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Abstract

Policymakers are concerned with the growth of public sector compensation bills, while many public employees believe their pay has fallen behind private sector levels. Public sector managers are concerned with offering competitive salary and benefit packages that will allow them to attract and retain employees. Public-private pay comparisons often are conducted using government household survey data. While household surveys provide essential information on public sector salaries and worker characteristics such as education, experience and occupation, those surveys lack information on employee fringe benefits, which are of increasing cost and importance in the public sector. Data from the National Income and Product Accounts (NIPA) published by the U.S. federal government can fill those gaps. The NIPA data include more accurate information on the fringe benefits, including future pensions, being accrued by employees. NIPA salary and benefit data for employees in the private sector, federal government, state and local government and public education make it possible to track changes in total compensation over the past two decades. Average inflation-adjusted salaries grew at similar rates in the private sector, state and local government and public education, while growing significantly more rapidly in the federal sector. Benefits, including pension accruals, grew substantially faster in the public than the private sectors. As a result, total compensation

from 1998 to 2017 grew somewhat more quickly in state and local government and public education than in the private sector, while growth of federal employee compensation far outpaced the other sectors. NIPA regional data make it possible to analyze the growth of state and local government employee compensation by state. There is considerable variation from one state to another. However, there was no state in which average state and local government employee compensation lost ground relative to private sector compensation from 1998 to 2017. The NIPA data also include the value of annual employee pension accruals in state and local pensions. The median state in 2017 provided an employer-funded pension benefit worth 14 percent of employee wages. From 1998 to 2017 the median state and local pension plan became about 13 percent more generous, though with considerable variation from state to state. Pensions became more generous in about three-quarters of states, while in one-quarter of state employee pension accruals declined from 1998 to 2017.

Introduction

For at least the past decade, policymakers at the federal, state and local levels have expressed concern over the cost of public sector employee compensation. Rising health and pension costs have constricted resources available for other purposes. In some cases, governments have responded by slowing the growth of employee wages, reducing employee benefits, or increasing the contributions that employees must make toward health and pension plans.

Perhaps in response to these policy changes, public employees have expressed concern that their pay and benefits are falling behind private sector levels. Federal employees cite a study by the Federal Salary Council (2018) concluding that federal workers receive average salaries 32 percent below those paid in comparable jobs in the private and state and local government sectors. Other research from Bureau of Labor Statistics (BLS) economists finds that state and local government employees receive salaries similar to private sector workers for jobs with similar work requirements. (Gittleman and Pierce, 2012.) Since the Federal Salary Council and the Gittleman and Pierce analyses use the same dataset, the BLS National Compensation Survey, these two analyses considered jointly logically imply that federal government employees are substantially underpaid relative to state and local government employees working in similar jobs.

At the same time, state and local government employees and public school teachers argue that they are increasingly underpaid relative to private sector employees. A number of studies published by the union-affiliated Economic Policy Institute argues that state and government employees in many states receive total salaries and benefits below those received by comparable private sector employees. A similar series of EPI studies, most recently Allegretto and Mishel

(2018), have found an increasing "salary gap" between public school teachers and private sector workers, reaching a high of 19 percent in 2017.

A major shortcoming of all the analyses discussed above is the failure to fully and accurately account for employee benefits, which form a significantly larger share of total compensation in the public sector than the private sector. The Federal Salary Council analysis ignores benefits entirely, despite a Congressional Budget Office (2017) finding that federal employee benefits are 47 percent more generous than benefits received by similarly-qualified private sector employees. Likewise, while the EPI studies attempt to count the value of public sector benefits, those studies incorrectly calculate employee compensation through traditional defined benefit pension plans. The EPI studies equate employee pension compensation in a given year with the government pension contribution in that year. However, those annual contributions are largely unconnected from the pension benefits earned by employees in that year and can dramatically misstate employee compensation paid via pension plans. For instance, some states have skipped pension contributions entirely in a given year, yet employees continue to accrue benefits. Likewise, a state might reduce its annual pension contribution by assuming a higher rate of return on pension investments, but this does not change the value of benefits that must be paid in the future. These methodological issue are discussed in greater detail below.

This article does not intend to resolve all these questions. Instead, it uses National Income and Product Accounts data on average salaries and benefits across industries and sectors to track changes in total compensation between private sector workers and employees in the federal government, state and local governments and public education. Importantly, the NIPA data use an accurate measurement of the accrual value of public employee pension benefits, data which allow for easier analysis of the growth of total compensation and comparisons of pay between

workers in different sectors. These NIPA pension data exclude government pension contributions used to amortize unfunded liabilities from prior years, which are not a part of current employee compensation. The NIPA pension data also calculate the present value of future pension benefits using a discount rate matched to the low risk of those benefits, which produces a more accurate measurement than discounting largely-guaranteed pension benefits using the expected return on a portfolio of risky pension investments.

