



THE EQUITY PROBLEM IN TEACHER PENSIONS

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Each year, about \$30 billion¹ in public funds goes toward teacher pensions in the United States, representing roughly 5% of all K-12 education spending nationally. These funds are an important component of teacher compensation, particularly where teachers make a tradeoff, accepting lower salaries in anticipation of realizing pension benefits at the end of their career. A growing body of research explores the implications of various aspects of teacher pensions, such as whether pension plans are financially sustainable.² But this analysis explores teacher pensions from a largely unexplored angle: that of equity in pension spending across schools. Our goal is to boost transparency on spending and better understand if these billions of taxpayer dollars are being deployed in a way that equitably benefits all schools (and by extension, all students) covered by the expenditures. Our initial analysis of patterns in Delaware and three school districts in Wisconsin, California, and Pennsylvania suggest that the answer is no, they are not.

A teacher's pension wealth is partly a function of her salary. Extensive analysis has documented the systematic spending inequities created by uneven teacher salaries.³ Pay based on the number of years in the classroom tends to drive more dollars to schools with more senior teachers; these schools, in turn, tend to have lower concentrations of poor and minority students. This evidence prompted an inquiry by the U.S. Education Department's Office for Civil Rights in 2010, and later a nationwide federal data collection, which confirmed the problem. Since then, the Secretary of Education has issued a warning letter and proposed new regulations for districts to address the inequities.⁴

Given the link between salaries and pensions, it seems reasonable to predict that patterns in spending on teacher pensions would mirror patterns in spending on teacher salaries. But until now, such analysis hasn't been done, partly due to the challenge in teasing out variable pension impacts: Systems do not report data on pension wealth accrual by school or by teacher. This paper takes a first attempt at filling that void to better understand the scope of variation in how pension funds are applied across schools. The question is whether that

1. Analysis also indicates that the total funds committed are even larger given that current pension systems are underfunded to the tune of \$325 billion, per NCTQ. http://www.nctq.org/p/publications/docs/nctq_pension_paper.pdf

2. See for example: http://www.aei.org/publication/pensions-politics-and-the-new-jersey-education-association/?utm_source=paramount&utm_medium=email&utm_campaign=lilley&utm_content=new-research; <http://www.aei.org/wp-content/uploads/2016/10/Pensions-Politics-and-the-New-Jersey-Education-Association.pdf>

3. Roza, M. and Hill, P. (2004). "How Within-District Spending Inequities Help Some Schools to Fail." In D. Ravitch (Ed.), *Brookings Papers on Education Policy 2004*. pp. 201-218.

4. Proposed regulations were part of the "supplement-not-supplant" provisions of ESSA, although given pushback, this provision did not make it into the final regulations.

variation is random or coincides with student demographics in a way that raises concern. This paper attempts to put real numbers to the question and analyzes the total pension wealth accrual between schools with high enrollment of minority students compared to schools with low-minority enrollment.⁵ As predicted, we find that the current structure of pension wealth accrual yields inequitable deployment of these key education resources. Teachers in high-minority schools accrue less annual publicly funded pension wealth than teachers in low-minority schools in the same district.

Why does it matter how evenly pension monies benefit different schools?

Should we care if pension wealth is accrued evenly across schools? Some would argue that pension spending has no bearing on the fundamentals of a teacher—like whether he or she is more or less effective—and, therefore, expecting a more equitable application of those earnings is unnecessary at best.⁶ On the other hand, the public funds used for teacher pensions must be considered part of the total pot of public dollars available for educating students. To that end, officials must ask whether tying up such a significant portion of public monies in ways that make them unavailable to students in high poverty or high minority schools is unfair and, ultimately, inequitable.

To be sure, financial equity has been deemed relevant from a civil-rights perspective. According to the legal framework put forth by the U.S. Education Department's Office for Civil Rights:⁷

School districts that receive Federal funds must not intentionally discriminate on the basis of race, color, or national origin, and must not implement facially neutral policies that have the unjustified effect of discriminating against students on the basis of race, color, or national origin. In assessing the allocation of educational resources, OCR will investigate and analyze the evidence found under both theories of discrimination — intentional discrimination and disparate impact — to ensure that students are not subjected to unlawful discrimination.

With so many public education dollars deployed via teacher pensions, the issue of equity applies to pensions just as it does to other types of public education spending.

