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Illinois' Teacher Pension Plans Deepen School Funding Inequities

Max Marchitello

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Introduction

Many of the inequities of the American public education system are well known. Low-income students and students of color disproportionately attend high-poverty and low-quality schools.¹ They are more frequently taught by unqualified, inexperienced, and out-of-field teachers.² Their schools are often underfunded,³ and they frequently have less access to college-preparatory curricula.⁴

An inequity that is often overlooked, however, is that statewide teacher pension plans exacerbate school funding disparities. Spending on teacher pensions is yet another way that states invest fewer resources into schools serving the highest concentrations of low-income students and students of color. After accounting for teacher pensions, the disparity in school-level personnel

An inequity that is often overlooked is that statewide teacher pension plans exacerbate school funding disparities.

expenditures between high- and low-poverty schools increases dramatically. The same pattern holds when looking at student race: Schools enrolling the highest percentages of black and Hispanic students also tend to get less in the way of pension spending.

Teacher pensions increase funding inequities because they are derived from teacher salaries,⁵ which are themselves unevenly distributed across schools. The most experienced teachers, and thus the highest paid, are much more likely to work in low-poverty schools and schools serving a lower percentage of students of color.⁶ Because pension contributions are made as a percentage of salary, the teacher pension system mirrors and amplifies any inequities in the way teachers are distributed among schools.

Traditionally, pension spending is ignored when determining schools' per-pupil expenditures. This is out of step with how most employers think about the costs associated with employment. Employers in most sectors generally consider not only salaries, but also retirement contributions and other benefits, when deciding whether to hire someone and how much to pay them.

It should be no different for teachers and teacher retirement. Simply put, excluding spending on teacher pensions in analyzing school finance equity masks an important source of disparities and can undermine efforts to make school funding more fair.

To determine the extent to which teacher pensions exacerbate school funding inequities, I analyzed 10 years of Illinois educator salary data from 2003 to 2012. For those years only, the state of Illinois made available a unique database on every educator in the state, including how long they had served and how much they earned. After pulling the data, I aggregated educator salaries to the school level and calculated the pension contributions using the state's actual contribution rates. I then paired that data with each school's student demographics. This allowed me to track school-level salary and pension spending compared with student poverty rates and student racial demographics.

Complicating the analysis is the fact that there are two teacher pension systems in Illinois: The statewide Illinois Teachers' Retirement System (TRS),⁷ and the Chicago Teachers' Pension Fund (CTPF).⁸ The operation of two different pension funds with different contribution rates significantly influences how pension spending exacerbates school funding inequities. I tackled the results for each fund independently and then together as an entire state. After running the numbers, I found:

- » **Even after excluding the separate Chicago pension fund, the state's pension fund increases school funding gaps by 24 percent, or \$211 per pupil, between high- and low-poverty schools.** In 2012 the average salary-based disparity in per-pupil spending between the most and least affluent schools was \$875. That gap increased to \$1,086 per pupil after accounting for pension spending. Since these schools all participate in the statewide TRS, the inequity caused by pension spending is based entirely on the contribution rate and any inequity in salaries. In other words, the increase in the gap caused by pension spending is derived from underlying inequities in the distribution of teacher salaries.
- » **The state funding gap between schools serving high and low concentrations of black and Hispanic students also grew by 24 percent, or \$156 per pupil, after considering pension costs.** In 2012, the salary gap between schools serving high and low concentrations of black and Hispanic students was \$649. That inequity increased to \$805 per pupil after accounting for pension spending.

- » **After including Chicago Public Schools, pension spending increases school funding gaps between high- and low-poverty schools by over 200 percent.** Accounting for CPS actually decreases the salary-based funding gap between high- and low-poverty schools, while simultaneously increasing the pension spending gap. In 2012, low-poverty schools spent \$582 more per pupil on salaries than high-poverty schools. Adding in pensions increases the gap to \$1,243 per pupil. This happens because high-poverty schools only spent \$492 per pupil on pensions, while low-poverty schools spent \$1,153. That is a \$661 disparity.
- » **Statewide, pension spending increases school funding gaps between schools serving high and low concentrations of black and Hispanic students by over 250 percent.** Across the state, the salary-based gap is \$375 per pupil. However, after accounting for pension spending the gap more than doubles to \$941 per pupil. Schools with high enrollments of black and Hispanic students spent only \$533 per pupil on pensions compared with \$1,099 in schools serving the lowest concentrations of these students. That's a difference of \$566 per pupil.
- » **Spending inequities increase as the pension contributions increase.** Between 2003 and 2012, both the TRS and CTFP generally increased their pension contribution rate as a percent of salaries. Despite greater investments, the inequities increased in pension spending between high- and low-poverty schools, as well as between schools serving high and low concentrations of black and Hispanic students. Even though the data are only available through 2012, both the TRS and CTFP have increased their contribution rates even further in recent years. Thus, it is likely that our findings undersell the spending differences today.
- » **At the district level, funding gaps are even larger than the disparities at the school level.** High-poverty schools are generally clustered in high-poverty districts. Due to this concentration, the effect of pension spending on funding at the district level is even more significant than what was observed at the school level. The spending gap between high- and low-poverty schools more than doubled. Even worse, the gap based on the enrollment of nonwhite students more than tripled.
- » **Both rural and urban school districts lose out due to the way Illinois allocates pension contributions.** Breaking down the district-level inequities by urbanicity reveals that rural and urban districts receive far less than other districts. Suburban districts, in particular, benefit the most from the current pension structure. These districts receive an average of \$1,119 per pupil for pensions, while rural districts receive \$946. Urban districts receive even less, at \$662 per pupil. Altogether, urban districts receive \$558 per pupil less than suburban districts, while rural districts receive almost \$900 per pupil less.

In general, the teacher pension debate focuses on questions of affordability⁹ and whether the pension benefit structure serves teachers well.¹⁰ While these arguments are important, they leave out how pension spending compounds school funding inequity. Understanding that the issues

with teacher pensions extend beyond questions of retirement and even the long-term fiscal health of state education systems is crucial to both improving the pension system itself and to more completely addressing school funding gaps.

Pension spending is school spending.

Pension spending is school spending. Therefore, how much states and districts spend on teacher retirement should be included when determining school funding levels to ensure that all students receive an equitably funded education.

Background on the Illinois and Chicago Pension Systems

Across all of its state pension funds, Illinois now carries an approximate \$140 billion in unfunded liabilities, a debt that it has not allocated the funds to pay.¹¹ As of 2016, the Illinois state teacher pension fund accounts for roughly \$74 billion, or around 53 percent of those debts.¹² In other words, the state has only about half of the money it needs to meet its financial obligations to retirees. The story is similar in Chicago. There, the teacher pension fund is only funded at around 48 percent and has an unfunded liability of over \$10 billion.¹³

This is understandably troubling to older and retired teachers. But it gets even worse for new teachers in Illinois. Teachers just beginning their careers contribute 9.4 percent of their salaries to the pension funds, but their benefits are only worth 7 percent. The state uses the difference to pay down debt. As a result, newer teachers will need to work even longer for their pension to become more valuable than the amount of money they invested into it.

There are a number of reasons that both the Illinois and Chicago teachers' pension funds now face such serious financial challenges. But among the biggest reasons is that their administrators habitually underfund their pension systems.

Chicago Public Schools rarely invested as much money as was determined to be necessary to keep the fund healthy and solvent. In 2006, for example, the district only contributed \$53 million, or 16 percent of how much money was actually required. Some years the district invested at a higher rate, but in recent years it has never provided as much as its actuaries recommended.¹⁴ And each year that the district underinvested in the pension fund added to the

unfunded liability and increased the demand for greater investments the following year. Overall from 2006 to 2015, the School District of Chicago only managed to invest 54 percent of the necessary funds.

Another problem is that Illinois' and Chicago's teacher pension funds have had weak returns on their investments. Over the past 10-15 years the pension funds have earned lower returns than their administrators assumed they would get when they built their model to determine how much to invest in the funds to keep them solvent.¹⁵ Furthermore, pension systems have become stretched by retirees who live longer lives and draw pensions for longer periods of time.¹⁶ As a result of these and other factors, Illinois and Chicago now carry large unfunded liabilities.

In Chicago, the situation has become so dire that the Chicago School Board sued Governor Bruce Rauner.¹⁷ They alleged that both the state school funding system and the pension system are inequitable.¹⁸ Based on my analysis, they may have a case.

Methodology

To study how spending on public school pensions affects school-level personnel expenditures, I analyzed Illinois' public school employee salaries between 2003 and 2012 using publically available data from Illinois' Teacher Service Record.¹⁹ Each data file contains roughly 160,000 individual records. However, not all of those records were included in the final analysis.

I restricted the dataset to include only those employees who, in a given year, worked in a single school. This was necessary to ensure the accuracy of aggregated school-level salary expenditures. I further restricted the data to those employees who are enrolled in Illinois' and Chicago's pension funds. That is, I excluded some employees, such as administrative assistants and some therapists, who are employed in schools but are not enrolled in the state or city pension plans. See table 1 in appendix A for the number of educators included in the final dataset per year.

I adjusted the salaries for cost of living using the Consumer Wage Index developed by Lori Taylor from Texas A&M.²⁰ Then, I adjusted the salaries into 2012 dollars so that they could be compared from year to year. Finally, I matched each school with publically available enrollment and demographic data from the National Center for Education Statistics (NCES).

Ultimately, the dataset included the total salary and pension spending for well over 100,000 employees each year at the school level for between 3,800 and 3,900 schools across almost 900 districts. I then grouped all of the schools based on the enrollment of students eligible for free- and reduced-price lunch, and separately by the enrollment of black and Hispanic students. See appendix A for a more complete discussion of the analysis methods.

Excluding Chicago Pension Spending Increases Poverty-Based Funding Gaps

A recent study found that Illinois has the most inequitably funded schools in the country.²¹ In Illinois, the highest-poverty school districts receive almost 20 percent less state and local funding than the lowest-poverty districts in the state. The funding gap between the highest- and lowest-poverty districts in Illinois is twice as large as the disparity in New York, which has the second largest gap in the country.²² These findings are consistent with other research.²³

Ultimately, teacher pensions are yet another way in which Illinois spends less on its highest-need students.

