

METHODOLOGY

Equable Institute's Hidden Education Funding Cuts project is an on-going effort to identify the ways that growing teacher retirement costs are influencing resources available for K-12 education purposes.

This document provides detailed methodology notes related to "Hidden Education Funding Cuts in 2023" which is available at www.equable.org/hidden-funding-cuts/. We provide a detailed run-down of all the various challenges, assumptions, and other methodological decisions that were made by the Equable Research Team to conduct the analyses contained in this paper.

The simplicity of our approach in this paper provides resilience to our findings, which are robust using multiple different data sources and hold up across the 50 states and the District of Columbia over-time. Moreover, our conclusion is simple — the rising costs of teacher retirement benefits, driven by large unfunded liabilities, are outpacing increases in education funding. This simple reality means that each year pension debt is consuming a larger share of the dollars intended for the classroom.

For any further questions about data sources, data utilization, or data methods, please contact the authors Jonathan Moody and Anthony Randazzo.

Our General Approach

Our analysis indicates that retirement costs are growing much faster than total funding, meaning that items other than teacher retirement expenses are being squeezed out of budgets. We also find that the primary driver of those retirement costs are pension plan costs, and more specifically the unfunded liability amortization payments that are colloquially known as pension costs.

The growth in pension debt costs has translated into less money for K-12 programs and staff, which is often referred to as "crowd out," a "squeeze," "bunch crunch," or other similar terms. But the basic idea is that retirement costs are growing faster than K-12 spending, and so there is less available than there would be if not for the change in benefit costs.

Whether this crunch translates into fewer teachers, delayed pay raises, larger classrooms, deferred school maintenance, or the discontinuation of school programs varies from district-to-district. However, the reality is simple — pension debt costs are harming states' abilities to provide a quality, equitable public education to all students.

This paper, then, does not aim to perform statistical tests to verify the presence of a specific degree of "crowd out" in education finance. We start from the premise that a 0% relative growth rate in K-12 spending would be ideal and everyone would agree that 100% of K-12 spending shouldn't go to retirement costs. However, we are agnostic to what the appropriate amount of education spending on retirement and other benefits should be, as it is a subjective matter related to a wide range of policy goals and preferences.

Instead, our project focuses on the growth in pension costs in states relative to growth in K-12 spending, examining the "share" of education spending being consumed by retirement costs. Statistical modeling is not necessary to see that pension costs are cutting into state and school district budgets.

A litany of various factors could influence this ratio, and it isn't necessary to lay blame on a single source. The reality is simple: If the share of education spending going toward retirement systems is growing faster



than increases in education budgets, an increasing share of funds will not be available to support resource equity, provide teacher pay raises, or otherwise make it into the classroom.

There is value in understanding the source of the growth in hidden education funding cuts on a state-to-state level. In certain states it might be a function of slow growing K-12 resources. In other states it might be a specific source of growth in unfunded pension liabilities. But, at a national level, the more important analysis is whether there is a trend going in the right or wrong direction.

One of the primary strengths of our analyses lies in their sheer simplicity and the lack of qualifying assumptions required. We compile three basic data components for all 50 states (and Washington DC) over time, adjust them for inflation, and then examine their respective trendlines, individually and in concert, to assess the extent to which rising pension costs are cutting into education funding.

We make no assumptions regarding the specific operations of each respective state's education finance system, funding model, or other operations. We do not assert ourselves to be experts in education finance, but we recognize there are notable complexities that exist across states ranging from where education revenues come from, to how those funds pass through state and local government budgets, down to who is responsible to pay employer contributions to retirement systems.

We compile our data such that education expenditures (from both sources outlined in greater detail below) and pension costs are a simple time-series for each given state. From there, we simply examine the trends to see what share of education funding is going toward paying pension costs. This approach is simple, but has its limits. We do not employ advanced statistical modeling or other econometric analyses to attempt to establish causality and, in most cases, offer no more than simple observations of the trends in our data. Such work could be done in further work or by other analysts (any of whom are welcome to use our collected and organized datasets, which are available as part of the [Equable Public Retirement Research Database](#)).

However, we make no greater assertion than that retirement costs are growing at a faster rate than education funding. This is not a statement of opinion to justify a perspective regarding pensions, rather, it is an empirical fact we demonstrate thoroughly throughout the paper. The fact that pension costs are outpacing education funding is resulting in a larger share of the dollars intended for the classroom never getting there — this is the hidden education funding cut.



Data Overview

Data collected for this report came from a wide range of sources, including the Census Bureau, state and local retirement systems, the Bureau of Labor and Statistics, the National Center for Education Statistics (NCES), and the National Association of State Budget Officers (NASBO). While multiple data sources were utilized, these data break down into roughly three groups: education expenditures, retirement costs, and other supporting data.