5. For the analysis, we sorted schools in each district by the percentage of minority students enrolled. We then broke that into four quartiles. The top quartile represents schools with the fewest minority students enrolled and is referred to as low-minority schools. The bottom quartile has the highest percentage of minority students enrolled, and is referred to as high-minority schools.

6. Proposed regulations on equalizing spending by school have been dubbed unnecessary "bean counting" by some http://blogs.edweek.org/edweek/campaign-k-12/2016/11/essa_spending_rules_state_chiefs.html

7. Available online at: <http://www2.ed.gov/about/offices/list/ocr/letters/colleague-resourcecomp-201410.pdf>

Why divvying up the pension bill by school—allowing greater transparency—is no small task.

Schools don't directly pay pension bills, which makes it difficult to determine how evenly public pension dollars are applied across schools. Instead, payments to the pension fund are paid in part by employees (for the employee share) with the public share paid directly by states and districts via lump sum as part of each budget cycle. This makes tracing pension dollars to schools even more buried and complex than tracing teacher salaries to schools. School district financial accounting does not report (or even document) changes in pension wealth by teacher each year. Nor does district accounting parse and compare pension spending across schools.

In the vast majority of states and school districts, a teacher's pension is a function of age, experience, and final salary (typically computed as the average of 1 to 5 of the years of highest earnings). Therefore thirty-year-old Teacher A, works for five years and earns \$40,000 a year, accrues lower pension wealth than 50-year-old Teacher B, who works for 20 years and earns \$65,000. Given that teachers' salary and experience levels are unevenly distributed across schools, some variation in total pension wealth accrual by school is expected.

This analysis uses two methods to explore the extent to which pension spending can be attributed to teachers across schools on an annual basis. The first method uses vesting to attribute public pension spending to teachers qualified for a pension in one state, Delaware. The second, more sophisticated method explores variation in pension accrual among teachers and schools in three urban districts (Madison, Wisconsin; Oakland, California; and Pittsburgh, Pennsylvania). This uses the ABO (Accrued Benefits Obligation) to compute the incremental change in pension wealth⁸ for each teacher in order to make more accurate computations by school.

Delaware analysis: High-minority schools' teachers are less likely to be vested and earning publicly funded pension wealth.

Delaware teachers have to work for ten years before their pensions are "vested."⁹ "Vesting" refers the number of years a teacher must work before being eligible for a publicly funded pension. For any year that a teacher works before her vesting point, the value of her employer-awarded pension is zero. If she leaves teaching before vesting, by law she would receive the value of her own contributions to the pension plan, but would not be eligible for any publicly funded retirement earnings. The number of years required for pension vesting varies across states (see Table 1) and is rising. The national average grew from 5.7 years in 2009 to 6.5 years in 2012.¹⁰

8. For a description of this approach, see Reinsdorf and Lenze (2009) "Defined benefit pensions and household income and wealth" Survey of Current Business. P 50-63.

9. In Delaware, teachers hired prior to Jan. 1, 2012 only needed five years of experience to vest. Teachers hired after that date need ten years.

10. Kathryn Doherty, Sandi Jacobs, Trisha Madden, "No One Benefits: How teacher pension systems are failing both teachers and taxpayers," National Council on Teacher Quality, December 2012. http://www.nctq.org/p/publications/docs/nctq_pension_paper.pdf

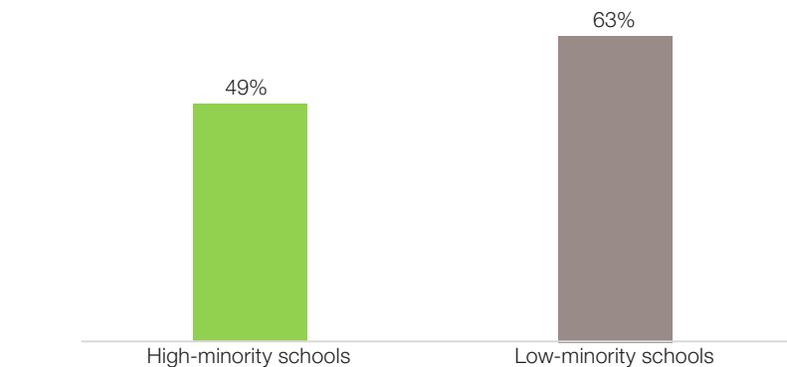
Table 1: Vesting requirements vary, but half of all states require 5 years¹¹

