unable to raise enough revenue to fund their schools adequately, whereas other states simply fail to provide sufficient resources despite having the option to do so. Including effort in our framework allows us to differentiate the former states from the latter.

OUR ADEQUACY ESTIMATES

Our estimates of adequate funding levels (or estimated costs) play a central role in our system—i.e., they are used directly in calculating two of our three core indicators (statewide adequacy and equal opportunity). The cost model from which these estimates are derived is called the National Education Cost Model, or NECM. The NECM is part of the School Finance Indicators Database (SFID), which is a set of public data and resources on state and local school finance that we update and publish annually, and from which all the measures presented in this report are drawn.

The NECM estimates how much each district must spend (i.e., costs) to achieve a common benchmark outcome goal. We choose to set this goal as national average math and reading scores in grades 3-8. This is a relatively modest goal, but we interpret our adequacy results such that choosing a different benchmark would not substantially alter our conclusions about the performance of states' systems.[3]

This model yields these estimated adequate funding levels every year since 2009 for approximately 12,000 districts. The estimates are based on numerous factors, including each district's Census child poverty rate, its

[2] To be clear, the goal of achieving both equal opportunity and adequate funding is an idealized goal, particularly in a national evaluation of states' systems. In this report, we evaluate adequacy (and, by extension, equal opportunity) using averages across states and within states by district poverty. In practice, it is unlikely that any state would ever exhibit perfectly equal opportunity. In other words, at any given adequacy "bar" (e.g., national average outcomes), equal opportunity is really a matter of degree, rather than a discrete "yes/no" outcome. This is why we interpret our results relatively—i.e., how close states get to equal opportunity, relative to other states or groups of states.

[3] The issue here is that higher benchmark student outcome goals, however defined, require more funding, and so whether a district or state spends above estimated adequate levels will vary depending on where you set this common goal. We use national average scores as our benchmark but, as discussed below, choosing a different "bar" would not change our conclusions because we interpret each state's adequacy results *relatively rather than absolutely*. In other words, adequacy, both nationally and in each state, would decrease if we set a higher benchmark goal, and increase if we set a lower goal (this is conceptually similar to how proficiency rates change if states set a different test score cutoff point). But each state's performance *relative to that of other states* stays consistent regardless of the choice of benchmark. One partial exception to this would be a situation in which: 1) we expressed statewide adequacy using a measure with an absolute minimum or maximum, such as the percentage of students in districts with funding below estimated adequate levels (and we do use this type of measure in this report and in the state profiles); and 2) we moved the common outcome goal to a very high or very low level, thus pushing many states to or near the maximum (100 percent) or minimum level (0 percent), respectively. For instance, we also calculate (and have in the past published) our adequacy results using the very ambitious common benchmark goal of Massachusetts average test scores. By this standard, the percentage of students in districts with below adequate funding is 100 percent in numerous states, and very high in most other states. This of course would produce somewhat different relative results/rankings than the same measure based on national average outcomes. Overall, however, states' relative positions are very consistent using different benchmark goals so long as those goals are not extremely high or low (and they are perfectly consistent if adequacy is expressed in terms of the percentage difference between actual and estimated adequate funding, which we also report below).

labor costs (if the cost of living in a district is higher it must pay its employees more), its size (economies of scale), its students' characteristics, and other factors.[4] We then compare those estimated adequate funding levels to actual funding (spending) levels.

A problem with cost modeling in education finance is that outcomes and spending have a circular, or *endogenous,* relationship. Greater spending leads to better educational outcomes; however, better outcomes can lead to greater spending, as higher test scores can manifest in higher property values, increasing a community's tax capacity and, therefore, its ability to spend on its schools (Figlio and Lucas 2004; Nguyen-Hoang and Yinger 2011). The NECM draws on previous work in education cost modeling to address this problem through econometric methods (for more technical details on the model, see: Baker, Weber, and Srikanth [2021]; Baker [2025]).

It's important to bear in mind the limitations of our adequacy measures. Like any tools for assessing finance systems, they are imperfect. There is the normal, inevitable imprecision of any complex statistical model, including the fact that we cannot control for absolutely everything that affects costs (researchers call this latter issue "omitted variable bias").

But there is also an additional layer of imprecision when you're looking at all states simultaneously. There are, for example, inconsistencies between states in how they collect finance data and report it to the U.S. Census Bureau. Similarly, we are relying on an outcome dataset (the Stanford Education Data Archive) that transforms the results of all states' standardized tests such that they can be compared across the nation (Reardon et al. 2024); these data, though groundbreaking, may also contain inconsistencies due to the normalization process. In part for these reasons, one of our recommendations, discussed below, is for states to commission their own cost model studies, using their own state-specific testing and finance data.[5]

And, finally, there is one more consideration here, which affects the interpretation of adequacy estimates (or any funding measures) in any context: cost models are essentially designed to isolate the (bi-directional) effect of spending on testing outcomes, but some districts are more efficient than others in how they spend money. So, for instance, what seems like inadequate funding might be due in part to inefficiency. Similarly, many districts, particularly affluent districts, spend money on programs or facilities that don't necessarily affect standardized math and reading test scores but may still be highly desirable to students and parents.

All that said, we contend that our adequacy (NECM) estimates, interpreted properly, are superior to the alternatives (and, if we're talking about national cost estimates based on inputs and student outcome goals, the NECM, to our knowledge, is the only option). They are not designed to be interpreted as pure causal estimates in the sense that we can say "if you spend *X* number of dollars you will achieve *Y* level of test scores." Even if we had a way to calculate perfect estimates of education costs, we would not imply that these spending levels, if put into place in a state or district, would quickly and certainly raise scores to the national average. This is not only because that implication assumes efficient use of additional funds, but also because real improvement is gradual and requires sustained investment.

Our model, rather, yields *reasonable estimates of costs that allow for better evaluations of states' finance systems toward the goal of improving those systems*. Yet we are mindful of their limitations, and so we try to be careful and clear about how we use them to evaluate states' systems. There are two general purposes:

[4] In addition to the SFID's district-level dataset of finance, student characteristics, and other variables (some of which are summarized in Appendix Table A1), the NECM relies heavily on three additional data sources. The first is the Comparable Wage Index for Teachers (Cornman et al. 2019), an index of regional wage and salary variation developed by Dr. Lori Taylor of Texas A&M in collaboration with researchers at the National Center for Education Statistics (Taylor 2014; Taylor et al. 2006)and failure to address such differences can undermine the equity and adequacy goals of school finance formulas. Therefore, there is considerable interest in developing measures of the cost of education that can facilitate such comparisons and possibly may be used to adjust school finance formulas in some states. Geographic cost adjustment data for states, metropolitan areas, and school districts are frequently and widely requested by the public and school finance research community. In this report, NCES extends the analysis of comparable wages to the labor market level using a Comparable Wage Index (CWI. The second is the EDGE School Neighborhood Poverty Estimates, also published by the NCES, which is specifically designed to measure poverty surrounding schools and districts (Geverdt 2018). The third and perhaps most important NECM data source is the Stanford Education Data Archive (SEDA), a database of nationally normed test scores going back to 2009 (Reardon et al. 2024). The SEDA allows for a better comparison of individual district's test results across all states, a crucial tool for producing cost model estimates that are comparable across the nation.