In short, Illinois funds its schools regressively—spending more per pupil in its most affluent school districts and the least in districts serving the highest percentages of low-income students. However, these calculations do not include the money the state contributed to its teacher pension

fund. Given that teacher pensions are based largely on factors that are themselves inequitably distributed, such as years of experience, salary, and student-teacher ratios, excluding pensions from calculations of school funding levels has the effect of hiding the true extent of funding inequities between high- and low-poverty schools. With pension funding included, the disparities increase dramatically. Ultimately, teacher pensions are yet another way in which Illinois spends less on its highest-need students.

As shown in the graph below, high-poverty schools in Illinois, excluding Chicago Public Schools, spent \$875 per pupil less on salaries than the most affluent schools in the state. Similarly, high-poverty schools spent \$211 less per pupil on pensions. Together, this amounted to an average spending inequity of \$1,086 per pupil between high- and low-poverty schools. Put another way, the schools serving the most students with the most needs received less funding per pupil of more than 18 percent.

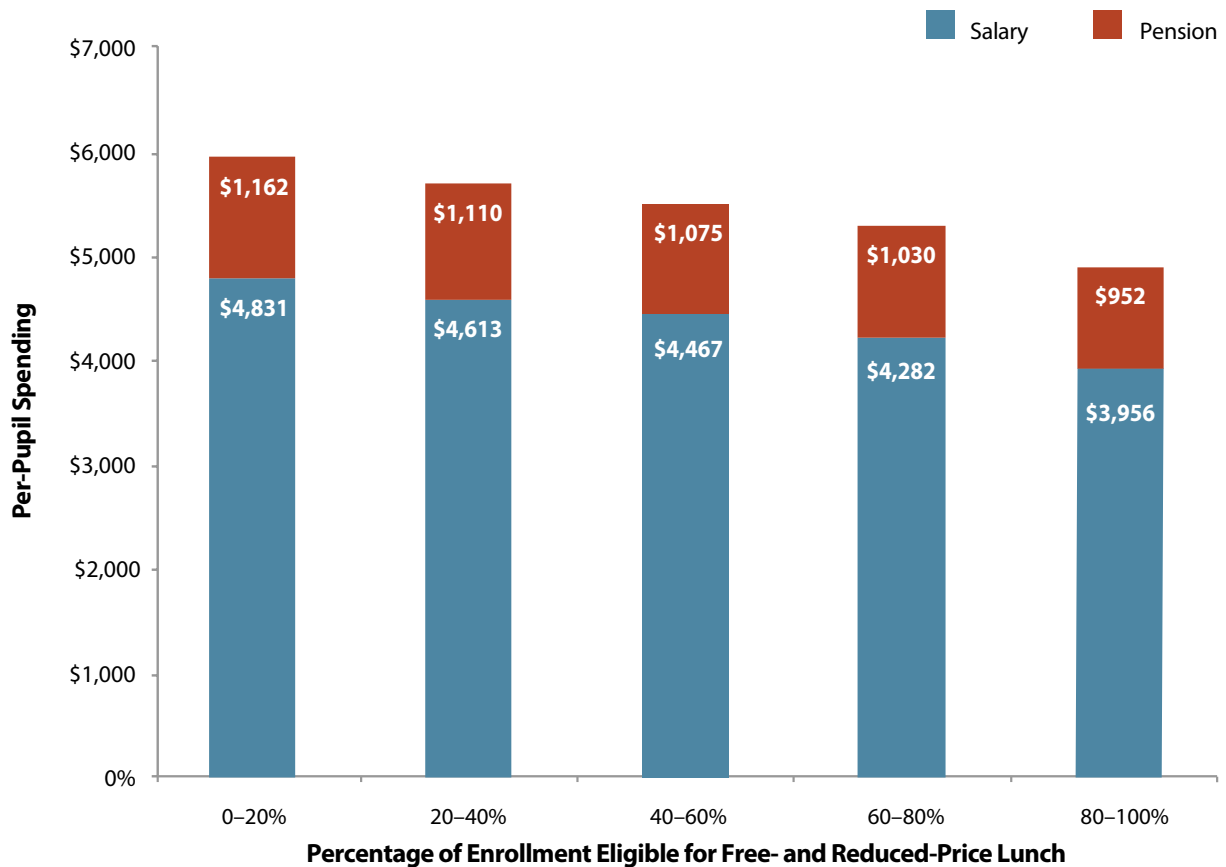
Figure 1 Salary and Pension Spending Between High- and Low-Poverty Schools in 2012
Excluding Chicago Public Schools (CPS)



Source: Author's analysis of data from the Illinois Teacher Service Record (TSR), 2012 and from the National Center for Education Statistics (NCES), 2012.

Since this analysis excludes Chicago Public Schools, the degree to which pension spending exacerbates the salary-based inequity is entirely derived from the contribution rate. In other words, the increase in the funding gap directly reflects the underlying disparity in salaries. Illinois invested 24.06 percent of salaries into the pension fund in 2012. Thus, including pension spending increased the 2012 funding disparity between high- and low-poverty schools at the same 24.06 percent.

Figure 2 2012 Salary and Pension Spending by Student Poverty at the School Level
Excluding Chicago Public Schools (CPS)



Source: Author's analysis of data from the Illinois Teacher Service Record (TSR), 2012 and from the National Center for Education Statistics (NCES), 2012.

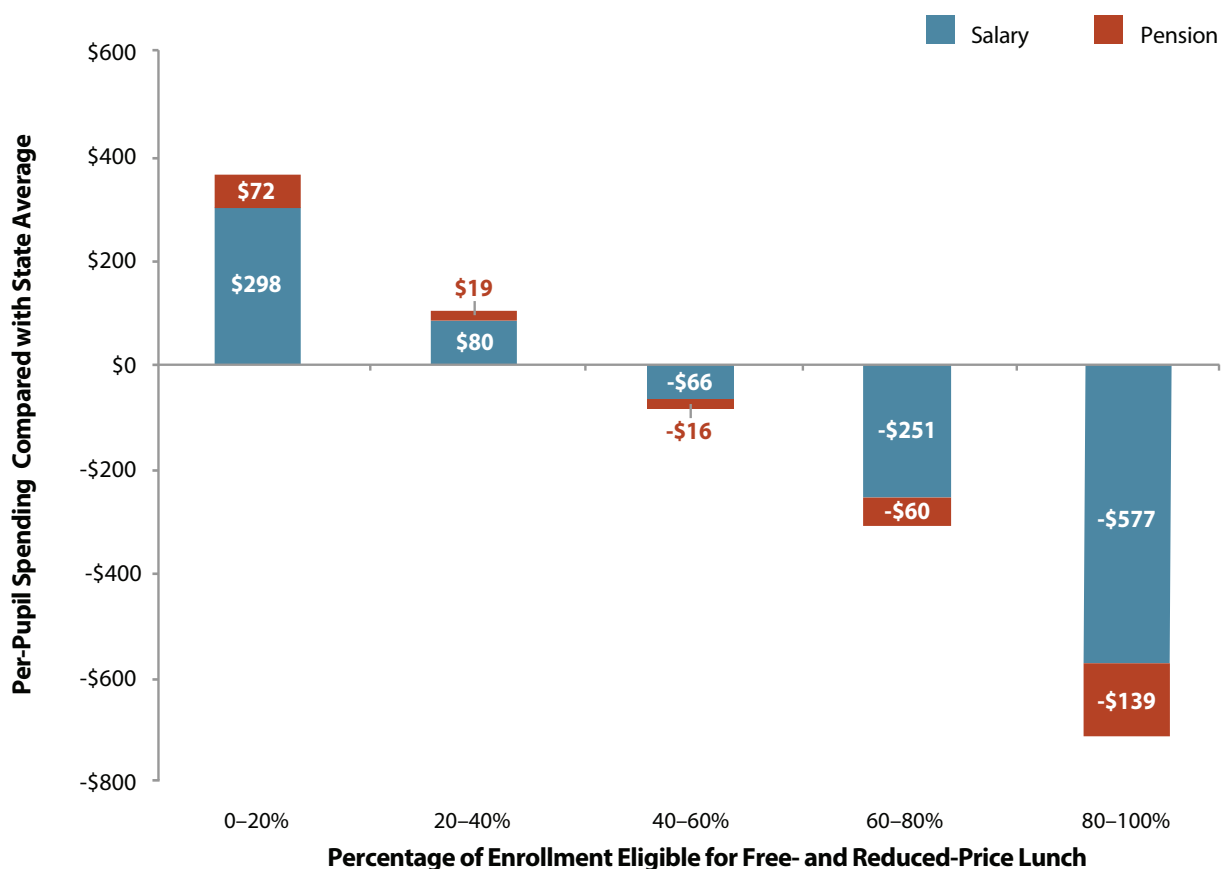
The problem of pension spending increasing school funding inequity does not only affect schools with the most affluent or the least affluent students. Rather as shown in the graph below, pension spending increases gaps consistently as the percentage of students eligible for free- and reduced-price lunch increases. For easier interpretation, the spending data below was grouped into five groups based on student poverty.

Schools serving a greater percentage of low-income students also spent well below the state average per-pupil expenditures in both salaries and pensions. As shown in the graph below, schools with a poverty rate of up to 40 percent spent more than the state average per pupil on

both salaries and pensions. Schools with a higher poverty rate spent far less. For example, a school with a poverty rate of between 60 and 80 percent spent on average \$251 per pupil less than the statewide average on salaries. Due to this underfunding, these schools received 24.06 percent less on pensions, or an average of \$60 less per pupil.

Pension spending makes the problem of Illinois' regressive school finance system worse. In 2012, pension spending increased inequities by a little more than 24 percent. Pension spending grew the gap between the highest- and lowest-poverty schools by over \$200 per pupil.

Figure 3 Comparing Salary and Pension Per-Pupil Spending by Poverty Rate to the Statewide Average
Excluding Chicago Public Schools (CPS)



Source: Author's analysis of data from the Illinois Teacher Service Record (TSR), 2012 and from the National Center for Education Statistics (NCES), 2012.