Education Expenditures

To reflect the education funding side of our analyses, we referenced three different sources to compile our time series. One is a measure of state “own-source” spending on K–12 education collected from NASBO’s annual State Expenditure Reports.¹ While these data served as the foundation for our analyses in a prior iteration of this report, we acknowledge that a significant share of education funding is drawn from local sources. As such, we supplement the state own-source data by also compiling the total education expenditures, state education expenditures, and local education expenditures reported by the Census Bureau’s Annual Surveys of State and Local Government Finance.² One limitation of the Surveys of State and Local Government Finance is that they are limited in scope to relatively top-line figures. As such, we further supplement our education finance data using the Census Bureau’s Public Elementary-Secondary Education Finance Database, which includes breakdowns of spending to between wages and salaries and employee benefits.³

We note that in each of these three approaches to recording education funding that we have excluded federal dollars as these generally are prescribed for specific programs and not typically the basis of sources of payroll financing. While we are able to demonstrate the federal funds that are given to states to fund education using both NASBO and Census data, federal funding does not have any impact on our analyses.

NASBO VERSUS CENSUS DATA

Both the NASBO and Census data have strengths and weaknesses.

As noted previously, the intricacies of each respective state’s education finance system and funding model are numerous and complex. This is among the greatest strengths of the state own-source data provided by NASBO, as these data are self-reported totals spent on education as offered by each state’s respective executive budget officer. Because these data are self-reported, it is not necessary for us to unpack or to otherwise discern whether the dollars going toward K–12 are coming from the state’s general fund, earmarked revenues, or other supplemental operating funds.

Furthermore, included in their survey, NASBO asks each budget officer to indicate whether or not teacher retirement costs are included in the total they report. Using these responses reported to NASBO, we are then able to adjust the reported totals such that we do not assume pension costs are included where they should not be. In cases where the budget officer indicated that retirement costs are excluded from their education

¹ NASBO’s State Expenditure Reports can be accessed here: <https://www.nasbo.org/reports-data/state-expenditure-report>

² Census Annual Surveys of State and Local Government Finances can be accessed here: <https://www.census.gov/programs-surveys/gov-finances.html>

³ The Census Public Elementary-Secondary Education Finance database can be accessed here: <https://www.census.gov/data/tables/2021/econ/school-finances/secondary-education-finance.html>



spending totals, we add the pension costs (explained in the next sections in greater detail) to the reported education funding totals.

One weakness of the NASBO data is that may not reflect how every agency in a given state may think about education spending and they are focused exclusively on state dollars. This means that they omit the local funding that often comprises a significant share of the total dollars that go toward the classroom. As a result, any state-specific analysis based on NASBO data should be contextualized with other data that allow for the inclusion of these local funds.

This is why we also draw on Census data. Census provide as reliable of a measure of both state and local government spending on K–12 education as is readily available. The fact that these data provide a means to capture the dollars being sent to classrooms while also accounting for the mixture of state and local spending. These Census data, as with all other Census products, are highly vetted and are frequently revised as more accurate or complete totals become available.

However, Census data do suffer from a variety of shortcomings. One of the limits of the Census data is the number of years covered and completeness of data provided. This has meant most of our Census data-based analysis focuses on the period 2002 to 2020.⁴ By contrast, we can use NASBO data for the period 2001 to 2021. And 2001 is an appropriate starting point for analysis because it marks the point in time when teacher pension plans were best funded.

Another issue introduced with the Census data relates to their ability to accurately classify all elements of state and local government spending. Census researchers have an unenviable task of trying to untangle the afore mentioned complexities of education finance so that they can then accurately classify the data that their surveys produce. In fact, as the Census Bureau also explicitly notes in their documentation for their Surveys of State and Local Government Finance, they “implemented significant changes to its classification system for statistics on government finances effective with FY 2005 data.”⁵ These categorization challenges are well known by public finance researchers, as Census is presented with the challenge of fitting the myriad financial systems of the states into a uniform classification system. This often can result in mis-categorizations that will exclude or include data in state spending figures.⁶

⁴ We note that data are available for 2001, however, the totals are not consistent with those reflected in 2002, suggesting either an error in classification, incorrect data posting by Census, or an honest error on the part of the Equable Research Team. In any event, the fact the data format and structure are not consistent over time is problematic for non-Census researchers when trying to compile a consistent time-series.

⁵ U.S. Census Bureau. (2010). Data Base on Historical Finances of State and Local Governments: “Govt_Finances” Fiscal Years 1957 – 2008 README Documentation. The note states, “The Census Bureau implemented significant changes to its classification system for statistics on government finances effective with FY 2005 data. Some of these changes will be obvious (e.g., new variables, no more data for existing ones, large increases due to expanded coverage of variable). Others, however, will not be as apparent, such as changing the coverage of a data variables from state only to include all local governments who reported some but not a significant amount of data.” For additional information regarding the reclassification, see Appendix 1 to the [2006 Government Finance and Employment Classification Manual](#).

⁶ We note that, in addition to the concerns we raise above, there are numerous options for different Census data to draw upon. For instance, we could have drawn data from their Annual Survey of School System Finances, Survey of State and Local Government Finances, and Public Elementary-Secondary Education Finance Dataset. All these data sources have their own nuances and introduce their own trade-offs regarding data quality, data availability, classification challenges, and more. In our case, we opted to use the Survey of State and Local Government Finances data because they report higher top-line education spending figures than in the other available Census datasets. These top-line data are capital inclusive and, in many cases, even include higher education costs. While one could argue that this is an incorrect approach to examining the impact of pension costs on K–12 education, as these data include



USING NASBO AND CENSUS DATA SIDE-BY-SIDE

Yet, at the end of all of this, we are presented with two “competing” data series that are both intended to track the level of education spending in a given state. And, perhaps most importantly of all, it is worth emphasizing that state own-source expenditure data in NASBO and both the total and state-only data from the Census reports largely track one another, regardless of which data source we utilize.