[5] Note that our NECM estimates have proven to be generally consistent with the results of several state-specific cost modeling studies, including those in Kansas (Baker 2021), Missouri (Baker 2023), New Hampshire (Atchison et al. 2020), Vermont (Kolbe, B. D. Baker, et al. 2019), and Virginia (JLARC 2023).

1. **Comparisons between states:** We average our district estimates across entire states and use them to compare statewide adequacy and equal opportunity (see below) between those states.
2. **Comparisons within states (or over time):** This is very similar to the between-state comparisons, except instead of averaging our district estimates across a whole state, we average and compare them within states (e.g., by district poverty, student race/ethnicity, or over time).

The key point here is that we are interpreting each state's results relatively. We generally avoid, for example, using our estimates to assert with confidence whether a state's schools are funded adequately by some absolute standard. We do, however, say—with due caution—whether that state's schools are *more or less* adequately funded than those in a different state or group of states, or whether different groups of districts are funded more or less adequately than others within a state.

A NOTE ON STATES FOR WHICH WE DO NOT PUBLISH/ANALYZE COST MODEL ESTIMATES (AND A CAUTION ABOUT NEW YORK)

In this report and accompanying datasets, we have not presented statewide adequacy or equal opportunity estimates for Hawaii (as the state consists of a single-government run school district that is geographically isolated from the rest of the nation) and Vermont (due to irregularities in that state's data beginning in 2017). We also exclude Alaska, as the state's isolation, climate, and population dispersal clearly entail costs, such as those related to transportation and infrastructure/buildings, that are unique to Alaska and not accounted for in our model.

Finally, while we will still publish them, we would also urge readers to interpret our New York results (for statewide adequacy and equal opportunity) with caution. The primary issue is that there are no student testing (SEDA) data for New York districts beginning in 2015. We have been imputing these outcome data prior to running our national cost model and reporting the results based on those imputations, with caveats in the documentation for our district cost dataset. We have, however, recently participated in a project to produce state-specific cost estimates in New York, which allow us to use the state's own testing and finance data. While state-specific estimates in other states have generally matched up very well with our NECM results, we had some concerns in the case of our NECM estimates for New York. We have decided to keep publishing our New York estimates, but, again, they should be interpreted carefully.

A NOTE ON FEDERAL PANDEMIC FUNDING AND OUR RESULTS

The COVID-19 pandemic did not cause the catastrophic budget cuts that many were anticipating in mid-2020 (Baker and Di Carlo 2020). This was due in large part to the relatively quick recovery of most states' economies, and certainly the K-12 fiscal situation was also shored up by the roughly $200 billion in federal pandemic aid to schools allocated in three waves under the banner of the Elementary and Secondary School Emergency Relief (ESSER) Fund. Some of these funds are included in districts' 2023 spending amounts, and so, like any federal funding that goes toward current operating expenditures, they may be reflected in our statewide adequacy and equal opportunity results (fiscal effort, in contrast, is a strictly state and local funding measure and is not affected).

Although it is difficult to isolate the share of districts' or states' total current spending that came from ESSER funding, we do not believe that these new federal dollars have a large impact on our state-level results. The overall amount of this aid is substantial, but the funding is spread out over multiple years and in most cases will not amount to a large proportional increase at the district level in any given year (especially when averaged across states). In addition, we interpret our results relatively (e.g., by comparing states with each other in any given year). While the infusion of ESSER funds may affect our statewide adequacy and especially our equal opportunity results in absolute terms (e.g., funding may be more adequate, or less inadequate, in districts that receive the money), its impact on states' *relative* performance is almost certainly less pronounced.

RESULTS

In this section, we report results for our three core indicators of **fiscal effort**, **statewide adequacy,** and **equal opportunity**. Data sources for all measures are presented in Appendix Table A1.

Note that, throughout this report, individual years refer to the spring semester of that school year. For example, 2023 means that the data pertain to the 2022-23 school year (the most recent year available).

FISCAL EFFORT

Fiscal effort (or simply "effort") measures how much of a state's total resources are devoted directly to public K-12 education. In our system, effort is calculated by dividing total state and local K-12 revenue by gross state product (GSP).[6] To reiterate, the effort numerator (total state and local revenue) does not include federal aid; effort is strictly a state and local measure.

In Figure 1, we present a map with each state's effort level in 2023, along with its rank (note that effort in the District of Columbia is reported in Figure 1 but it should not be compared with that in other states). Effort ranges from approximately two percent in North Carolina to almost five percent in New Jersey. Put differently, if Arizona were to increase its effort level to that of New Jersey, state and local K-12 revenue in Arizona would increase 150 percent.

Most states are clustered within 0.5 percentage points of the unweighted U.S. average of 3.13 percent. But even seemingly small differences in effort represent large amounts of school funding. We shall return to these state-by-state effort results when we discuss statewide adequacy, below.

FISCAL EFFORT TREND 2006-2023

States' fiscal effort levels can vary year to year due to changes in their education funding policies, their overall economies (e.g., GSP), or both. Figure 2 presents the national trend in effort between 2006 and 2023. The figures in the graph are unweighted averages—i.e., each state's effort level counts equally toward the national average in any given year (the District of Columbia is excluded from these averages). They provide a sense of changes over time in how much the typical state is spending as a share of its capacity.

Fiscal effort seems quite volatile during the earlier years of this time period. The primary reason for this is the financial crisis and so-called Great Recession of 2007-09. Effort spiked between 2007 and 2009 and subsequently declined sharply between 2009 and 2013. The initial jump (2007-09) is an "illusion" of sorts, a result of the fact that recessions affect the denominator of the effort equation (capacity, or GSP) before they affect the numerator (spending). Recessions cause economies to contract very rapidly (they are of course defined that way). But school budget cuts usually take longer to appear. As a result, education spending (the numerator) in the typical state was relatively stable for a couple of years (2007-2009) while capacity (the denominator) declined, causing a spike in effort even without an unusual increase in K-12 spending.