Pension Spending, Excluding Chicago, Grows Race-based Funding Disparities

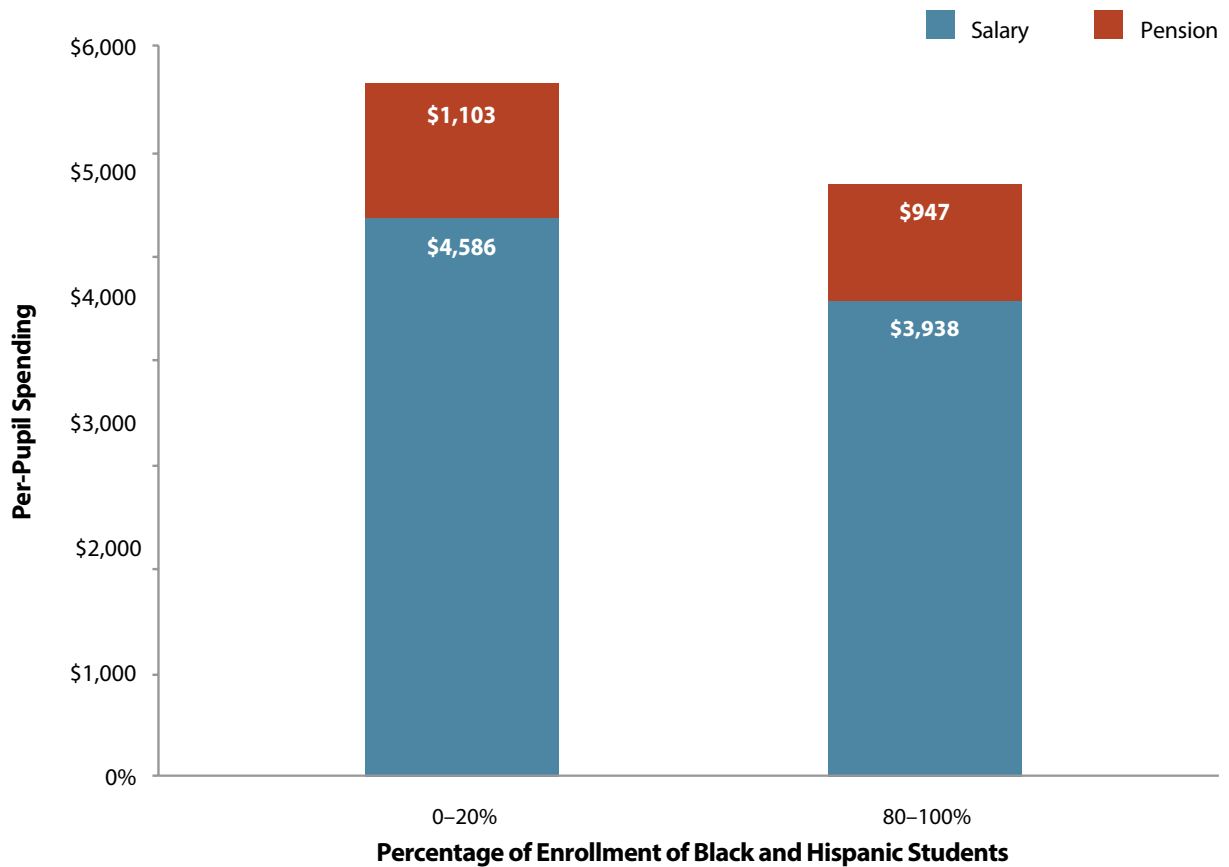
Poverty overlaps considerably with race and ethnicity in Illinois (and nationwide).²⁴ With that in mind, it is not surprising that Illinois' pension spending compounds school funding

This analysis reveals important and troubling issues with Illinois' state school finance system and pension fund. Namely, as a school's concentration of nonwhite students increases, its per-pupil funding decreases.

gaps by race. In this study, I also analyzed the effect of pension spending on school funding based on enrollment of black and Hispanic students. I included those groups because they are the largest nonwhite student populations in Illinois.²⁵ This analysis reveals important and troubling issues with Illinois' state school finance system and pension fund. Namely, as a school's concentration of nonwhite students increases, its per-pupil funding decreases.

Just as in the poverty-based analysis, race-based inequities grew by 24.06 percent of salary in 2012. The per-pupil salary disparity is stark. On average, the schools with the lowest percent enrollment of these students spent \$649 more per pupil on salaries than did schools serving the highest percentage. This inequity translated to a \$156 per-pupil disparity in pension spending and a total gap of \$805 per pupil.

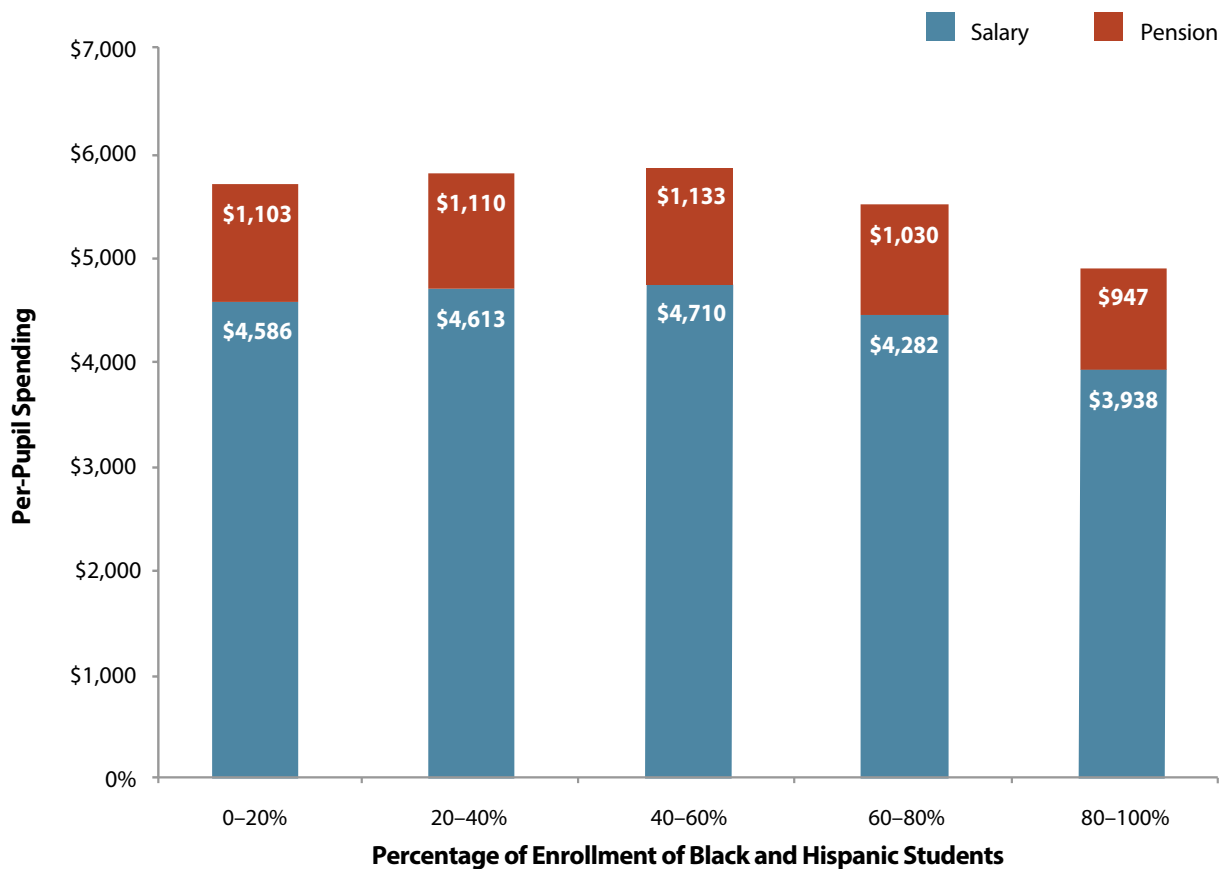
Figure 4 Salary and Pension Spending Between Schools with High and Low Concentrations of Nonwhite Students
Excluding Chicago Public Schools (CPS)



Source: Author's analysis of data from the Illinois Teacher Service Record (TSR), 2012 and from the National Center for Education Statistics (NCES), 2012.

Interestingly, however, the relationship between spending on salaries and pensions and a school's racial composition is not as linear as the relationship between spending and poverty. In fact, of schools with between 20 and 60 percent enrollment of these students, roughly 45 percent of the state's schools spent the most per pupil. As shown below, schools serving a moderate percentage of black and Hispanic students actually have the largest average per-pupil expenditures in terms of both salaries and pensions.

Figure 5 Salary and Pension Spending by Race
Excluding Chicago Public Schools (CPS)

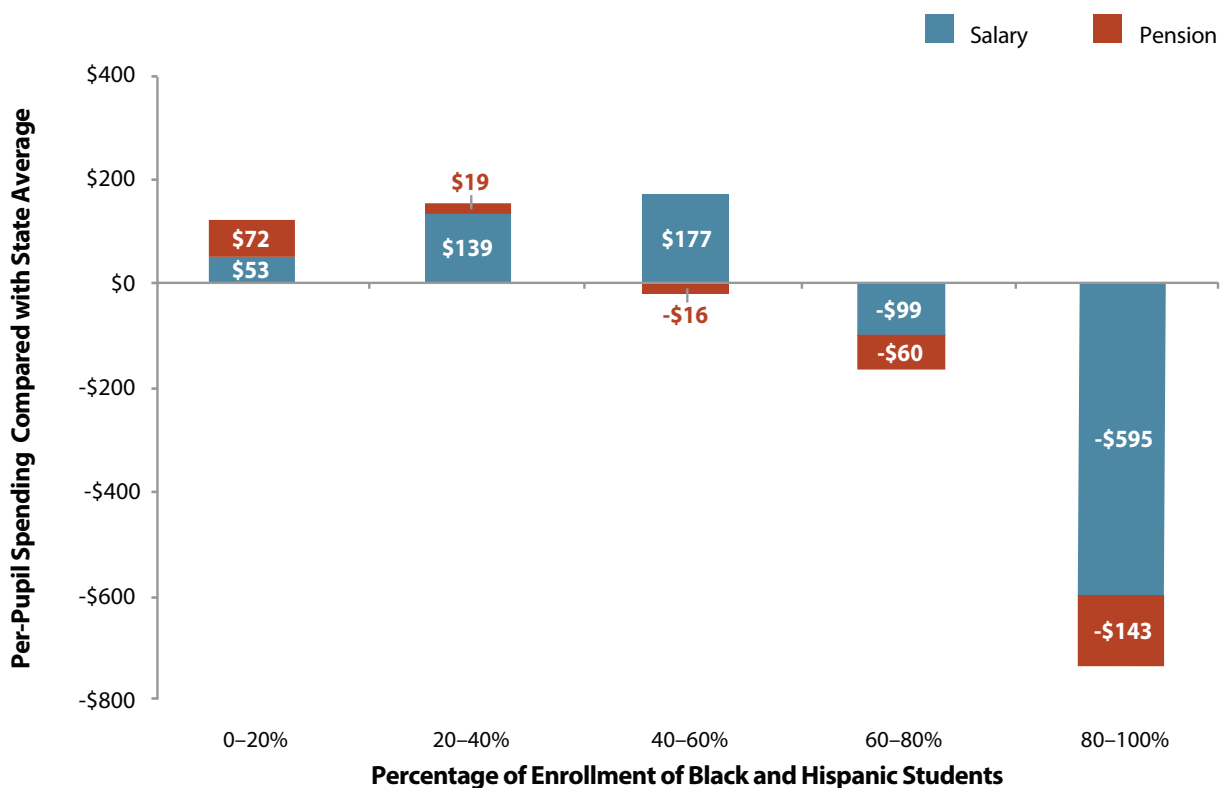


Source: Author's analysis of data from the Illinois Teacher Service Record (TSR), 2012 and from the National Center for Education Statistics (NCES), 2012.