As a result, we offer examinations of the trends using both measures of education spending in our analyses, to offer full transparency, while also incorporating measures of local spending and illustrating how all of our results indicate similar trendlines for hidden education funding cuts. This adds strength to our analyses because we are not reliant on a single data source of perspective on K-12 education spending. For any given state, one or the other data set might be more appropriate — or even a more refined approach to retirement costs for the state and school districts. Nationally, though, we can use both NASBO and Census data to paint a picture of the trendlines in hidden education funding cuts.

Student Enrollment

Another way to assess the impact of rising pension costs is to normalize both costs and education funding into per-student totals. This approach has the benefit of reflecting the amount of resources being allocated to each child in the classroom, while also tracking whether student enrollment is increasing or decreasing (which could explain shifts in education funding).

As we have compiled data on the level of education funding (described in the preceding sections) and retirement costs (detailed in the following sections), the only piece remaining is to collect data recording the number of students enrolled in K–12 for each state in a given year. Thankfully, these data are among the most readily available, as the National Council of Education Statistics (NCES) publishes these regularly to reflect each school year.⁷ NCES data are widely viewed as among the best available when it comes to analyzing education-related topics.

While we also believe NCES data to be highly reliable, we did perform one added layer of review on these data. Specifically, the Census Public Elementary-Secondary Education Finance database also includes an annual measure of enrollment for each state. These data were compared against the NCES totals, finding that while the exact totals differed, they only did so slightly typically with less than 3 to 5% difference from the Census totals. Moreover, the trends were the same, meaning that a state that has seen declining enrollment in the NCES data also saw a decline in their Census enrollment figures. But, as the NCES data are both more widely viewed as reliable and allow for the inclusion of additional years to our analyses, we have opted to use their enrollment data for our analyses.

elements beyond just K–12 spending, we would argue that a more top-line approach helps ensure that we are less impacted by any issues related to classification challenges, or other data issues that might arise in the more fine-grained sources. For instance, in the state of Pennsylvania, the primary and secondary specific data even from the Survey of State and Local Government Finances report that \$0 was spent by the state on K–12 education, while the self-reported data from NASBO indicate that approximately \$14 billion in state own-source funding was allocated. Using these top-line figures allows for us to minimize the impact of these sorts of issues while simultaneously biasing our results in favor of hidden education cuts being smaller than they actually are. This may result in overstating the amount of money actually going to the classroom in any given state-year, both on an aggregate or per pupil basis. However, we would again point out that this approach biases our calculated hidden funding cuts down. Should we use these more finely grained data then the magnitude of the hidden cuts would only increase while the trends would largely remain the same.

⁷ Enrollment data from NCES can be located here: [K-12 enrollment - USAFacts](#)



Retirement Costs

“Retirement costs” throughout this paper refer to any employer contributions to a retirement plan that is intended for providing a primary source of income to teachers and/or public school employees (including for retirement plans offered to teachers by municipalities). This includes defined benefit pension plans, defined benefit cash balance plans (or guaranteed return plans), defined contribution plans, and hybrid forms of these structures. We notably did not include any employer contributions to supplemental retirement plans, nor did we count employer “pick-ups” of member contributions as these are managed at the district level and are not always consistent across a given state. We also did not count supplemental payments made to a pension fund if they were from a state’s general fund or rainy-day fund.

To reflect these costs, we compiled data using actuarial valuation reports, annual comprehensive financial reports (ACFRs), and other documents published by the retirement systems themselves. In most cases these documents are required by statute (or other binding rules) to provide audited financial data including, but not limited to, the actuarially determined contributions for both members and employers, supplemental state contributions, the contributions actually paid to each retirement system, and other supporting data regarding the broader funded status and funding policies for the plan.

Using these documents, the Equable Research Team compiled data recording the actuarially required employer contributions (ADEC) and contributions paid for all plans that provide benefits to certificated K–12 educators. All figures are recorded in raw, nominal dollars to ensure there are no issues created due to different scaling of totals reported across plans and years.

We note that “employer contributions” in this context refers to either school district employers and, where applicable, state contributions as a non-employer contributor. Most states have separate retirement systems, retirement plans, or tiers of benefits for teachers and public school employees, and this allows us to collect contribution rate data specific to these classifications of employee. States that offer the same retirement plan for all civilian public employees typically publish reports based on Government Accounting Standards Bureau (GASB) guidelines that document what share of the collective pension plan’s contributions were associated with K–12 employees.

PLANS COVERED

The primary objective of our analysis is to compare the trends in education funding against the retirement costs of teachers, so, as such, we have opted to limit our analyses to only K–12 teachers to the extent possible.

Some states classify all employees in public sector schools as the same for the purpose of retirement benefits (such as in Texas). Others differentiate between full-time classroom teachers and non-instructional public education staff (administrative staff, instructional aids, lunchroom staff, etc.) and create standalone retirement systems and pension plans for these workers (such as Louisiana and Missouri, which create entirely separate pension plans for non-instructional staff; or California, which puts non-instructional employees in the state employee pension plan). Still other states put certificated teachers in one retirement plan and then include non-instructional school employees as members of a state employees plan (like Connecticut), or they just mix every public school employee — instructional or not — in with state and municipal workers as part of a general public employees retirement plan (see the “regular” pension plans in Nevada and Florida). Plus, states also vary as to whether higher-ed employees are included in the pension plan for K-12 teachers, have their own plan but managed by the same retirement system, get counted as state employees, or have an entire retirement system for themselves.