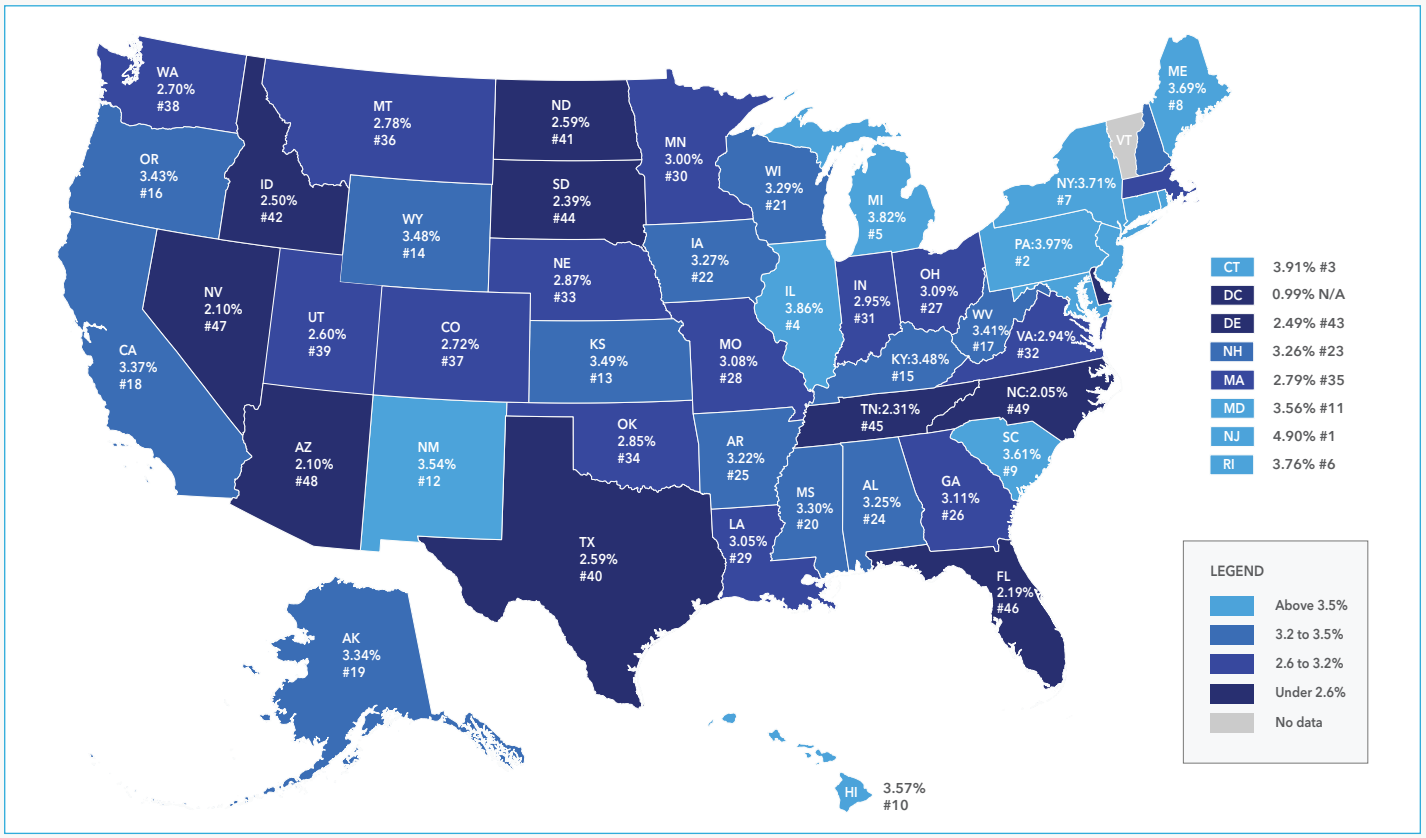
The situation changed dramatically around 2009, as states' economies began to recover while state and local budget cuts began to take effect. Average effort decreased sharply (almost 0.3 points) between 2009 and 2013, with at least a nominal net decrease during this time in virtually every state.

[6] There are two notes of relevance to the effort indicator. First, effective with this release of the SFID, we have replaced the numerator of the effort "equation" with total state and local revenue in each state (we had previously been using total state and local expenditures [direct to education], as published by the U.S. Census' *Annual Survey of State and Local Finances*). This change is due to serious irregularities in recent releases of the Census *Annual Survey*. If we compare the new effort estimates, using the revenue numerator, to those based on the previous numerator (in years before the irregularities began), they are very strongly correlated (r = ~0.90), but some states do vary in their relative performance, depending on which version of the indicator is used. The second, more longstanding issue is that we focus on the GSP-based version of effort in this report, but there is an alternative version with a different denominator (i.e., a different measure of states' fiscal capacity): aggregate personal income (API). The results for this alternative version (using API) are not presented in this report, as they are similar (the correlation between the two is once again roughly 0.90), and both can be downloaded as part of our state database. (The District of Columbia is a major exception to this consistency, and users interested in assessing the District's relative performance in any given year should rely on the API-based indicator.) That said, we focus on GSP- versus API-based effort because we feel the former does a somewhat better job capturing states' revenue-raising capacity, and we do not present both versions of the effort indicator in this report to avoid the confusion and clutter that replicating all analyses would cause. Again, though, readers interested in results for the API-based effort indicator can access these data at the SFID *project website*.

FIGURE 1

State fiscal effort

Total state and local revenue as a percentage of gross state product, 2023



Note: Effort in the District of Columbia should not be compared with that in other states. Effort is not available in Vermont. Ranks may reflect differences concealed by rounding.

DATA SOURCE: SCHOOL FINANCE INDICATORS DATABASE

To reiterate, economic downturns tend to create these up-and-down periods, and the severity of the 2007-09 recession meant that this pattern was also going to be unusually pronounced. What's truly disturbing—and unusual—is the fact that *effort never recovered*. Between 2013 and 2019, effort in the typical state remained mostly flat. This was in no small part the result of deliberate choices on the part of policymakers in many states to address their recession-induced revenue shortfalls primarily with budget cuts rather than a mix of cuts and revenue-raising. In fact, a number of states actually *cut* taxes during and after the recession (Leachman, Masterson, and Figueroa 2017).