The salary gap between a school enrolling roughly 50 percent black and Hispanic students and one enrolling around 90 percent is on average \$772 per pupil. The pattern continues for pension spending, with an average gap of \$186 per pupil.

Illinois' schools are fairly segregated. For roughly 57 percent of the state's schools, excluding Chicago, black and Hispanic students compose less than 20 percent of their enrollment. These schools spend almost \$700 per pupil more on salaries and pensions than the schools serving the highest concentrations of nonwhite students. In short, the Illinois pension system compounds funding inequity in the most racially segregated schools in the state.

Figure 6 2012 Per-Pupil Spending Compared with Illinois State Averages by Race
Excluding Chicago Public Schools (CPS)



Source: Author's analysis of data from the Illinois Teacher Service Record (TSR), 2012 and from the National Center for Education Statistics (NCES), 2012.

The Independent Pension Fund for Chicago Public Schools Contributes Significantly to School Spending Inequities

Approximately 15.5 percent of Illinois' schools in the study are located in the Chicago Public School district and therefore do not participate in the state pension system. Nevertheless, Chicago contains nearly 60 percent of the highest-poverty schools in the state, and 57 percent of schools in which between 80 and 100 percent of students are black or Hispanic. Since Chicago has its own pension system and contributes far less than the state, including Chicago dramatically increases the inequities caused by pensions.

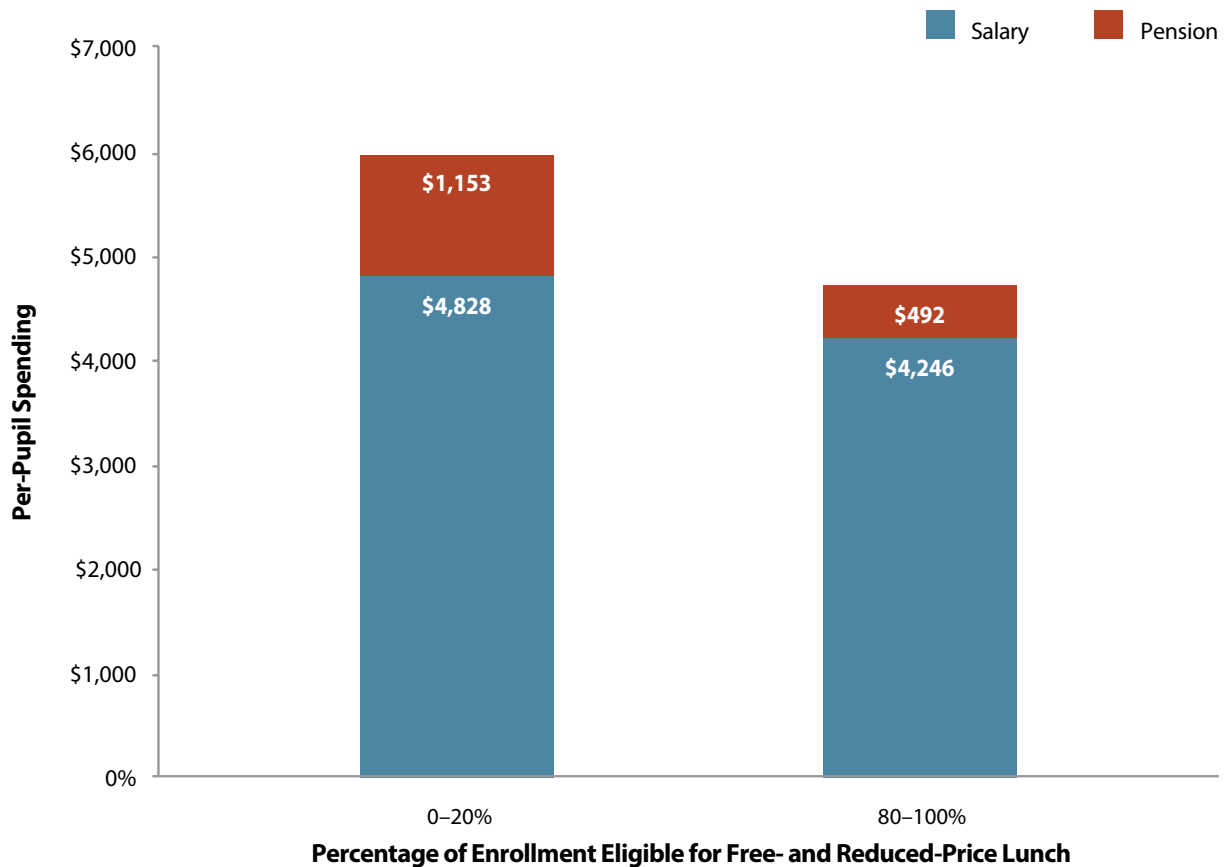
With Chicago in the analysis, the pension gaps are no longer proportional to the state's contribution rate. In fact, the disparities become much bigger. As shown in the graph below, the statewide funding gap between high- and low-poverty schools more than doubles once Chicago is included.

Pensions cause an even larger increase in funding gaps based on schools' enrollment of black and Hispanic students. Including pension spending increases the spending gap by two and a half times.

The average salary-based gap of \$582 per pupil is increased by an average \$661 per-pupil disparity in pension funding. As a result, high-poverty schools spent \$1,243 less per pupil overall than did low-poverty schools.

Pensions cause an even larger increase in funding gaps based on schools' enrollment of black and Hispanic students. Including pension spending increases the spending gap by two and a half times. The salary-based disparity is on average

significantly smaller between schools' high- and low-percent enrollments of black and Hispanic students than between schools based on poverty. Nevertheless, schools with the lowest percentage

Figure 7 Statewide Salary and Pension Spending Between High- and Low-Poverty Schools

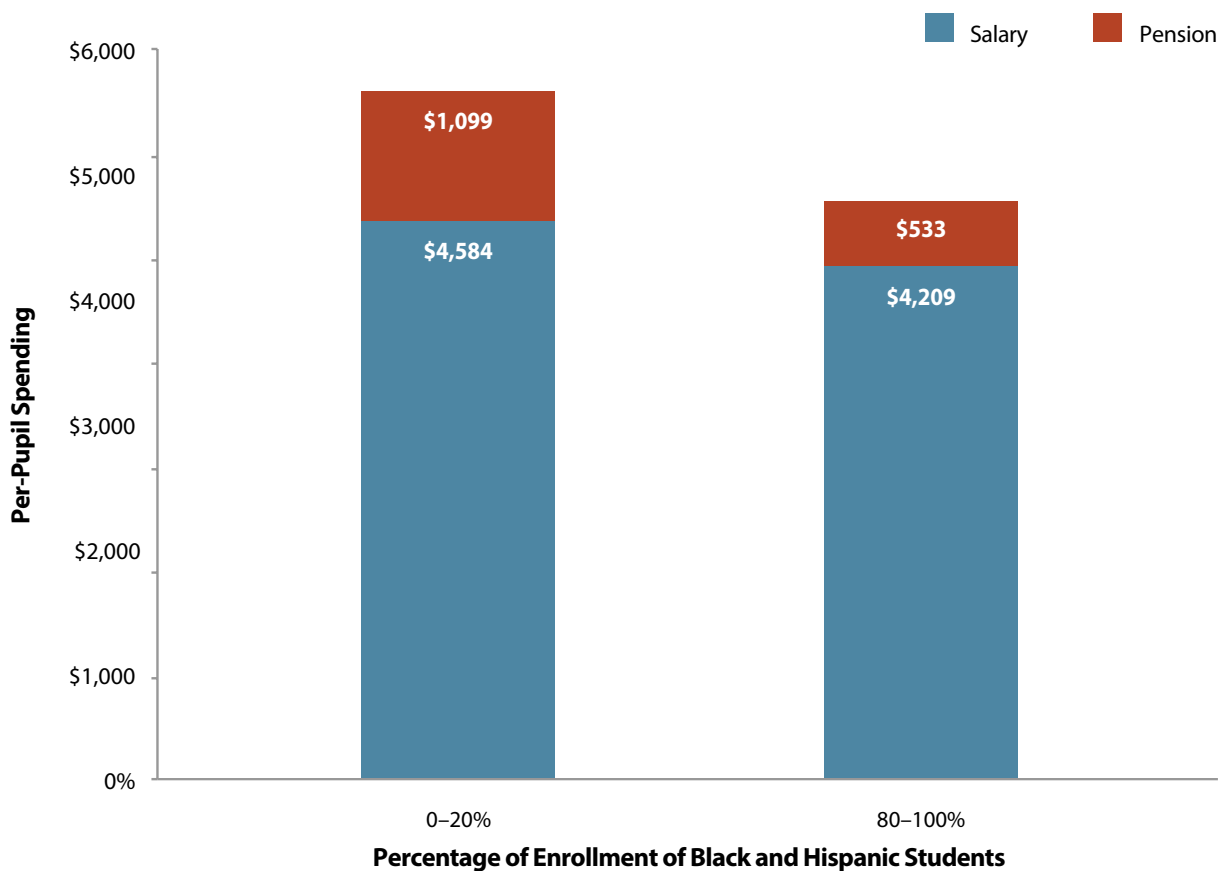
Source: Author's analysis of data from the Illinois Teacher Service Record (TSR), 2012 and from the National Center for Education Statistics (NCES), 2012.

of these students spent on average \$375 more per pupil. Yet, due to the segregated nature of public education in Illinois and the high concentration of schools enrolling between 80 and 100 percent black and Hispanic students in Chicago, the disparity in pension spending is on average \$566 per pupil. This results in an average overall funding gap of \$941 per pupil.