There are even a few cities that manage teacher pensions. Municipalities offering their own primary retirement plan for teachers including: Chicago, IL; Denver, CO; Kansas City and St. Louis, MO; New York, NY; and St. Paul, MN. Other municipalities offer defined benefit pension plans to teachers supplemental to a statewide plan, such as Knox County, TN and Fairfax County, VA.

In some cases, we are able to easily separate out any non-K-12 teacher retirement benefits, as the plans are limited to instructional staff (e.g., CalSTRS or Connecticut TRB). In other instances, we adjust the broader

liabilities and contributions of plans to reflect only the share that can be attributed to public school employers, whose budgets are typically overwhelmingly consumed by instructional salaries and wages (this process is detailed in the next section). And, fortunately, higher-ed related liabilities and cost are typically line itemed if included in a K-12 teacher pension plan (such as the breakout of higher-ed data in Texas TRS GASB 68 reports or Kentucky TRS valuation reports).

While this decision to exclude non-instructional staff from our analyses does mean we are understating the retirement cost of public education, we note that the trends are still likely to be the same, albeit with slightly different magnitudes. If anything, our decision to exclude multiple independent retirement systems for non-instructional staff actually helps to produce a more conservative estimate of the rising costs associated with unfunded pension liabilities and, in turn, biases the results of our analyses in favor of a null hypothesis. The fact that we are actively excluding some of these retirement costs and still find evidence suggesting that rising retirement costs are cutting into available education funding only serves as further support that further examination is warranted.

Teachers in several states are afforded the choice to opt into various different retirement options including traditional defined benefit pension plans, but also featuring 401k-style defined contribution plans and guaranteed return plans — also known as *cash balance plans* — that operate with individual retirement accounts for teachers but guarantee a designated return on plan members' investments.⁸

We focus our analyses primarily on defined benefit pension plans that cover classroom teachers, as they represent the vast majority of public education payroll. However, we also compiled and include contributions to teacher defined contribution plans in our measures of retirement costs. A full list of the retirement systems included in our analyses can be found in Table 1 in the next section.

ADJUSTING FOR TEACHERS' LIABILITIES

When examining the relationship between education funding and teacher pension costs it is necessary to identify and isolate the retirement costs for educators, as described above. However, in many cases, K-12 teachers receive benefits offered by a retirement system that covers many different types of public employees. For instance, the Arizona State Retirement System offers benefits that cover nearly all state public employees, (with the notable exceptions being those in public safety roles who are covered by the Public Safety Personnel Retirement System, which also administers plans for elected officials and corrections officers). This presents a challenge for our analysis, as most of these retirement systems do not provide sufficient detail in their published documents to clearly attribute the unfunded liabilities for teacher benefits.

⁸ Note: Both Kansas offers guaranteed return plans to teachers while Hawaii has a hybrid plan that includes a guaranteed return plan component. Kentucky also recently created a new tier of benefits for those teachers hired after July 1, 2022, that is a hybrid plan combining a pension portion with a guaranteed return plan.



Although the actuarial valuations and ACFR documents often do not clearly state that a set dollar amount can be linked to teachers, we identified an approach that would allow us to isolate the portion of liabilities and contributions that can be attributed to public school teachers — something we call the “teacher share.” To get these adjusted totals, we reference “Proportionate share” documents that are released each year by plans as part of their required normal disclosures under General Accounting and Standards Board (GASB) requirements. These documents list the contributions paid by each major employer whose employees are enrolled in the retirement system. Moreover, these documents also calculate the share of total contributions that can be attributed to each employer.

As such, the Equable Research Team reviewed the most recently published GASB documents to identify public schools and school districts. The proportionate shares were then summed across all applicable employers to produce an estimated “teacher share” that could be applied to adjust the total liabilities, ADEC, and contributions paid for each retirement system included in our analyses. The full list of proportionate shares for each system is listed in Table 1 below.