Number of states with teacher pension vesting at:	0 years	3 years	4 years	5 years	6 years	7 years	8 years	10 years
	1	2	3	24	1	1	3	14

We start our analysis by examining the portion of teachers not yet vested in each school. (In other words, the portion of the teaching force that has not yet reached Year 10 in teaching). Unlike vested teachers, unvested teachers are not yet accumulating any publicly-funded pension wealth. Thus, Delaware’s annual investment in the pension fund is not yet part of their real earnings. In 2013-14, the portion of vested teachers varied among Delaware schools from a state-wide low of 18% at Bancroft Elementary (just 7 of 40 teachers were vested) to a state-wide high of 90% at Brookside Elementary (where 20 of 22 teachers were vested). While both schools are not only in the same state but in the same district, each had radically discrepant access to the state’s pension funding. While pension wealth was accumulating for 90% of Brookside’s teachers during the 2013-14 school year, only 18% of Bancroft teachers had access to this part of the state’s education funding pie.

Examining the share of vested and unvested teachers reveals patterns across types of schools. As Figure 1 shows, only about half of teachers in the high-minority quartile of elementary schools¹² in Delaware are at or above the vesting point, compared to 63% in the low-minority quartile.

Figure 1: Fewer teachers are vested in high-minority Delaware schools.



Source: Author calculations.

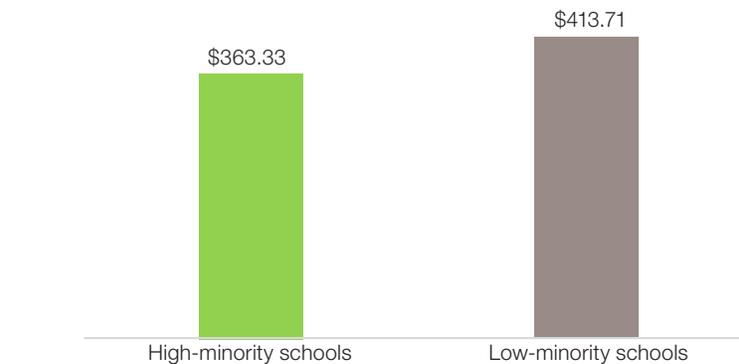
11. Author analysis of NCTQ data. Note that some pension plans are managed at the district level, and this analysis only includes plans managed by states.

12. We chose to focus on elementary schools throughout this analysis because, due to their size and local boundaries, they tend to include more variation by race than larger high schools.

Our analysis went one step further to roughly estimate the extent to which pension funds benefit each school. Since unvested teachers have not yet earned any employer-paid pension wealth for a given school year, we attributed the state’s entire annual pension payment to the remaining teachers – those who have already reached minimum vesting. While a relatively crude calculation, we simply divided the state’s full annual pension payment among vested teachers (yielding \$10,570 per vested teacher) and then summed that figure for the number of vested teachers in each school. After dividing the totals by each school’s enrollment, we find that the per pupil dollar value of the pension payment varies from a low of \$108 per pupil in Sunnyside Elementary to a high of \$646 per pupil in Brookside. Clearly, this calculation is far from a precise reflection of the actual accrual for each vested teacher, since that still depends on her experience, age, and salary.¹³

To compare pension spending across quartiles of schools, we then summed the average per-teacher pension accrual for vested teachers in each quartile and divided that sum by the number of students in each quartile. As Figure 2 shows, this analysis revealed that the pension accrual in Delaware’s highest minority elementary schools was, on average, \$50 less per pupil than the pension accrual for teachers in the elementary schools with the lowest minority enrollments. Since high-minority schools have a smaller portion of vested teachers, their faculties are, on average, reaping a smaller portion of the state’s pension contributions.

Figure 2: Delaware pension spending disproportionately benefits low-minority schools



Source: Author calculations.

More precise analysis measures annual incremental pension wealth accrual among teachers and across schools.