We then see a similar "up and down" pattern coinciding with the COVID-19 pandemic. After an increase between 2019 and 2020, average effort dropped from about 3.5 percent in 2020 to 3.1 percent in 2023. This decline was driven mostly by explosive growth in states' economies (GSPs) during these years. Revenue growth, on the other hand, was slow between 2020 and 2021, but was quite robust between 2021 and 2023. That increase, however, was outpaced by abnormally fast GSP growth—i.e., the effort denominator increased more quickly than the numerator, resulting in effort declines in the vast majority of states.

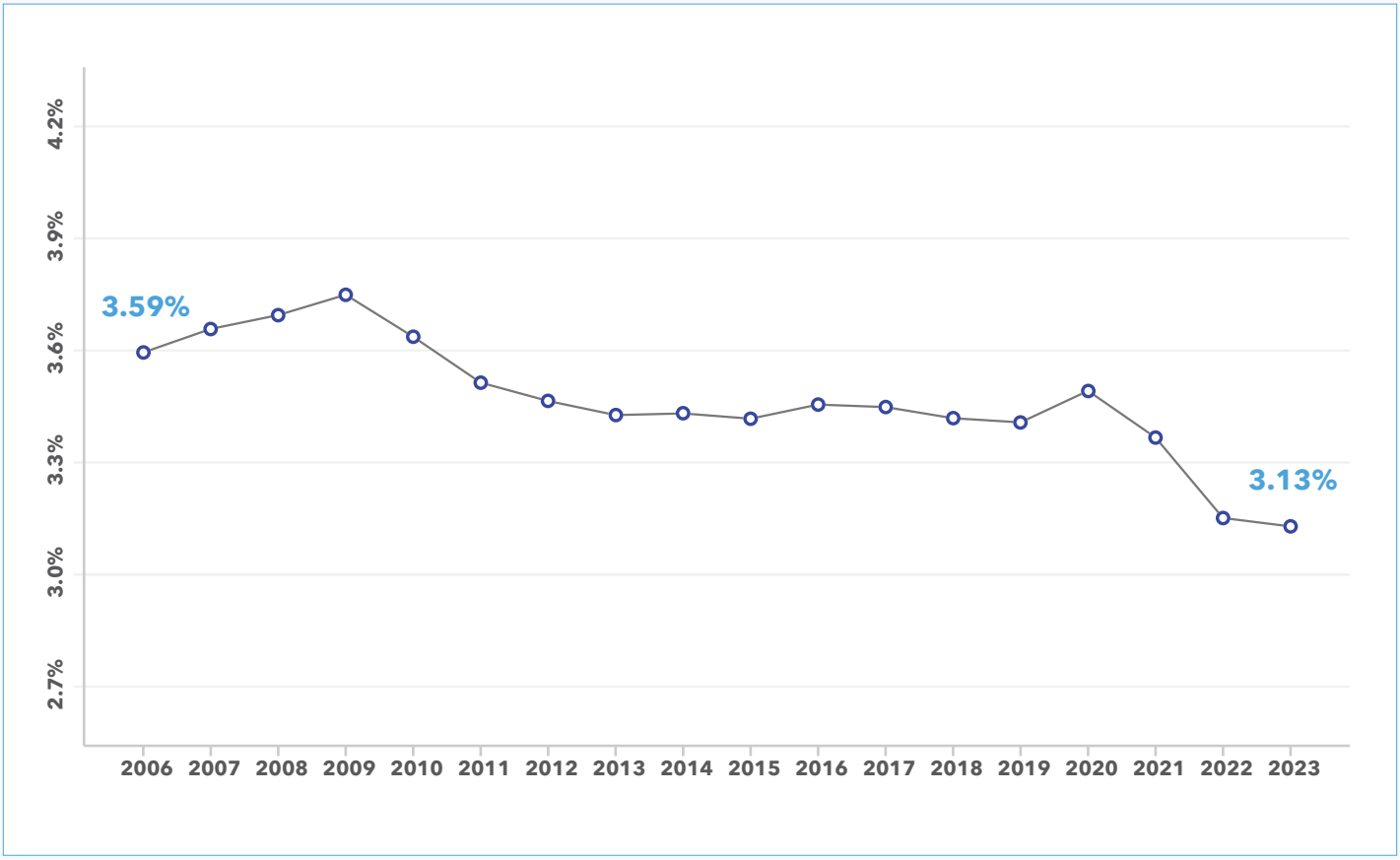
The next few years will be crucial for public education finance. Fiscal effort—and school funding generally—will always depend in part on overall economic trends. Economic contractions, such as that which occurred during the pandemic, affect employment, consumption, and other factors that in turn influence tax revenue. Yet what happens during economic *recoveries* is in many respects more important. Will effort levels bounce back up to their pre-pandemic levels, or will the decline persist as it did in the wake of the 2007-09 recession, creating another seemingly permanent drop?

In either case, the U.S. average effort level was still nearly half a percentage point lower in 2023 than it was in 2006,

FIGURE 2

National fiscal effort trend

Total state and local revenue as a percentage of gross state product, U.S. average, 2006-2023



Note: National averages are unweighted and do not include Vermont and the District of Columbia.

DATA SOURCE: SCHOOL FINANCE INDICATORS DATABASE

with at least modest declines in 42 states. In some of these states, the drops are alarming—for instance, the net decrease was at least a full percentage point in Indiana, Massachusetts, and West Virginia. To view the full trends for any state, ***download its one-page profile***.

THE COST OF DECLINING FISCAL EFFORT

The changes in U.S. average effort discussed above may appear small—fractions of 1 percent—but, again, they can represent very large increases or decreases in education resources. The denominators of the effort calculation are entire state economies.

One simple way to illustrate this impact is to "simulate" spending in recent years at states' *pre-recession* effort levels. For instance, we might ask: How much higher would total K-12 state and local revenue have been between 2016 and 2023 had all states recovered to their own pre-recession (2006) effort levels by 2016? This "thought experiment" entails simply multiplying each state's 2006 effort level by its gross state product in each year between 2016 and 2023 and comparing those "simulated" amounts with actual total state and local revenue in any years where the former exceeded the latter. This, of course, effectively excludes from this exercise five states (Alaska, Connecticut, Illinois, Louisiana, and Wyoming) that, to their credit, exceeded their own 2006 effort levels in all eight years between 2016 and 2023.

According to these calculations, effort decreases since 2006 cost public schools a total of roughly $575 billion between 2016 and 2023, which is roughly 10 percent of all state and local school revenue over these eight years. And this includes enormous proportional "losses" in Arizona (-35 percent), Indiana (-32), and Florida (-29). To view the results of this rough simulation for a state not mentioned above, ***download that state's one-page profile***.