TABLE 1: TEACHER SHARES LISTED BY RETIREMENT SYSTEM

Retirement System	Plan Name	Teacher Share
Alabama Teachers' Retirement System	Alabama TRS	62.3%
Alaska Teachers' Retirement System	Alaska TRS	97.4%
Alaska Teachers Retirement System DC	Alaska TRS DC	100.0%
Alaska Teachers Retirement System Disability Plan	Alaska TRS Disability	100.0%
Arizona State Retirement System	Arizona SRS	48.1%
Arkansas Teacher Retirement System	Arkansas TRS	98.6%
California State Teachers' Retirement System	CalSTRS	100.0%
Colorado Public Employee Retirement Association - Denver Public Schools Fund	Colorado DPS	100.0%
Colorado Public Employee Retirement Association - Schools Division Fund	Colorado Schools	100.0%
Connecticut State Teachers' Retirement System	Connecticut STRS	99.5%
Delaware State Employees' Pension Plan	Delaware SEPP	4.8%
District of Columbia Teachers' Retirement Fund	D.C. TRP	100.0%
Florida Retirement System - Defined Benefit Plan	Florida RS	33.5%
Florida Retirement System DC	Florida RS DC	33.5%
Georgia Teachers Retirement System	Georgia TRS	84.1%
Employees' Retirement System of the State of Hawaii	Hawaii ERS	23.2%
Public Employee Retirement System of Idaho	Idaho PERS	43.1%
Illinois State Teachers' Retirement System	Illinois TRS	100.0%
Public School Teachers' Pension and Retirement Fund of Chicago	Chicago Teachers	100.0%
Indiana State Teachers Retirement Fund - 1996 Account	Indiana TRF 1996	100.0%
Indiana State Teachers Retirement Fund - Pre-1996 Account	Indiana TRF Pre-96	100.0%
Iowa Public Employees' Retirement System	Iowa PERS	47.8%
Kansas Public Employees Retirement System - School Employees	Kansas PERS-T	100.0%
Kentucky Teachers' Retirement System	Kentucky TRS	95.3%
Louisiana Teachers' Retirement System	Louisiana TRS	74.4%
Maine Public Employees Retirement System - State Employee and Teacher Program	Maine SETP	52.4%
Maryland State Retirement and Pension System - Teachers' Combined System	Maryland TCS	96.3%
Massachusetts Teachers' Retirement System	Massachusetts TRS	100.0%



Michigan Public School Employees' Retirement System	Michigan PSERS	100.0%
Michigan Public School Employees' Retirement System Pension Plus Plan	Michigan PSERS PPP	100.0%
Michigan Public School Employees' Retirement System Pension Plus Plan 2	Michigan PSERS PPP2	100.0%
Minnesota Teachers Retirement Association	Minnesota TRA	100.0%
St. Paul Teachers Retirement Fund	St. Paul Teachers	100.0%
Public Employees' Retirement System of Mississippi	Mississippi PERS	39.7%
Missouri Public School Retirement System	Missouri PSRS	100.0%
Kansas City Missouri Public School Retirement System	Kansas City Missouri Schools	100.0%
Public School Retirement System of the City of St. Louis	St. Louis School Employees	100.0%
Montana Teachers' Retirement System	Montana TRS	97.9%
Nebraska Public Employees Retirement Systems - School Employees Plan	Nebraska SEP	100.0%
Public Employees' Retirement System of Nevada - Regular Subfund	Nevada PERS-R	36.7%
New Hampshire Retirement System	New Hampshire RS	45.0%
New Jersey Teachers' Pension & Annuity Fund	New Jersey TPAF	100.0%
New Mexico Educational Retirement Board	New Mexico ERB	68.5%
New York State Teachers' Retirement System	New York STRS	100.0%
Teachers' Retirement System of the City of New York	New York City Teachers	100.0%
North Carolina Teachers' and State Employees' Retirement System	North Carolina TSERS	56.0%
North Dakota Teachers' Fund for Retirement	North Dakota TFR	100.0%
Ohio State Teachers' Retirement System	Ohio STRS	78.4%
Ohio State Teachers Retirement System DC	Ohio STRS DC	78.4%
Oklahoma Teachers' Retirement System	Oklahoma TRS	77.3%
Oregon Public Employees Retirement System - Tier1/2 and OPSRP Combined	Oregon PERS	31.1%
Pennsylvania Public School Employees' Retirement System	Pennsylvania PSERS	100.0%
Pennsylvania Public School Employees DC	Pennsylvania PSERS DC	100.0%
Employees' Retirement System of Rhode Island - Teachers	Rhode Island ERS-T	100.0%
South Carolina Retirement System	South Carolina RS	41.9%
South Carolina Retirement System DC	South Carolina RS DC	41.9%
South Dakota Retirement System	South Dakota RS	39.9%
Tennessee Teacher Legacy Pension Plan	Tennessee TLPP	100.0%
Tennessee Teacher Retirement Plan	Tennessee TRP	100.0%
Texas Teachers Retirement System	Texas TRS	85.5%
Utah Public Employees Contributory Retirement System	Utah CRS	35.1%
Utah Tier 2 Public Employees Contributory Retirement System	Utah CRS-T2	50.1%
Utah Public Employees Noncontributory Retirement System	Utah NRS	74.6%
Utah Retirement System DC	Utah T2 DC	50.1%
Vermont State Teachers' Retirement System	Vermont STRS	100.0%
Virginia Retirement System - Teachers Division	Virginia RS-T	100.0%
Washington Teachers Retirement System Plan 1	Washington TRS 1	99.2%
Washington Teachers Retirement System Plan 2 & 3	Washington TRS 2/3	98.7%
West Virginia Teachers' Retirement System	West Virginia TRS	99.7%
Wisconsin Retirement System	Wisconsin RS	33.0%
Wyoming Retirement System	Wyoming RS	50.5%

With these teacher shares in hand, the adjustment process is relatively simple and straightforward. However, there are some exceptions worth noting. In cases where the GASB reporting was insufficient to discern a teacher share, we assume the share to be 100% if the plan is specifically designated for teachers (e.g., Vermont State Teachers' Retirement System).