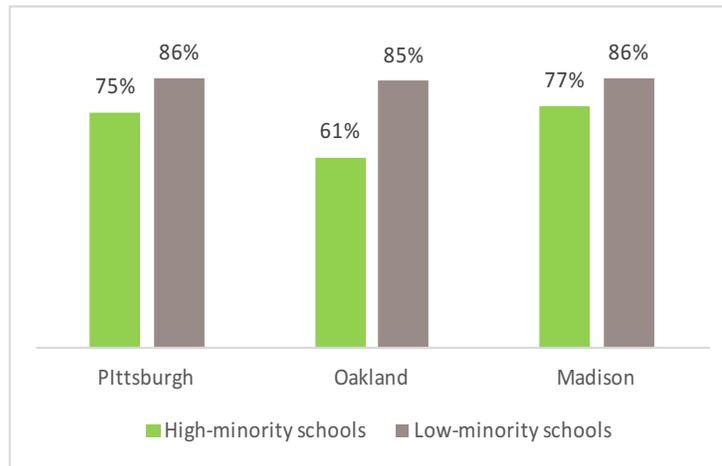
As noted, the method used to calculate pension wealth gaps in the Delaware analysis above has real limitations. Using improved district-level datasets, we attempted to address those shortcomings with a more sophisticated model. This model computes incremental pension wealth gain for each teacher for a given year with no assumptions about continued teaching. Specifically, we use the ABO approach to isolate the pension benefits an employee earned

13. The calculation may indeed be an under-estimate of the variation, since teacher pension wealth accrual will generally increase with teacher seniority. Those schools with fewer vested teachers are also ones with lower teacher seniority.

during the current year of employment (in contrast to a projected pension accrual that hinges on an assumption of continued teaching.)¹⁴ We chose the ABO method because of a) the uncertainty of a teacher’s continued employment; b) the year-by-year nature of schooling and budgets (e.g. today’s funds are intended for today’s students); and c) recent standards that suggests employers “attribute the present value of projected benefit payments to the periods when they were or will be earned.”¹⁵

The availability of actual salary files and additional teacher data for each school in three districts made this more robust analysis possible. All three districts--Madison Metropolitan, Oakland Unified, and Pittsburgh Public Schools – have meaningful variation in poverty and race among their schools. All base their pensions on the highest three years of earnings. We followed the same process used in the Delaware analysis, first placing elementary schools into quartiles by concentration of minority students, then determining the portion of each school’s faculty vested in the pension system. In all three districts studied, we again found that high-minority schools had a smaller percentage of vested teachers (Figure 3).

Figure 3: Fewer teachers vested in high-minority schools within districts.



Source: Author calculations.

We used the more precise ABO calculation to determine the incremental pension wealth accumulation for each teacher during a given school year. Each teacher’s incremental pension wealth (PW) in a given year can be computed as the final pension wealth (assuming the

14. Reinsdorf and Lenze (2009) describe two basic approaches to computing the value of a person’s pension wealth at a given point in time, namely ABO (Accrued Benefit Obligation) and PBO (Projected Benefit Obligation). The ABO is today’s value of the future benefits to which an employee “has actually become entitled, meaning the benefits that would be due if the employee were to separate from the employer or otherwise lose the opportunity to accrue further benefits under the plan.” The PBO method assumes a future payout at full retirement, and then attributes a proportionate share of that future retirement wealth to the portion of the career completed thus far (despite the fact that those earning depend on continued employment beyond today).

15. See GASB’s Fact Sheet on the GASB’s New Pension Standards: Governments in Single-Employer Defined Benefit Pension Plans, available at: <http://gasb.org/cs/ContentServer?c=Page&pagename=GASB%2FPAGE%2FGASBSectionPage&cid=1176160426520>. While this new regulation doesn’t not apply to most state teacher pension plans (as they are not “single-employer”), it does set a new standard for such computations.

teacher terminates at the end of the year) less the starting pension wealth for that year less the employee contribution during that year:

$$\triangle PW = PW_{2015} - PW_{2014} - EC_{14-15}$$

PW_{2015} = present-day value of a teacher’s pension wealth if she left teaching at the end of the 2014-2015 school year

PW_{2014} = present-day value of a teacher’s pension wealth if she left teaching at the end of the 2013-2014 school year

EC_{14-15} = Employee contribution to pension for the 2014-15 school year

These calculations required district salary files that provided sufficient details needed about hire years, years of experience, age, and school assignments. For each teacher, we then applied state pension formula calculations to determine the teacher’s future annuity if she left teaching at the end of the 2014 school year and began receiving pension payments at the standard plan age (using current 2014 salaries). We next calculated that value as of the end of the 2015 school year (using her current salaries and the standard age for receiving pension payments). We discounted both annuities to 2015 dollars using a 3 percent discount rate, then took the difference of the two numbers and subtracted the employee contribution to find the incremental pension wealth accrual supported by public funds. The publicly-funded pension wealth accrual for each teacher in each of the three districts varied enormously, from \$0 (for unvested teachers) to over \$20,000 for teachers with higher salaries during the most recent three years and closer to receiving pension payments.