STATEWIDE ADEQUACY

As discussed above, our adequacy measures compare actual spending per pupil to estimated (cost-modeled) per-pupil spending levels that would be required to achieve the common goal of national average math and reading test scores.

There are different ways to express statewide adequacy. For instance, in each state's profile you can find the percentage difference between actual spending and estimated adequate spending for the typical student in that state (i.e., "adequate funding gaps"). The measure upon which we concentrate is a bit simpler and more intuitive: the percentage of students in each state in districts where actual spending is below estimated adequate spending.

We also identify a subset of these below adequate districts in which spending is *particularly far* below adequate levels. We refer to these as "chronically below adequate"—or "chronically underfunded"—districts. We identify these districts as the 20 percent of all U.S. districts with the largest negative adequate funding gaps as a percentage (i.e., the 20 percent of all U.S. districts in which actual spending is furthest below estimated adequate spending). We then calculate, just as above, the proportion of each state's students attending one of these districts. The purpose of looking at the percentage of students in both below adequate and chronically below adequate districts is that the latter statistic gives a sense of how many students in each state are in districts where funding is so low relative to costs that additional funding is especially urgent.

In Figure 3, we present the percentage of students in each state in below adequate (light blue circles) and chronically below adequate districts (dark blue circles).[7] Obviously, circles further to the left indicate more adequate funding (i.e., lower proportions of students in districts with below adequate funding). We would reiterate that it is best to interpret the percentage in each state relative to those in other states. For example, in Maine, only about five percent of students attend schools in below adequate districts, and just over 4 percent are in chronically underfunded districts. We cannot say, for the reasons discussed above, that these are the "true" percentages, but we would conclude that Maine districts, on average, are among the most adequately funded in the nation (the circles in Figure 3 are further to the left than they are in most other states).

The share of students in below adequate districts is comparatively low in a group of states that includes Wyoming, New Hampshire, and North Dakota. Mississippi, in contrast, has the highest percentages of students in underfunded districts (99 percent) and the second highest share (80 percent) in chronically underfunded districts.

There are also a few states, such as South Carolina and New Mexico, in which funding is widely inadequate but effort is relatively high (see Figure 1). This, to reiterate, is in part because students in these states are especially higher in poverty compared with students in other states, and their students tend to score relatively low on state tests; they need more investment to catch up and stay up. As a result, these states have higher costs, and must spend more to achieve a common student outcome goal, making adequacy more difficult even if effort is high. But it is also because of the (related) fact that these are comparatively low-capacity states. That is, due to their small economies, their high effort levels still generate less revenue than those effort levels would yield in states with larger economies (e.g., 3 percent generates a lot more revenue in a high-GSP state such as New York than in a low-GSP state such as South Carolina); these states are "trying" to fund their districts properly, but simply lack the capacity to do so. This is not to say that these states cannot or should not increase their funding levels. But we would also suggest that additional federal assistance might be targeted at these states, as their high costs and small economies constrain the adequacy of their K-12 funding despite their high effort levels (Baker, Di Carlo, and Weber 2022). We will return to this issue in the recommendations section.

Then we have several states that are also low in terms of adequacy, but their effort levels are *low*. Such states include Arizona, Florida, Idaho, Nevada, North Carolina, Tennessee, and Texas. These are states in which inadequate spending represents, at least in part, a deliberate choice on the part of policymakers to tolerate poor out-

[7] The estimates presented in Figures 3, 4, and 5 are calculated using the SFID's District Cost Database (DCD), aggregated to the state level. The full DCD dataset is available up to 2022 at the ***SFID project website***. The dataset with the latest 2023 estimates, which are presented in this report, will be published in mid-2026.

FIGURE 3

Percent of students in below adequate and "chronically" below adequate districts

Percent of students in districts with actual spending below estimated adequate levels and percent of students in districts with adequate funding gaps in the bottom quintile nationally, by state, 2023

Note: Graph does not include Alaska, Hawaii, or Vermont (adequacy not available).

DATA SOURCE: SCHOOL FINANCE INDICATORS DATABASE

comes despite having the capacity to improve them. Their priority should be increasing funding in-house. To view the statewide adequacy rates in any state, including trends over time, *download states' one-page finance profiles*.

EQUAL OPPORTUNITY

We calculate equal opportunity by comparing adequate funding gaps—i.e., the percentage difference between actual and estimated adequate funding—between the higher- and lower-poverty districts in each state (essentially the "gap between the gaps"). We define the former group (higher-poverty districts) as the 40 percent of districts with the highest Census child poverty rates in each state, and the latter (lower-poverty districts) as the 40 percent of districts with the lowest child poverty rates. The difference in adequacy gaps between the higher- and lower-poverty groups, in percentage points, is what we call an "opportunity gap." These gaps are important. When higher-poverty districts are less adequately funded than more affluent districts in a given state, the latter districts are essentially funded to achieve higher outcomes than the former districts.

The gaps are presented, by state, in Figure 4.[8] For example, in Alabama (at the top of the graph), the higher-poverty districts (light blue diamond) spend about 48 percent below estimated adequate levels, and the lowest-poverty districts (dark blue diamond) spend about 7 percent below adequate levels. The "opportunity gap" is therefore -48 minus -7 = -41 percentage points (reported in the line between the diamonds). Note that it doesn't matter whether the two diamonds are above or below adequate (i.e., to the right or left of the vertical zero percent line). What matters is the "space" between them. As discussed above, equal opportunity and statewide adequacy as we define them are independent measures.