In the small number of cases where data was not provided for a given year, we used an estimating methodology to determine what share of employer contributions to count in this study. Further, in a small number of cases complete employer contribution data was not available — this effectively makes all of our estimates slightly conservative. The dollars involved in these exclusions are exceedingly small and would not influence the overall analysis if they were included (though they would change the headline figures for a specific state).

We also note that this approach is limited in that we cannot further decompose the liabilities and contributions to separate K–12 teachers from non-instructional public school employees. In a few instances, states have distinct plans that provide benefits for each group separately. In those cases, as noted in the previous section, we have opted to include only the plans specific to teachers.

INFLUENCE OF DEFINED CONTRIBUTION PLAN COSTS ON HIDDEN CUT LEVELS

The majority of teacher retirement benefits are offered through “pension plans” (defined benefit plans based on final average salary) that are administered at the state level. But over the past two decades there have been multiple defined contribution plans introduced for teachers, as well as “hybrid plans” that have a defined contribution component. Teachers in Kansas and Kentucky also get benefits through a kind of defined benefit plan called “guaranteed return” or “cash balance.”

For the purposes of measuring the share of K–12 spending that is consumed by retirement costs, these alternative plans increasingly matter with respect to appropriately tabulating employer contributions. Most of these pension plan alternatives were introduced after the Great Recession, so they still are in the early stages of adding members and building up any sizable share of employer contributions. So nationally, in the inclusion of these plans does not make a meaningful difference in the Hidden Education Funding Cuts trendline. However, for any given state they might meaningfully change the topline figures.

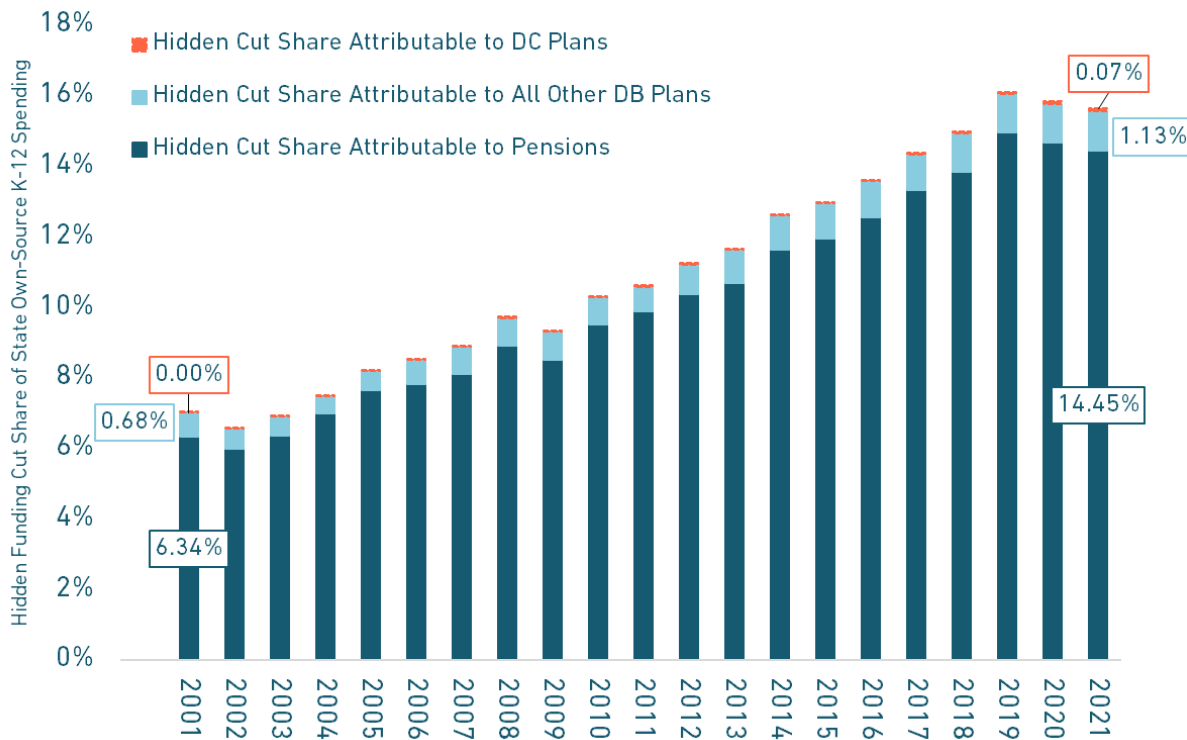
Similarly, the inclusion of data from municipally administered teacher pension plans does not dramatically influence the topline trends because the total number of the plans is small. However, for the states that have separately provided teacher pensions for certain school districts (Colorado, Illinois, Minnesota, Missouri, New York) the topline figures can change based on complete data.

The figures below show similar charts from the main paper that show the percentage change in hidden education funding cuts. Except here we show what the trendlines look based on different levels of data inclusion.