Without the more than 600 CPS schools included in the study, the TRS contribution rate determines how much pension spending exacerbates school funding disparities. Adding in CPS complicates the impact of pension spending on school funding gaps. This happens because the two pension systems, in particular their different contribution rates, interact. And it is this interaction effect that causes the dramatic increase in inequity brought on by pension spending.

The graph below illustrates how salary and pension spending change based on how CPS is treated. The salary gap is largest when CPS is excluded. This likely happens because Chicago houses the majority of the state's highest-poverty schools and generally pays higher salaries. Since CPS is a single district, it is not altogether surprising that its salary gap is significantly smaller than it is for the other districts in the state. Separately, pension spending increases the funding gap between high- and low-poverty schools by the specific contribution rate of the pension fund the schools belong to. Statewide, however, the trend reverses and the average pension spending gap grows even larger than the salary gap.

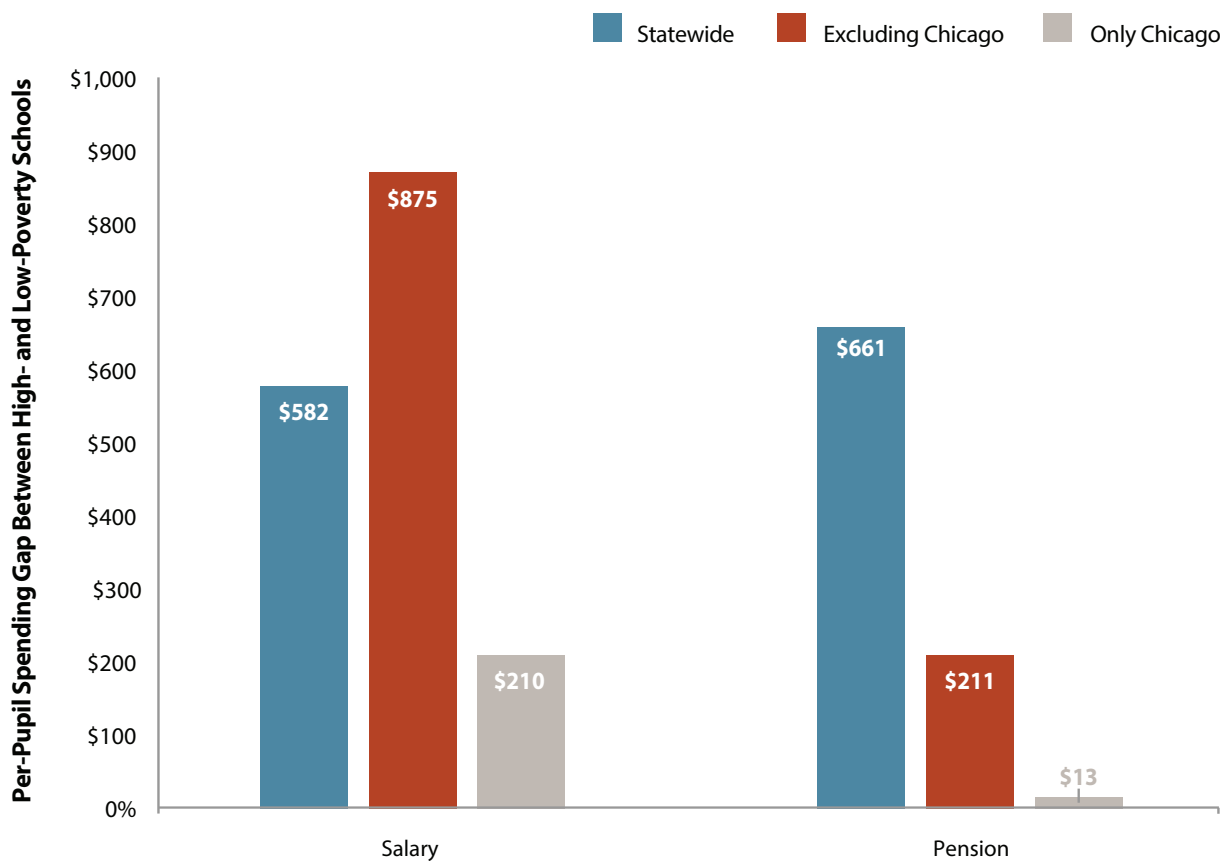
Figure 8 Statewide Salary and Pension Spending Between Schools Based on Race



Source: Author's analysis of data from the Illinois Teacher Service Record (TSR), 2012 and from the National Center for Education Statistics (NCES), 2012.

In the end, pension spending deepens school funding inequities in large part because Chicago Public Schools operates its own pension system. CPS typically contributes a far lower percentage of employee salaries to its pension fund than the state contributes to the separate fund for all other teachers. This investment disparity drives a lot of the increase in funding inequities. However, even without Chicago, pension spending still increased poverty-based funding inequities.

Figure 9 Disparity in Salary and Pension Spending Between High- and Low-Poverty Schools



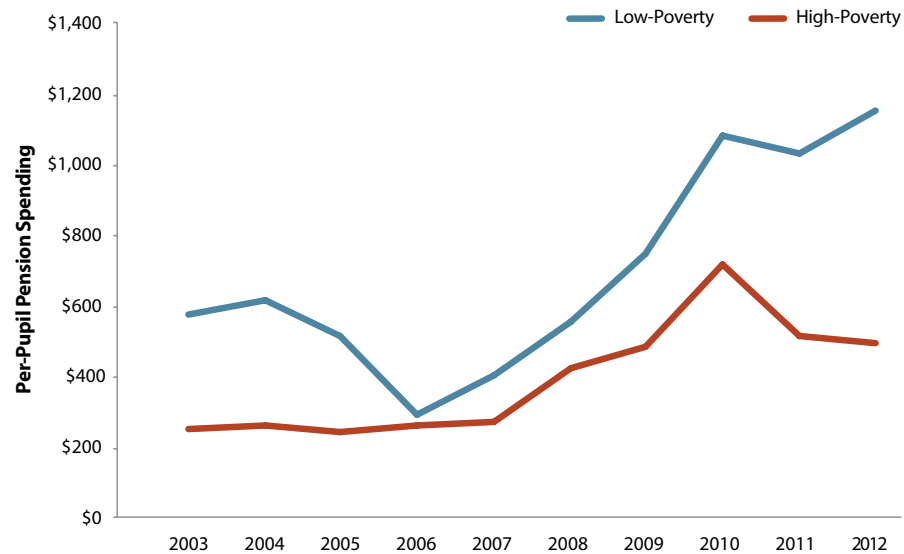
Source: Author's analysis of data from the Illinois Teacher Service Record (TSR), 2012 and from the National Center for Education Statistics (NCES), 2012.

Inequities in School Spending Grow as State Pension Contribution Rates Increase

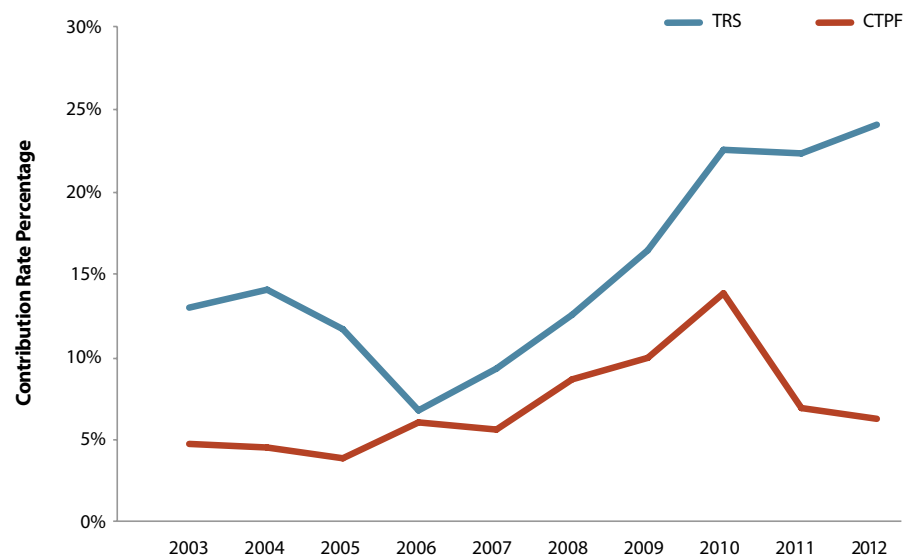
Illinois currently holds around a \$70 billion unfunded pension liability.²⁶ The unfunded liability for the pension fund for Chicago Public Schools is about \$10 billion.²⁷ To stave off bankruptcy and to make payments to current beneficiaries, the state and CPS have increased their contribution rates.²⁸ While necessary to pay down substantial debts, these additional investments alone are not enough to fix the financial problems facing both pension funds. Furthermore, increasing the pension contribution rate further deepens school funding inequities.

From 2003 to 2012, pension contribution rates were generally increasing in both the TRS and CTPF. However, tracking the disparity in pension spending between the highest- and lowest-poverty schools over that span reveals that the higher contribution rates produced greater inequities. Figures 10 and 11 taken together show how inequities in pension spending correspond with the pension contribution rates from both the TRS and CTPF.

The graphs are almost mirror images of each other. In general, the inequity in pension spending reflects the difference between the TRS and CTPF contribution rates. In 2006 the contribution rates were almost the same, and correspondingly the inequity in pension spending was at its lowest point in the sample. To be clear, pension inequity in Illinois is not solely caused by the separate pension system in Chicago. As shown earlier in the paper, even without CPS, pension spending increased inequity by the contribution rate.

Figure 10 Statewide Per-Pupil Pension Spending Between High- and Low-Poverty Schools

Source: Author's analysis of data from the Illinois Teacher Service Record (TSR), 2012 and from the National Center for Education Statistics (NCES), 2012.

Figure 11 TRS and CTPF Contribution Rates

Source: Illinois Teacher Service Record (TSR), and Chicago Teachers' Pension Fund (CTPF).

Pension Spending Exacerbates Funding Inequities at the District Level

In Illinois, education funds are not directly distributed to schools. Rather, federal, state, and local dollars are filtered to schools through their districts. Given that funding structure, I also analyzed the effect of pension spending on school finance equity at the district level.