The last step was to sum that incremental change in pension wealth across all teachers in a school and divide the total accrual for the year among the student enrollment per school.

Here again, as Figure 4 demonstrates, we find that the more precise calculation of incremental pension wealth accrual per pupil yields lower averages among the quartile of schools with the highest share of minority students relative to the quartile with the lowest share.

Figure 4: Pension accrual per pupil is lower in high-minority schools.



Source: Author calculations.

The per-pupil differences between low- and high-minority schools amounted to \$128 in Pittsburgh, \$44 in Oakland, and \$92 in Madison, totaling less than 1% of the average per pupil expenditure in each district. While seemingly minor, the patterns surfaced in this analysis were not random, suggesting that the current method of deploying teacher pension funds drives a larger share of these public resources to schools with proportionately fewer minority students.

Since pension funds are public funds intended for schooling, a more purposeful allocation is warranted.

This analysis finds that the way pension wealth accrual is currently structured results in an inequitable deployment of public funds for K-12 education: High-minority schools draw less in publicly funded pension wealth among their teachers than low-minority schools. At the root is a system driven largely by late-career salaries, salaries linked to years of experience, with more senior teachers tending to congregate in the schools that serve a smaller share of minority students than others in a given district.¹⁶

Any school that finds itself with disproportionately more junior teachers is less able to tap these pension resources as part of its compensation scheme. As our analysis shows, it seems high-minority schools on average are shortchanged by this structure.

This is one of the first studies to date to investigate whether pension funds are applied in an equitable manner; it will likely not be the last, given the import and magnitude of the dollars involved. Some researchers may take issue with our method of isolating incremental pension wealth gains for a single year and basing our analysis on those increments that don't make assumptions about continued teaching.¹⁷ The criticism is that even junior teachers are on a path to earning more pension funds as long as they continue to teach. But we deliberately chose to isolate the annual incremental pension wealth gains precisely because of the annual nature of schooling and the higher turnover rates among junior teachers (as well as emerging standards for accounting for pensions). Education dollars are doled out from state and local coffers in annual amounts to be applied to the current year's students. As part of the total resources for schooling, pension monies ought to be applied in ways that can measurably contribute to staff compensation during the year that the students are in school.

The point of this analysis is not to call for blanket policy changes to alter teacher distribution nor to change pension formulas. **Rather the idea is that pension dollars contribute to the totality of public funds spent on education, and consequently, state and district leaders ought to acknowledge and account for them as such.**

The status quo practice of keeping pension payments and liabilities off the annual accounting books works to detach the pension spending from the intended beneficiaries of any and all

16. See for instance: Ed Trust West (2015) California's Hidden Teacher Spending Gap. Available at <http://west.edtrust.org/wp-content/uploads/sites/3/2015/02/Revised-CDE-Data-Shows-Bigger-Gaps.pdf>

17. This criticism was raised at the 2016 Association for Education Finance Policy conference presentation.

public education spending—the students. The effect, as shown in this analysis, can be uneven application of public funds that result in the “disparate impact” the Office for Civil Rights describes earlier in this paper.

Toward more purposeful allocation of education funds, we suggest that districts properly account for the annual change in pension wealth earned by each teacher and apportion those liabilities to each school’s allocation. Once that level of transparency is reached, education leaders--together with their communities--can explore whether additional allocation or policy reform is necessary.

Where states and districts do find uneven accrual across schools, they might choose to undertake pension reform, or they might simply offset the increments with additional allocations for impacted schools. Others have documented the ways in which current pension schemes are ineffective at retaining junior teachers, and yield poor benefits for teachers who do switch states or careers. Any remedy should be assessed (at least in part) for its ability to deploy pension funds in a way that benefits all students.

But the first step is visibility. As long as districts and states mask the annual implications of pension plans, local schools and communities have no way to know if public dollars are applied in ways that reap the greatest value for their students and that are equitable system wide.



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Edunomics Lab is a university-based research center dedicated to exploring and modeling complex education fiscal decisions and growing the capacity of education leaders on the topic of education finance. The Edunomics Lab is affiliated with the McCourt School of Public Policy at Georgetown University.