FIGURE M1: CHANGE OVER TIME IN HIDDEN K12 CUTS TO STATE OWN-SOURCE FUNDING, BY RETIREMENT PLAN TYPE, 2001-2021

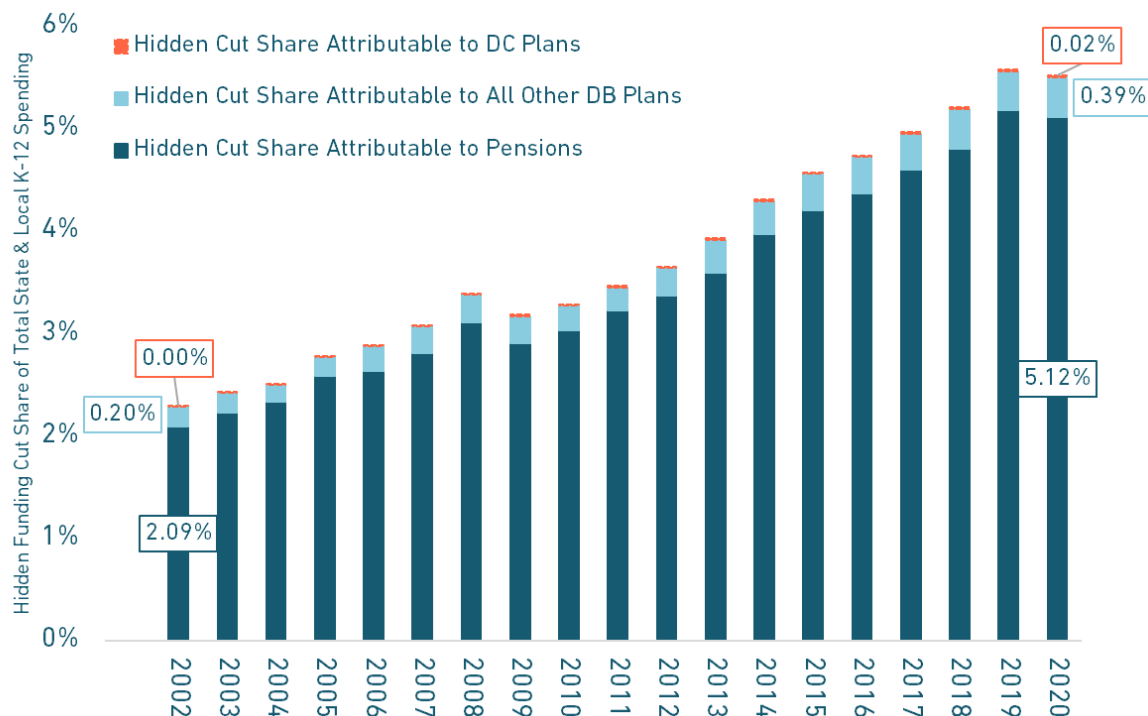
Retirement Costs as a Share of State-Owned Source K-12 Expenditures



Source: NASBO and Equable Institute analysis of public retirement system actuarial valuations and ACFRs.

FIGURE M2: CHANGE OVER TIME IN HIDDEN K12 CUTS TO STATE AND LOCAL FUNDING, BY RETIREMENT PLAN TYPE

Retirement Costs as a Share of State and Local K-12 Expenditures, 2002-2020



STATE SPECIFIC NOTES ON DC PLAN DATA THAT WAS NOT INCLUDED OR AVAILABLE

The following are retirement plan-specific notes for what was not included the retirement cost data for this analysis:

Indiana Public Retirement System

There are no statewide required employer contributions to Indiana's Teachers' Defined Contribution Account, which is the defined contribution portion of the hybrid plan for teachers. The state launched a defined contribution only plan in 2020 called My Choice: Retirement Savings Plan for Teachers which costs employers 6% of salary for members who choose this plan (a small portion of this is a supplemental contribution to paydown unfunded liabilities in the Indiana teacher pension plan). For either plan, a specific school's collective bargaining agreement might provide for employer contributions toward a DC plan, but this is ad hoc and specific to each district. Unfortunately, Indiana does not provide any substantive publicly available data on employer contributions to its defined contribution plan for teachers and, as such, we were unable to include any adjustment to Indiana's data.

Michigan Public School Employees Retirement System

The employer contribution rates are known for the "Tier 2" defined contribution plan, the Pension Plus Plan, and Pension Plus 2 Plan. Those rates are variable based on employee contribution selections, so the cumulative total amount contributed by public school employers to Michigan's defined contribution accounts for teachers and public school employees. However, as Michigan does not provide any substantive publicly available data on employer contributions to the state's hybrid plans for teachers or its defined contribution plan for teachers, we were unable to include any adjustment to Michigan's data.

Oregon PERS; Washington TRS Plan 3

These hybrid plans have no employer contributions to the DC portion of the retirement benefit and, as such, it was not necessary to make any adjustments to Oregon's data.

Rhode Island Employees' Retirement System

The figures for Rhode Island do not include employer contributions to the DC portion of the hybrid plan due to data availability, which means the actual hidden education funding cuts are slightly larger than presented in the figures above. These employer contributions vary based on Social Security participation and years of service. Members who are enrolled in Social Security get employer contributions ranging from 1% to 1.5% of salary while members who are not enrolled get employer contributions ranging from 3% to 3.5% of salary. However, the lack of readily available data prevented us from adjusting Rhode Island's data to account for the DC contributions.

South Dakota Retirement System

The figures for South Dakota do not include employer contributions to a supplemental benefit account due to data availability, which means the actual hidden education funding cuts are slightly larger than presented in the figures above. Employers pay 1.5% of salary into a special reserve account managed



by the retirement system that enhances the benefits of members upon retirement. However, this lack of readily available data prevented us from adjusting South Dakota's data to account for the DC contributions.