The gap between the highest- and lowest-poverty districts is actually larger than the school-level analysis.

Unsurprisingly, funding disparities increase as poverty increases. However, the gap between the highest- and lowest-poverty districts is actually *larger* than the school-level analysis. This indicates that many of the inequitably funded high-poverty schools discussed earlier are clustered in a minority

of districts. And this grouping has a compounding effect, resulting in even greater disparities that disadvantage high-poverty districts.

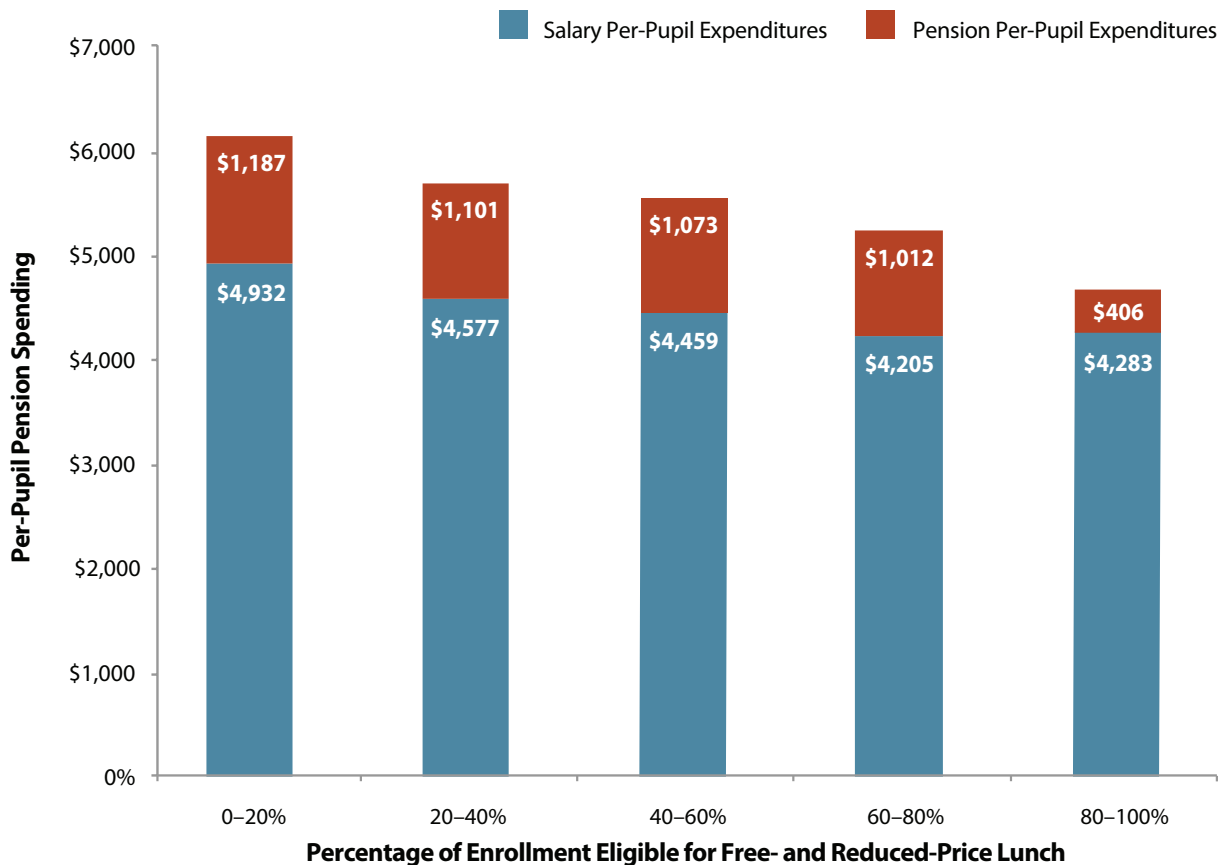
As shown below, salary and pension spending gradually decrease as the district poverty rate increases, with a more dramatic drop at the 80 to 100 percent poverty rate. Ultimately, the spending gap between the highest- and lowest-poverty districts more than doubles after pension spending is included. Keep in mind that only 45 school districts in the sample, including CPS, fall into this category. Therefore, even if CPS were a part of the TRS, this problem would not be mitigated.

This pattern largely holds when analyzing district spending compared with student demographics. But just as with the school-level analysis, the pension and salary spending increase slightly as the enrollment of black and Hispanic students increases to 40 percent. After that point, however, spending decreases. For the most racially segregated school districts, pension spending is on

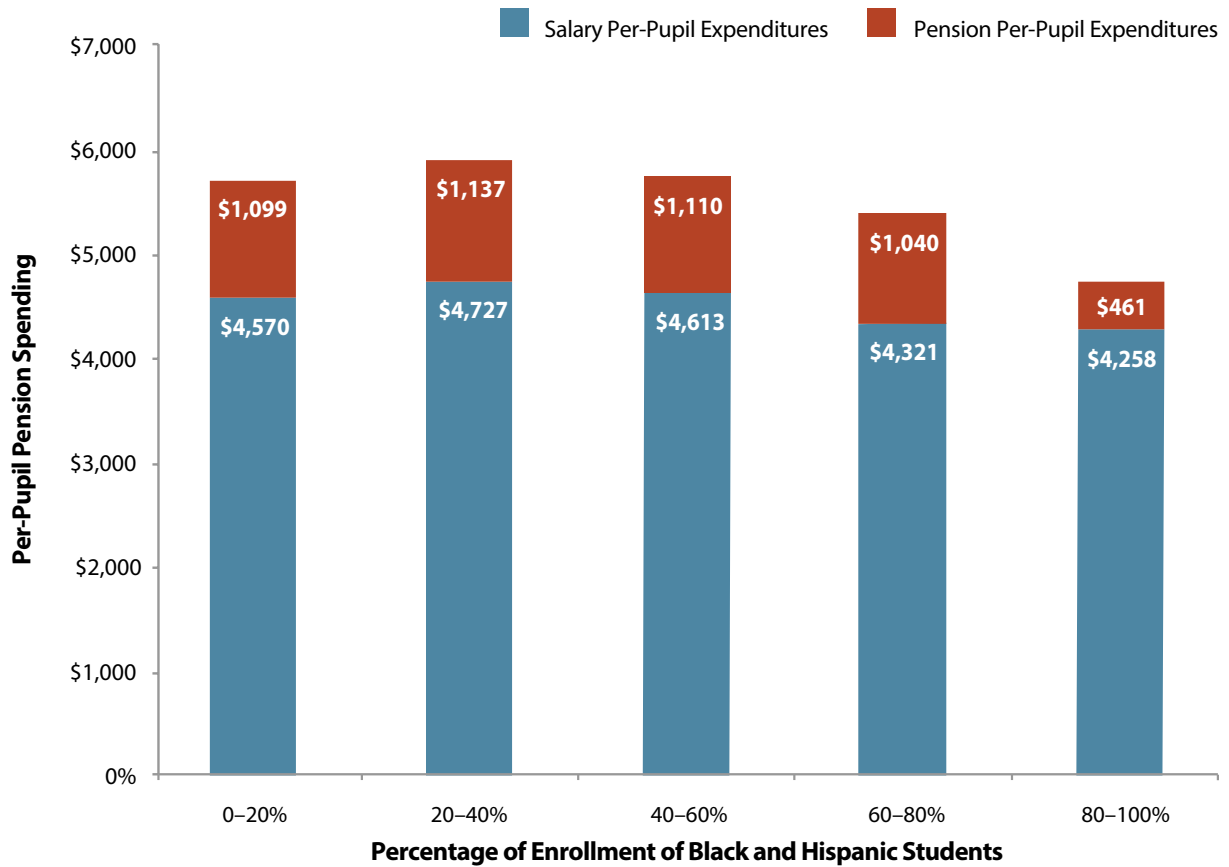
average significantly lower than in all other districts. In fact, pension spending more than triples the salary-based gap.

Overall, analyzing the impact of pension spending at the district level reveals that high-poverty schools and schools with the highest percentage of nonwhite students are clustered in relatively few districts. This causes funding disparities to be on average even greater than was demonstrated in the school-level analysis. In short, school-level gaps understate district-level gaps, which are the primary drivers of salary and pension funding disparities. Furthermore, this analysis mitigates the influence of Chicago Public Schools since it only counts as one district rather than over 15 percent of the schools in the analysis. Therefore, folding CPS into the TRS would largely not address the underlying problem of the inequitable distribution of teachers.

Figure 12 Statewide District Spending on Salaries and Pensions by Student Poverty Rate



Source: Author's analysis of data from the Illinois Teacher Service Record (TSR), 2012 and from the National Center for Education Statistics (NCES), 2012.

Figure 13 Statewide District Spending on Salaries and Pensions by Race

Source: Author's analysis of data from the Illinois Teacher Service Record (TSR), 2012 and from the National Center for Education Statistics (NCES), 2012.