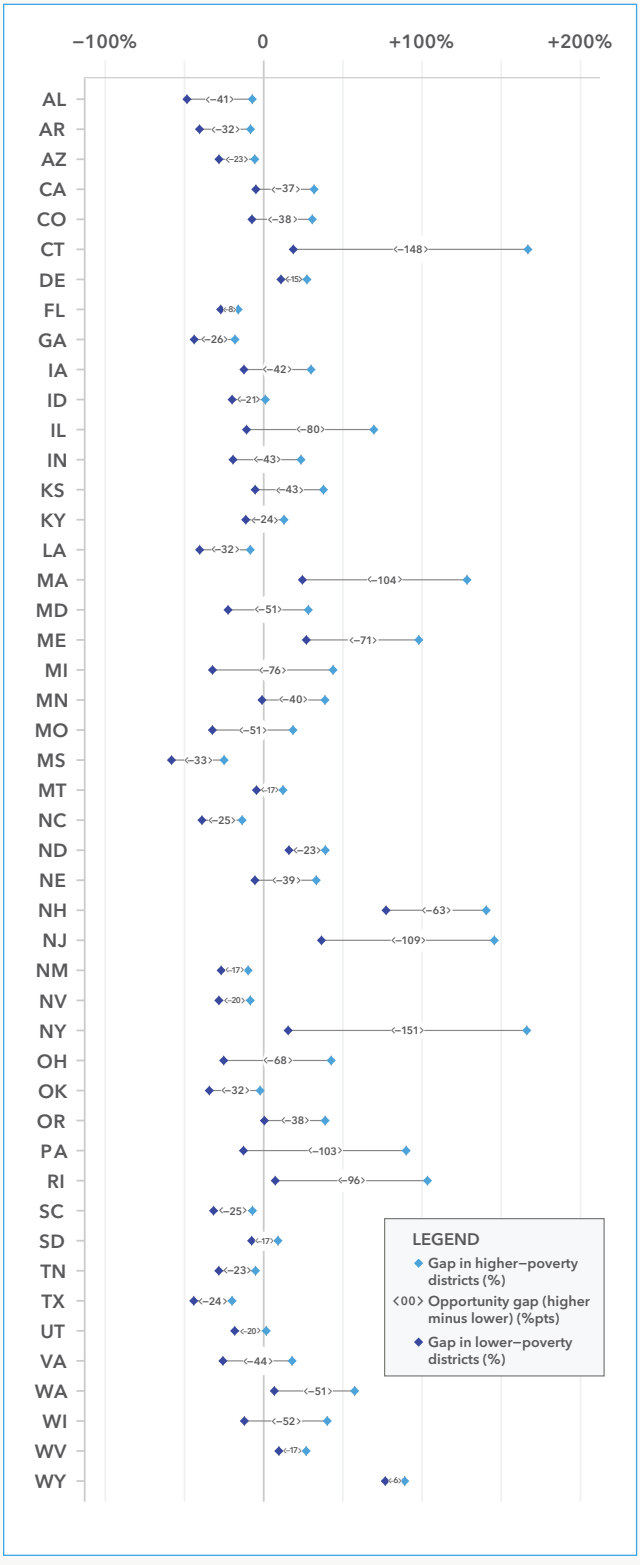
Figure 4 makes it very clear that unequal opportunity is universal in the U.S. In all states, higher-poverty districts are funded less adequately than lower-poverty districts (the dark blue diamonds are to the left of the light blue diamonds). But, again, we are particularly interested in

[8] We might also define equal opportunity gaps as the difference between the highest- (Q5) and lowest-poverty (Q1) quintiles. The two measures—Q5 vs Q1 and Q4/5 vs. Q1/2—are almost perfectly correlated but the latter does a slightly better job of "smoothing out" the estimates in states with huge discrepancies in adequacy between Q1 and Q2 or between Q4 and Q5. Adequacy gaps by district poverty quintile are also available in each state's one-page finance profile.

FIGURE 4

Equal opportunity gaps

Difference in adequate funding gaps between higher- and lower-poverty districts, by state, 2023



Note: The estimate in the middle of each state's band is the difference (in percentage points) between the adequacy gap (percentage difference between actual and estimated adequate funding) for that state's higher- and lower-poverty districts. Higher-poverty districts are the 40 percent of districts in each state with the highest Census child poverty rates; lower-poverty districts are the 40 percent with the lowest poverty rates. Graph does not include Alaska, Hawaii, and Vermont (adequacy estimates not available); it also excludes D.C., which contains only one government-run district.

DATA SOURCE:SCHOOL FINANCE INDICATORS DATABASE

comparing states, and so variation in the magnitude of these gaps is our primary focus.

We find extremely large opportunity gaps in New York (-151 percentage points), Connecticut (-148), New Jersey (-109), Massachusetts (-104), and Pennsylvania (-103). These are mostly northeastern states with relatively high statewide adequacy overall (see Figure 3) but extensive income and wealth inequality. To be clear, there are higher-poverty districts in these states, as there are throughout the nation, that are poorly funded relative to costs; this drives down adequacy for these districts (the light blue diamonds in Figure 4). But the opportunity gaps are very much exacerbated at the lower-poverty end of the spectrum (dark blue diamonds). Affluent districts in these states have lower costs, and also tend to contribute massive amounts of local property tax revenue to their schools, thus widening the gaps in adequacy between higher- and lower-poverty districts. In other words, in these states, large opportunity gaps are often due as much to the highly adequate funding in affluent districts as they are to the inadequate funding in poorer districts.

From this perspective, some degree of unequal opportunity (as we define it) is likely inevitable, and we would never contend that these wealthier districts should decrease their local investment in their schools. In fact, we would even suggest that their local investment is a good thing, as it represents these districts' aspirations for their students to achieve higher outcomes. We do argue, however, that states can and should "raise the floor" for higher-poverty districts and narrow these gaps with targeted state aid. We'll return to this in the recommendation section, below.

Conversely, the opportunity gaps are *relatively* small in Wyoming (-6 percentage points) and Florida (-8). In most of the states with smaller opportunity gaps (Wyoming is an exception), funding is relatively inadequate overall, and it is too low to generate substantial inequality. Put differently, educational opportunity in these states, though still unequal, is less so, in no small part because most districts get very little funding (relative to estimated costs).

EQUAL OPPORTUNITY BY STUDENT RACE AND ETHNICITY: A QUICK LOOK

Given the well-documented association between income/poverty and race and ethnicity, it is not entirely surprising that we should find gaps in K-12 funding adequacy by student race and ethnicity. That is, if students of color are overrepresented in lower-income districts, and lower-income districts tend to be less adequately funded than higher-income districts, then students of color will be more likely to attend schools in districts with below-adequate funding.

It is nonetheless important to examine these discrepancies, as doing so illustrates the multidimensionality of unequal educational opportunity in the United States, as well as the intersection of school funding and racial/ethnic segregation, both present and past (Baker, Di Carlo, and Green 2022; Di Carlo and Baker 2026). In addition, there is evidence that these race- and ethnicity-based funding gaps cannot be "explained away" by poverty (Baker et al. 2020)we use a national district level panel of data from.

In Figure 5, we present the percent of students across all states attending districts with funding below estimated adequate levels and the percentage in chronically below adequate districts in 2022, by student race and ethnicity.