Utah Retirement System

The figures for Utah do include employer contributions to the DC portion of the Tier 2 hybrid plan and the stand-alone DC plan. However, the actual contributions to those plans are estimated due to how URS reports contributions to its DC plans. The URS ACFR reports the total contributions paid to DC plans administered by the retirement system, with no differentiation between member contributions, employer contributions, or retirement plan. Prior to 2011 URS administered several DC plans that were purely supplemental in nature and, as such, we determined that those contributions should not be considered toward our evaluation of retirement costs. As such, we record \$0 in contributions for 2001 through 2011. We use the reported contributions for those years to determine an estimated baseline contribution to these supplemental DC plans and then remove those from the contribution total reported for 2012 through 2021.

To do this, we assume all contributions in 2011 are to supplemental DC plans and calculate the average change in contributions for 2001 through 2011. We then add the average change to the 2011 total, adjusting it using URS's inflation assumption, to produce an estimated contribution to supplemental DC plans for 2012. This is then removed from the reported total DC contribution for 2012, giving a total contribution to Tier 2 DC plans (both hybrid and DC only). We repeat this process for each year to produce estimated Tier 2 DC plan contributions for 2012 through 2021.

These totals are then further adjusted to reflect only the share attributable to the general and teacher groups. We do this using the total actuarially accrued liabilities for all tier 2 plans to discern the proportionate shares for the public safety groups and the general and teacher groups. Finally, the remaining number is adjusted for inflation and to reflect only the teacher portion of costs using the teacher proportionate share described in the methodology.

Virginia Retirement System

The figures for Virginia do not include employer contributions to the DC portion of the hybrid plan due to data availability, which means the actual hidden education funding cuts are slightly larger than presented in the figures above. Employer contributions are 1% of salaries. However, this lack of readily available data prevented us from adjusting Virginia's data to account for the DC contributions.

SUPPLEMENTAL CONTRIBUTIONS

In addition to adjusting for the teacher share and defined contribution plan contributions, we also made one final adjustment to our data recording pension costs. Specifically, there are numerous instances over the past 20 years where a state would issue a one-time, supplemental or otherwise abnormally large payment to a pension. Most commonly these large payments would come following the issuance of pension obligation bonds or following a revenue windfall that afforded the state an opportunity to pay a sizable portion of their unfunded liabilities in a single installment.



The reporting of these large, supplemental contributions varies from plan-to-plan. In some cases, the supplemental funds would be listed separate from the normal reporting of their ADEC and contributions paid. In these cases, the pension costs are recorded simply as reported in the plan's documents with no adjustment. But in other cases, the supplemental dollars are lumped in with how they report their normal contributions paid to the retirement system. This results in large, outsized contributions in specific years that would serve to skew our analyses, as these funds are not processed via the education budget. To ensure that we do not misconstrue these as being sudden one-time hidden funding cuts, the Equable Research Team reviewed each retirement system's contributions over time examining for outliers or disproportionate shifts from one year to the next. If the trend showed an outsized jump, we reviewed the plan's actuarial valuation report and ACFR in greater detail to identify whether or not a supplemental payment had been made. In cases where a payment was documented, we then subtracted that total from the reported contributions paid to reflect the normal pension cost that would then be included in our analyses.

STATE AND PLAN SPECIFIC NOTES

In the course of our analyses some plans require specific adjustments or caveats. Those are detailed here.

Calculating Percentage Changes in Hidden Funding Cuts

When examining the changes in our measures of hidden funding cuts, we utilize two approaches.

The first approach is to report the absolute change in the share of education funding consumed by retirement costs. This approach is simple, intuitive and does not require any special adjustments to the data.

The second approach is to calculate the percentage change from one year to another, allowing us to reflect the relative scope and speed of an increase or decrease in the hidden funding cut. This approach, however, encounters issues when the share of education funding going toward retirement costs is zero for one of the years. This can occur in years where no contributions are paid — this is something that happens several times in our data.

In these cases we have opted to replace the 0.0% value with the nearest actual, non-zero value for that state. For instance, in New Jersey there were no contributions paid until starting in 2006. As such, comparisons for the change in hidden funding cut from the start of our data series in either 2001 or 2002 (depending on which education funding data we're using) are problematic, as they would require us to divide by zero. In this case, we pull the reported value of 0.32% from 2006 (for Census) and use that as the basis for calculating the percentage change. We acknowledge that this approach is not perfect, but if anything, it understates the scale of the increase.

Each instance of these adjustments is listed below in Table 2 on the next page.



TABLE 2: SPECIFIC DATA ADJUSTMENTS FOR PERCENTAGE CHANGES IN HIDDEN CUTS

NASBO State Own-Source Analyses			
State	Year Affected	Reason for Adjustment	Year Sourced
Alaska	2001	NASBO does not have complete data for Alaska in 2001.	2002
New Jersey	2001-05	No contributions paid.	2006
Tennessee	2001-02	No contributions paid.	2003
Washington DC	2009-12	No contributions paid.	2013
Census Analyses			
New Jersey	2001-05	No contributions paid.	2006
Pennsylvania	2002	Contribution paid was small enough that it rounds to zero with the addition of local spending.	2001
Tennessee	2001-02	No contributions paid.	2003
Washington DC	2009-12	No contributions paid.	2013



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