Rural and Urban Districts Experience the Greatest Growth in Inequity Due to Pension Spending

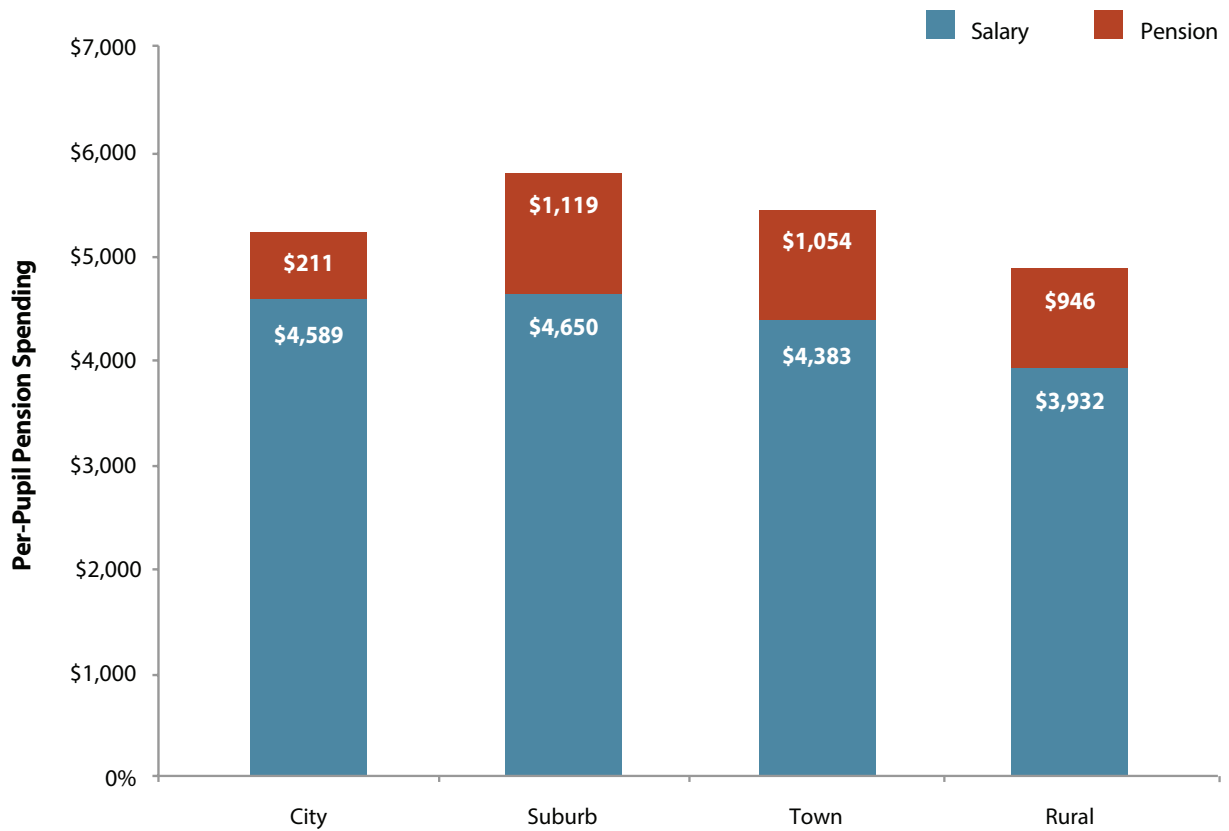
As demonstrated in the earlier section, pension spending greatly exacerbates funding inequities between districts. Among Illinois districts, however, rural and urban districts are the biggest

Among Illinois districts, however, rural and urban districts are the biggest losers from state pension spending.

losers from state pension spending. Rural districts on average received \$717 less per pupil on salaries than did suburban districts. As a result, these districts spent on average only \$173 per pupil on pensions compared with \$497 in suburban districts. Because all suburban and rural districts participate in the statewide TRS, this is a 24 percent

increase in the funding gap. Altogether, rural districts underspent suburban districts by an average of \$890 per pupil.

Despite urban districts' spending significantly more per pupil on salaries than rural districts, pension spending on urban districts exacerbated the funding disparity with suburban districts at a far greater rate. Urban districts only received an average of \$662 per pupil on pensions compared with \$1,119 in the suburbs. This increases the relatively small funding gap of \$61 to \$558.

Figure 14 Statewide Salary and Pension Spending by District Urbanicity

Source: Author's analysis of data from the Illinois Teacher Service Record (TSR), 2012 and from the National Center for Education Statistics (NCES), 2012.

Conclusion

Inequities in school funding are well documented. However, as this paper has shown, because many of these analyses do not include pension spending, they are likely systematically underestimating the magnitude of the funding disparities. In other words, funding gaps are even bigger than is generally thought.

Even my estimates of the impact of pension spending on school funding inequity in Illinois likely understate the problem. My analysis does not account for those teachers who did not vest in the pension fund and therefore forfeited all of the contributions made by either the state or CPS on their behalf. Between 2003 and 2012, both the TRS and CTPF had a five-year vesting period. Since turnover rates are generally higher in high-poverty schools and schools serving a high concentration of nonwhite students, it is very likely that I overestimated how much money these schools received for pensions.

While this paper analyzed salary and pension spending data for Illinois only, there is no reason to believe such issues are confined to Illinois. Even states with only one teacher pension fund nevertheless deepen school funding inequities through funding teachers' retirements since pension spending reflects underlying inequities in salaries. The problem would likely be smaller in states in which districts themselves were responsible for pension payments. Nevertheless, younger teachers subsidizing the retirement of older and retired teachers would still be a problem but likely not to the magnitude it is in Illinois. In short, states cannot spend their way out of this problem. Instead, states will need to either address how salaries are distributed to schools across the state, or adjust their funding mechanisms such that high-poverty schools and highly racially segregated schools receive substantial revenues to compensate for significant salary-based funding inequities.

Appendices

Appendix A: Methodology

This analysis is based on individual employee salaries derived from Illinois' Teacher Service Record (TSR) database between 2003 and 2012. For each year I restricted the employees included in the analysis to only those educators who, in any given year, worked in only one school and one school district. Since this is a school-level expenditure analysis, it was important to ensure that each employee included in the final dataset only had his or her salary applied to a single school.

I further restricted the dataset to exclude employees who are not covered under the Illinois and Chicago teacher pension systems. Typically, only a handful of positions were dropped from the dataset, including, among others, administrative assistant, interpreter, and occupational therapist.

I aggregated the remaining employee salaries to the school level. District-level employees, including superintendents, were not included in the final analysis since their salary could not be accurately ascribed to a single school.

Each year the aggregated salary data for each school was paired with the corresponding school-level student demographic data from the National Center for Education Statistics. Unlike NCES, the TSR dataset includes traditional and nontraditional schools, as well as pre-k and adult education schools. Therefore, around 1,000 schools from the TSR dataset did not have corresponding demographic data since they were not included in the NCES dataset. Nevertheless, over 4,000 of Illinois' schools included in the NCES dataset matched with TSR salary data.

To be able to analyze the relationship between teacher pension spending and schools' student demographics required that I further limit the dataset to only those schools with:

1. At least some spending on salaries;
2. Data on student poverty; and
3. Data on the enrollment of black and Hispanic students.

Finally, I used the Comparable Wage Index developed by Lori Taylor at Texas A&M University to adjust all salaries for regional differences and to translate those amounts into 2012 dollars. Only schools with a corresponding CWI are included in the dataset. This ensures that the salaries reflect cost-of-living differences across the state and can be compared year to year. Despite these limitations, the vast majority of employees from the TSR datasets were able to be included in the final analysis. On average 89.60% of employees are included over the 10 years. See Table A1 below for the yearly employee inclusion rates.

Table A1 Employee Inclusion Rate in Final Dataset

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total employees in TSR dataset	159,250	158,216	160,566	159,909	160,869	164,325	167,743	167,821	163,228	162,960
Employees linked to a single school	142,776	142,580	145,062	144,437	147,163	148,240	151,306	151,292	147,226	147,393
Employees participating in Illinois or Chicago pension plans	142,295	142,466	144,950	144,354	147,085	148,118	151,187	151,181	147,135	147,303
Included in analysis	129,814	129,067	131,027	127,960	127,396	130,866	132,050	133,234	132,265	139,815
Percentage of TSR employees included in final analysis	91.2%	90.6%	90.4%	86.8%	86.6%	88.4%	87.3%	88.1%	89.9%	94.9%

Note: The inclusion rate is based on the percent of employees included in the final analysis from the total number of employees who worked in a single school, participated in the pension funds, and had complete NCES data and a CWI ratio.

After building a dataset with the limited and fully adjusted salary expenditures at the school level, I calculated the total school-level pension expenditures. I used the reported contribution rates for the Illinois and Chicago pension funds based on their Comprehensive Annual Financial Reports (CAFR). Table A2 lists the contribution rates by year for Illinois and Chicago.

Table A2 Pension Contribution Rates

	Illinois Contribution Rate	Chicago Contribution Rate
2003	13.01%	4.62%
2004	13.98%	4.42%
2005	11.76%	3.75%
2006	6.75%	6.06%*
2007	9.26%	5.57%
2008	12.53%	8.59%
2009	16.44%	9.92%
2010	22.56%	13.79%
2011	22.38%	6.87%
2012	24.06%	6.24%

Sources: Illinois Teachers' Retirement System, available at <http://trs.illinois.gov/pubs/cafr/FY2012/fy12.pdf>. Chicago Teachers' Pension Fund, available at: <http://www.ctpf.org/AnnualReports/cafr2009.pdf> and <http://www.ctpf.org/AnnualReports/cafr2015.pdf>.

*Note: Between the two CAFRs used to determine Chicago's contribution rate, there was an inconsistency in 2006. One reported a 2.72% contribution rate and the other 6.06%. Using the higher of the two produced a more conservative estimate of pension spending disparities among schools in 2006.

To analyze the relationship between pension spending and student poverty, I organized the schools into five different groups based on school-level student poverty. These are not equally sized quintiles. Rather, any schools with a poverty rate between 0 and 20 percent were grouped together. This pattern continued by 20 percentage point intervals up to 100 percent. In the few instances that the poverty rate was slightly over 100 percent, I placed that school into the fifth group. With these data I tracked differences in per-pupil salary and pension expenditures for 2012.

The analysis based on schools' percent enrollment of black and Hispanic students followed the same pattern. To calculate the salary and pension expenditures with and without Chicago Public Schools, I simply restricted the dataset to only schools with the CPS district code and conducted the analyses above. Then I removed schools with the CPS school district code and conducted the same analyses.

To track how the poverty-based inequities in fact grow as the contribution rates increase, I simply multiplied the TSR and CTPF contribution rates for the eligible schools for each year by the school-level salary data.

Appendix B: Yearly Data Tables

The following tables include the aggregated salary and pension spending, demographics, and employee data by poverty groups and groups of schools serving the highest concentrations of black and Hispanic students.