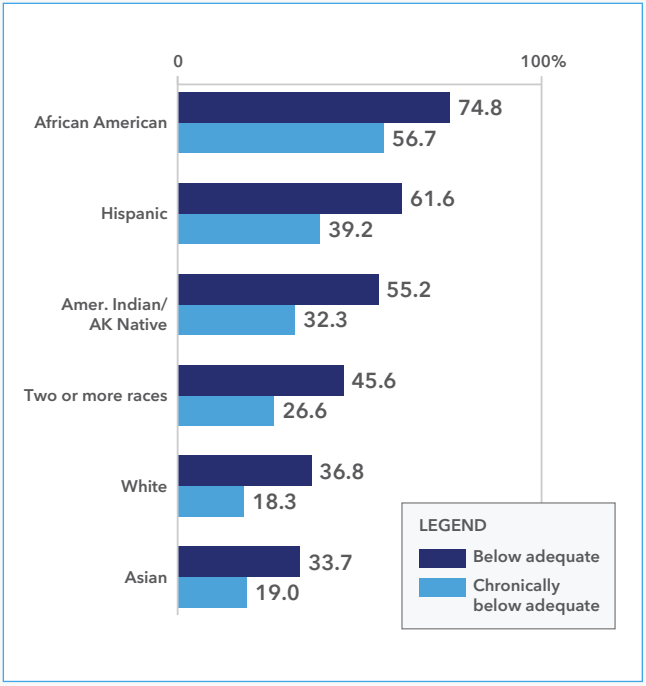
We find that 37 percent of white students attend districts with negative adequacy gaps, compared with 75 percent of African American students and 62 percent of Hispanic students.[9] In other words, African American students are about twice as likely as their white peers to attend school in a district with below-adequate funding, while Hispanic students are almost 70 percent more likely to do so, and Native American ("American Indian/Alaska Native") students are 50 percent more likely.

Similarly, African American students are over 3 times more likely than white students to attend chronically underfunded districts (57 versus 18 percent, respectively),

FIGURE 5

School funding adequacy by student race and ethnicity

Percent of students in below adequate and "chronically" below adequate districts, by student race and ethnicity, 2023



Note: Graph does not include Alaska, Hawaii, or Vermont (adequacy not available).

DATA SOURCE:SCHOOL FINANCE INDICATORS DATABASE

These race- and ethnicity-based discrepancies in funding adequacy, like those based on district poverty, reflect the failure of most states to provide equal educational opportunity for their students, regardless of their backgrounds or circumstances.

[9] We do not report results separately for Hawaiian Native/Pacific Islander students, as roughly one-fourth of these students are in Hawaii, for which adequacy estimates are not available. In contrast, note that we do publish estimates for the category "American Indian/Alaska Native," even though the estimates in the figure do not include Alaska (for which adequacy estimates are also not available). This is because only about five percent of all students in this category are located in Alaska.

POLICY RECOMMENDATIONS

The enormous "under the hood" heterogeneity of state school finance systems means that any attempt to offer national recommendations will inevitably be more general than specific. States' systems are complex, develop over time, and reflect many years of political compromises. The end goal here is universal—all districts, and therefore all students, should have what they need to achieve common (and hopefully desirable) outcomes—but the specific reforms that can help accomplish that goal will always vary state by state.

That said, there are general principles that apply across all states, and these principles lend themselves naturally to sensible policy recommendations.

Better targeting of funding (especially state aid). The backbone of any state finance system is the procedure by which target funding levels are determined for each district. Virtually all states set these targets, whether explicitly or implicitly. If they not determined properly and rigorously, funding may appear adequate and equitable when it is not, and policymakers may not even realize it. Ideally, these targets should represent reasonable calculations of how much funding each district needs to achieve the common student outcome goal(s) chosen by the state, given its student population and other contextual factors (e.g., labor costs).

- ***Audit and reform formulas/targets.*** Although we would suggest using state-specific, output-based cost models to set these targets, there are alternative approaches that might also be feasible (Baker 2018). In any case, as a first step, all states should routinely "audit" their funding targets or levels by comparing them with estimates from analyses using multiple approaches that account for student and district characteristics that influence costs (e.g., Atchison et al. 2020; Kolbe et al. 2019; Taylor et al. 2018). States should then adjust their formulas based on the results, with the goal being to drive additional state aid to districts based on their need (targets) and capacity to produce local revenue.
- ***Eliminate regressive "stealth" policies.*** District funding targets, and thus the equity-producing benefits of state aid, are also compromised by policies in many states that are often buried in complex legislation or overlapping formulas that can require in-depth analysis to uncover. For instance, several states have enacted provisions by which districts are entitled to some minimum level of state aid regardless of their needs or local capacity, whereas others provide local tax relief in the form of additional state aid. Similarly, states often maintain multiple state revenue streams on top of their general formulas, including, for example, flat-rate block grants that are also distributed without reference to costs or local wealth (Baker and Corcoran 2012). States should thoroughly review their systems, identify these policies, and remove them. Any state aid that is not allocated according to need and local capacity will tend to exacerbate unequal opportunity, while also failing to maximize the adequacy benefits of state revenue.

Increase funding to meet student needs where such funding is inadequate. This is, perhaps, the most obvious of our recommendations, but we would emphasize that the point here is not simply to increase funding. It is, once again, to ensure that funding is *commensurate with costs/need*, with a particular focus on allocating enough state aid to compensate for variation in costs/need and local capacity. Our adequacy estimates are designed to assess statewide adequacy and equal opportunity in each state relative to other states, but in reality, all states set their own outcome goals, and so the total amount of funding required can vary accordingly, even between states with similar student populations, labor costs, etc. In general, however, for effective targeting of funding to achieve adequacy and equal opportunity, there must be enough funding.

- ***Increase local revenue contributions where need and capacity are high.*** In states where funding is widely inadequate relative to costs, this might include a substantial increase in local revenue from districts where capacity is sufficient but revenue is lower than would be expected from that capacity (Baker, Di Carlo, and Weber 2022). "Fair share" contributions of local revenue by districts are a stable foundation of good finance systems, and cracks in that foundation will compromise the benefits of state aid.

- ***Increase state aid in amounts commensurate with funding gaps.*** In most states, particularly those in which effort is medium or low (i.e., where there is capacity to raise more revenue), the key is increasing state revenue (e.g., from state sales and income taxes). State K-12 aid is the great equalizer in school finance systems, as it is typically distributed based on district need/capacity. In some states, adequate and equitable funding might require only a relatively modest increase in state aid and/or better targeting. In other states, larger increases are needed. This additional revenue might come from state tax increases and/or from promising possibilities for expanding state tax bases, such as state taxation on nonresidential property (Baker, Di Carlo, and Oberfield 2023; Brent 1999; Ladd 1976).
- ***Eliminate policies that constrain revenue growth.*** In some states, meaningful increases in resources may require the phasing out of policies that constrain revenue or spending growth (e.g., Colorado's TABOR or Proposition 13 in California).
- ***Balance revenue "portfolios".*** Finally, states should also examine their revenue "portfolios"—i.e., the composition of their revenue by source (state vs. local) and tax type (sales, income, property)—and consider making adjustments to maximize equity and minimize volatility during economic downturns; the latter tends to cause disproportionate harm in higher-poverty districts (Baker et al. 2023).

Distribute federal K-12 aid based on both need and effort/capacity. As we've shown in this report, the unfortunate truth is that many states with widely inadequate funding have the economic capacity to rectify that problem partially or even wholly by devoting a reasonable share of their economies to their schools. Several other states, in contrast, *do* put forth strong effort but their costs are so high (e.g., high-poverty student populations) and/or their economies are so small that they are essentially unable meet their students' needs. For these latter states, such as South Carolina and New Mexico, additional federal education aid can serve as a vital bridge to more adequate and equitable funding.

- ***Supplemental federal "foundation aid".*** We recommend some type of federal "foundation aid" approach, in which supplemental federal funds are targeted at districts with below-adequate funding in states that: 1) are already paying their "fair shares" in state and local revenue (as a proportion of their capacity); or 2) make progress toward achieving this reasonable minimum state and local effort level.
    - We have shown elsewhere that such an approach, thanks to recent advances in data availability and modeling, is now a real possibility (Baker, Di Carlo, and Weber 2022).
    - This kind of federal program, while admittedly ambitious, would not only ensure that federal aid is targeted at states and districts where it is most needed, but might also provide some incentive for states to boost their own effort levels, which, as we've shown, are at their lowest levels in decades.

Enhance federal monitoring of school funding adequacy, equity, and efficiency, and mandate more comprehensive K-12 finance data collection. The federal government has long played a productive role in collecting and disseminating education data. The data we use to evaluate state systems in the SFID is mostly collected by the federal government, and the U.S. Department of Education has quite robust analytical capabilities.

- ***Increase federal monitoring and guidance.*** We recommend that the Department of Education establish a national effort to analyze the adequacy and equity of states' systems and provide guidance to states as to how they might improve their systems.
    - This would include estimation and publication of measures such as wage adjustment indices and compilations of nationally normed outcome measures such as those published by the Stanford Education Data Archive, annual estimates of costs such as those of the NECM, and periodic (e.g., five-year) evaluation of adequacy and equity in states' finance systems.
    - It should also include evaluations of the overall efficiency of state and local spending (using NECM-style cost models), as well as of specific policies and practices on which new revenue might be spent.
- ***Require finance data reporting from nongovernmental entities that operate public schools.*** Finally, the annual collection of local education agency finance data (the F-33 survey), which is carried out by the U.S. Census Bureau and published by the Na-

tional Center for Education Statistics, should include public schools run by independent nongovernment organizations (most notably charter schools).

Although several of our recommendations focus on the federal role in K-12 funding, and federal funds can (and do) help, the bulk of the improvement in U.S. school funding policy will have to come from action on the part of states. States determine the rules and parameters for local taxation, as well as the boundaries within which that local revenue is collected shared. They also, of course, determine how much state aid is allocated to districts overall, and who gets what.

State finance systems are complex, and often difficult to understand for policymakers, parents, and the public. None is perfect, and virtually all have at least some redeeming features. Such complexity can be daunting and frustrating, but it has also allowed researchers over the decades to examine how variation in the design of systems leads to variation in results. The upside is that we generally know what a good finance system looks like. But evaluating and ultimately improving states' systems starts with credible, high-quality data and analysis.

Based on our extensive experience collecting, analyzing, and disseminating finance data, and in collaboration with other researchers and organizations, we have designed and presented above a range of indicators that we believe capture the complexity of school finance in a manner that is useful and comprehensible to all stakeholders.

We are once again making all of our data and full documentation freely available to the public at the SFID website (***https://schoolfinancedata.org***), along with single-page profiles of each state's finance system, online data visualizations, and other resources. It is our ongoing hope and intention that the SFID, including the data presented in this report, can inform our national discourse about education funding, as well as guide legislators in strengthening their states' systems.

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APPENDIX TABLE

APPENDIX TABLE A1
INFORMATION ON DATA SOURCES

Indicator	Variable(s)	Source
Fiscal effort	Total state and local K-12 revenue	NCES CCD Public Elementary-Secondary Education Finance Survey (F33) *https://nces.ed.gov/ccd/files.asp*
	Gross state product and aggregate state personal income	U.S. Bureau of Economic Analysis *https://bea.gov*
Statewide adequacy and equal opportunity	Estimated required and actual spending, by district (aggregated to state level). **NECM variables include (partial list):**	**National Education Cost Model (NECM)**[1]
	Nationally normed test scores (2009-19)	Stanford Education Data Archive (Reardon et al. 2024) *https://purl.stanford.edu/cs829jn7849*
	Regional wage variation	Education Comparable Wage Index (Taylor 2014; Taylor, Fowler, and Schneider 2006) *https://bush.tamu.edu/research/taylor-cwi*
	Child poverty (5- to 17-year-olds)	U.S. Census Bureau—Small Area Income and Poverty Estimates (SAIPE) *https://census.gov/programs-surveys/saipe.html*
	K-12 revenue and spending	NCES CCD Public Elementary-Secondary Education Finance Survey (F33) *https://nces.ed.gov/ccd/files.asp*
	District size/enrollment	NCES Common Core of Data—Local Education Agency Universe Survey *https://nces.ed.gov/ccd/files.asp*
	Population density	U.S. Census Bureau—Population Estimates *https://census.gov*

Note: This table includes data sources only for variables presented directly in this report. For more information on these variables and their sources, see the documentation for the SFID State Indicator Database and District Cost Database at the SFID website (*https://schoolfinancedata.org*).

[1] The NECM incorporates variables from sources in addition to those listed in the indented rows. For more details, see Baker et al. (2021).

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$$(In)\mathbf{SCHOOL} = b_0 + b_1 State_i + b_2 LaborMarket_{ij} + b_3 CWI_{ij} + b_4 \mathbf{FINANCE}_{ij} + b_5 PopulationDensity_{ij} + b_6 Enrollment_{ij} + b_7 \mathbf{INDICATORS}_{ij} + b_8 Scale_{ij} + b_9 Poverty_{ij} + b_{10} SchlType_{ij} + b_{11} \mathbf{DATABASE}_{ij} + e$$