Table B1 2003 Salary, Pension, and Demographic Data by School-Level Student Poverty and Percent Enrollment of Black and Hispanic Students

	Percent Enrollment of Low-Income Students						Percent Enrollment of Black and Hispanic Students					
	0-20	20-40	40-60	60-80	80-100	State	0-20	20-40	40-60	60-80	80-100	State
School Count	1,386	950	560	403	510	3,809	2,162	464	265	216	702	3,809
Percent	36.4%	24.9%	14.7%	10.6%	13.4%	-	56.8%	12.2%	7.0%	5.7%	18.4%	-
Chicago	12	25	44	139	332	552	7	29	36	51	429	552
Percent	0.9%	2.6%	7.9%	34.5%	65.1%	14.5%	0.32%	6.3%	13.6%	23.6%	61.1%	14.5%
Employ. Count	53,241	26,617	15,757	14,475	18,533	128,623	64,186	17,747	10,679	7,912	28,099	128,623
Enrollment	788,111	395,405	241,317	231,010	307,258	1,963,111	947,211	266,665	162,887	122,504	463,844	1,963,111
Percent	40.2%	20.1%	12.3%	11.8%	15.7%	-	48.3%	13.6%	8.3%	6.2%	23.6%	-
Per-Pupil Salary Spending	\$4,452	\$4,458	\$4,287	\$4,144	\$4,020	\$4,329	\$4,445	\$4,495	\$4,408	\$4,194	\$4,007	\$4,329
Per-Pupil Pension Spending	\$577	\$567	\$507	\$351	\$253	\$489	\$577	\$561	\$500	\$417	\$284	\$489
Per-Pupil Total Spending	\$5,030	\$5,025	\$4,794	\$4,496	\$4,273	\$4,818	\$5,022	\$5,056	\$4,908	\$4,611	\$4,290	\$4,818

Note: All spending is adjusted for cost of living and is reported in 2012 dollars.

Table B2 2004 Salary, Pension, and Demographic Data by School-Level Student Poverty and Percent Enrollment of Black and Hispanic Students

	Percent Enrollment of Low-Income Students						Percent Enrollment of Black and Hispanic Students					
	0-20	20-40	40-60	60-80	80-100	State	0-20	20-40	40-60	60-80	80-100	State
School Count	1,285	967	599	366	574	3,791	2,109	451	302	211	718	3,791
Percent	33.9%	25.5%	15.8%	9.7%	15.1%	-	55.6%	11.9%	8.0%	5.6%	18.9%	-
Chicago	15	24	39	100	369	547	9	23	38	48	429	547
Percent	1.17%	2.5%	6.5%	27.3%	64.3%	14.4%	0.4%	5.1%	12.6%	22.8%	59.8%	14.4%
Employ. Count	48,992	27,431	17,150	13,034	21,459	128,066	61,274	17,619	12,282	7,578	29,313	128,066
Enrollment	732,208	418,216	264,459	207,098	343,603	1,965,584	919,796	266,925	190,069	115,669	473,125	1,965,584
Percent	37.3%	21.3%	13.5%	10.5%	17.5%	-	46.8%	13.6%	9.7%	5.9%	24.1%	-
Per-Pupil Salary Spending	\$4,299	\$4,372	\$4,301	\$4,085	\$4,084	\$4,292	\$4,289	\$4,419	\$4,347	\$4,251	\$4,021	\$4,292
Per-Pupil Pension Spending	\$612	\$598	\$553	\$400	\$260	\$517	\$612	\$597	\$528	\$460	\$297	\$517
Per-Pupil Total Spending	\$5,011	\$4,970	\$4,854	\$4,485	\$4,344	\$4,809	\$5,001	\$5,015	\$4,875	\$4,711	\$4,318	\$4,809

Note: All spending is adjusted for cost of living and is reported in 2012 dollars.

Table B3 2005 Salary, Pension, and Demographic Data by School-Level Student Poverty and Percent Enrollment of Black and Hispanic Students

	Percent Enrollment of Low-Income Students						Percent Enrollment of Black and Hispanic Students					
	0-20	20-40	40-60	60-80	80-100	State	0-20	20-40	40-60	60-80	80-100	State
School Count	1,193	952	630	413	578	3,766	2,059	467	304	204	732	3,766
Percent	31.7%	25.3%	16.7%	11.0%	15.4%	-	54.7%	12.4%	8.1%	5.4%	19.4%	-
Chicago	11	27	38	103	351	530	4	28	35	44	419	530
Percent	0.9%	2.8%	6.0%	24.9%	60.7%	14.1%	0.2%	6.0%	11.5%	21.6%	57.2%	14.1%
Employ. Count	47,038	27,720	18,133	14,661	22,391	129,943	60,178	18,447	12,489	7,762	31,067	129,943
Enrollment	699,237	415,415	274,234	223,346	338,954	1,951,186	897,027	274,121	188,257	115,419	476,362	1,951,186
Percent	35.8%	21.3%	14.1%	11.5%	17.4%	-	46.0%	14.1%	9.7%	5.9%	21.4%	-
Per-Pupil Salary Spending	\$4,402	\$4,371	\$4,323	\$4,275	\$4,344	\$4,360	\$4,373	\$4,488	\$4,400	\$4,374	\$4,242	\$4,360
Per-Pupil Pension Spending	\$515	\$501	\$461	\$366	\$242	\$440	\$513	\$504	\$454	\$407	\$267	\$440
Per-Pupil Total Spending	\$4,917	\$4,872	\$4,785	\$4,640	\$4,586	\$4,800	\$4,887	\$4,992	\$4,854	\$4,781	\$4,510	\$4,800

Note: All spending is adjusted for cost of living and is reported in 2012 dollars.

Table B4 2006 Salary, Pension, and Demographic Data by School-Level Student Poverty and Percent Enrollment of Black and Hispanic Students

	Percent Enrollment of Low-Income Students						Percent Enrollment of Black and Hispanic Students					
	0-20	20-40	40-60	60-80	80-100	State	0-20	20-40	40-60	60-80	80-100	State
School Count	1,154	916	612	412	629	3,723	1,992	476	308	186	761	3,723
Percent	31.0%	24.6%	16.4%	11.1%	16.9%	-	53.5%	12.8%	8.3%	5.0%	20.4%	-
Chicago	9	26	37	95	359	526	5	26	36	34	425	526
Percent	0.8%	2.8%	6.1%	23.1%	57.1%	14.1%	0.3%	5.5%	11.7%	18.3%	55.9%	14.1%
Employ. Count	46,076	26,561	18,212	13,638	22,334	126,821	58,506	18,824	12,292	7,045	30,154	126,821
Enrollment	681,616	395,392	276,278	208,463	347,857	1,909,606	873,177	275,066	181,628	104,772	474,963	1,909,606
Percent	35.7%	20.7%	14.5%	10.9%	18.2%	-	45.7%	14.4%	9.5%	5.5%	24.9%	-
Per-Pupil Salary Spending	\$4,319	\$4,246	\$4,169	\$4,181	\$4,181	\$4,242	\$4,263	\$4,408	\$4,335	\$4,287	\$4,062	\$4,242
Per-Pupil Pension Spending	\$291	\$285	\$278	\$272	\$261	\$281	\$288	\$296	\$287	\$282	\$256	\$281
Per-Pupil Total Spending	\$4,610	\$4,531	\$4,446	\$4,453	\$4,442	\$4,522	\$4,550	\$4,704	\$4,622	\$4,570	\$4,317	\$4,522

Note: All spending is adjusted for cost of living and is reported in 2012 dollars.

Table B5 2007 Salary, Pension, and Demographic Data by School-Level Student Poverty and Percent Enrollment of Black and Hispanic Students

	Percent Enrollment of Low-Income Students						Percent Enrollment of Black and Hispanic Students					
	0-20	20-40	40-60	60-80	80-100	State	0-20	20-40	40-60	60-80	80-100	State
School Count	1,092	884	633	379	676	3,664	1,975	449	291	189	760	3,664
Percent	29.8%	24.1%	17.3%	10.3%	18.5%	-	53.9%	12.3%	7.9%	5.2%	20.7%	-
Chicago	10	22	30	61	401	524	6	27	34	36	421	524
Percent	0.9%	2.5%	4.7%	16.1%	59.3%	14.3%	0.3%	6.0%	11.7%	19.1%	55.4%	14.3%
Employ. Count	45,136	26,092	18,658	13,179	23,529	126,604	58,802	18,724	12,417	7,471	29,190	126,604
Enrollment	648,687	379,022	275,195	202,890	372,954	1,878,748	855,311	266,913	178,301	109,622	468,601	1,878,748
Percent	34.5%	20.2%	14.7%	10.8%	19.9%	-	45.5%	14.2%	9.5%	5.8%	29.9%	-
Per-Pupil Salary Spending	\$4,389	\$4,327	\$4,260	\$4,093	\$4,114	\$4,271	\$4,312	\$4,509	\$4,453	\$4,333	\$3,977	\$4,271
Per-Pupil Pension Spending	\$405	\$396	\$381	\$339	\$273	\$366	\$399	\$408	\$387	\$367	\$276	\$366
Per-Pupil Total Spending	\$4,795	\$4,723	\$4,641	\$4,433	\$4,387	\$4,637	\$4,710	\$4,917	\$4,840	\$4,700	\$4,253	\$4,637

Note: All spending is adjusted for cost of living and is reported in 2012 dollars.

Table B6 2012 Salary, Pension, and Demographic Data by School-Level Student Poverty and Percent Enrollment of Black and Hispanic Students

	Percent Enrollment of Low-Income Students						Percent Enrollment of Black and Hispanic Students					
	0-20	20-40	40-60	60-80	80-100	State	0-20	20-40	40-60	60-80	80-100	State
School Count	724	965	844	546	843	3,922	1,881	582	368	244	847	3,922
Percent	18.5%	24.6%	21.5%	13.9%	21.5%	-	48.0%	14.8%	9.4%	6.2%	21.6%	-
Chicago	10	30	26	44	498	608	7	31	41	45	484	608
Percent	1.4%	3.1%	3.1%	8.1%	59.1%	15.5%	0.4%	5.3%	11.1%	18.4%	57.1%	15.5%
Employ. Count	31,750	32,570	25,285	17,764	29,854	137,223	55,833	24,909	15,660	9,406	31,415	137,223
Enrollment	453,755	468,009	368,538	265,654	471,825	2,027,781	806,919	362,300	226,459	139,116	492,987	2,027,781
Percent	22.4%	23.1%	18.2%	13.1%	23.3%	-	39.8%	17.9%	11.2%	6.9%	24.3%	-
Per-Pupil Salary Spending	\$4,828	\$4,604	\$4,466	\$4,290	\$4,246	\$4,505	\$4,584	\$4,658	\$4,643	\$4,469	\$4,209	\$4,505
Per-Pupil Pension Spending	\$1,153	\$1,076	\$1,034	\$935	\$492	\$931	\$1,099	\$1,080	\$988	\$890	\$533	\$931
Per-Pupil Total Spending	\$5,981	\$5,680	\$5,500	\$5,225	\$4,739	\$5,436	\$5,683	\$5,738	\$5,632	\$5,359	\$4,742	\$5,436





Note: All spending is adjusted for cost of living.

Endnotes

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- ²⁸ Ibid.

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