The focus is on four main employee groups: private sector employees as a whole; federal government civilian employees, excluding active duty military and employees of government sponsored enterprises; state and local government general government employees, who include all state and local government employees except for public education; and public education employees, who include employees of public schools and public universities. This does not assume that these four groups should be compensated identically, given the different skills that employees in these different sectors may possess. Rather, the focus is on how relative compensation in the different sectors has changed over the past two decades.

Public education employees are a subset of state and local government employees. To provide insights on these employees, Table 1 below uses Current Population Survey data from 2013 through 2017 to show the most common occupations in the public education sector. These occupations are identified by looking at workers classified as employed by state and local governments whose industry classification is either “Elementary and secondary schools” or “Colleges and universities, including junior colleges.” By far the largest occupational categories are elementary, middle and secondary (high) school teachers, who make up 37 percent of all employees in public education. Postsecondary school teachers, who include college professors or

instructors, make up 8 percent of the sample. Following that are teacher assistants, administrators and a variety of mostly support-oriented occupations.

[Table 1. Here]

For these employee categories, NIPA data are used to track the real growth of wages and benefits from 1998 to 2017, along with comparisons in the rate of growth between different sectors. The NIPA data also provide the annual costs of newly-accruing public employee pension benefits to gauge the relative generosity of such benefits between states and how that generosity has changed over time.

Background on NIPA Data

The National Income and Product Accounts are the official accounting statements of the United States and are used by policymakers for a wide range of purposes. The NIPA track economic activity across industries and regions and are designed to be consistent with international accounting standards that allow for comparability between countries. The NIPA accounts reflect governments' considered views on the best way to express various economic events, including compensation of employees.

In 2013, the National Income and Product Accounts were revised to calculate employee compensation through pensions on an accrual basis, such that employee compensation in a given year was credited with the pension benefits accrued by employees in that year. (See McCulla, et al. 2013) This allows for a more comprehensive view of relative employee compensation in different sectors of the economy and how relative compensation has changed over time.

The 2013 comprehensive revision to the NIPA was enacted in response to the System of National Accounts 2008 update (SNA 2008), published by the United Nations Statistical Commission. The SNA 2008 is a document outlining standards by which countries can publish

national accounts that are informative to users and comparable with each other. The SNA 2008 recommended that pensions be accounted for on an accrual basis, meaning that pension benefits are counted as costs to the pension sponsor and income to pension participants at the time the benefits are earned rather than the time at which benefits are paid out. Under the previous methodology, pensions were treated on a cash basis. The problem with this, the UN later pointed is out, is that "employers' actual social contributions to defined benefit pension funds *reflect amounts paid rather than the true cost to the employer of the pension entitlements that staff accrue*. Underfunding or overfunding of defined benefit employers' pension schemes is not shown as an obligation or a claim of the employers." (UN Statistics Division, 2005) Pension cash contributions may differ substantially from year to year based upon the funded status of the plan. Accrual accounting captures the steadier accumulation of benefit liabilities as employees progress through their working careers.

Beginning in 2013, the Bureau of Economic Analysis measured pension activities for the NIPA on an accrual basis, including for private sector, federal employee, and state and local government employee plans. The BEA also revised prior figures, allowing for comparison of changes to employee compensation paid through pensions over time as well as across different types of retirement plans. Previously, using a cash accounting system, employees with defined contribution plans such as 401(k)s would be credited with employer contributions as they occurred while employees with defined benefit plans would not be credited until benefits were paid out in retirement.

Accruing pension benefits are added to wages and other fringe benefits to produce total compensation. The components of fringe benefits tracked by the NIPA include:

- **Pension and other employee benefit plans**: Old-age, survivors, and disability insurance; Federal civilian pension plans; Federal military pension plans; Railroad retirement; Pension benefit guaranty; State and local employee retirement; Private pension plans
- **Health insurance**: Federal hospital insurance; Military medical insurance; Temporary disability insurance; Publicly administered government employee insurance funds; Private group health insurance
- **Life insurance**: Veterans life insurance; Private group life insurance
- **Workers' compensation**: Federal; State and local; Private insurance
- **Unemployment insurance**: State unemployment insurance; Federal unemployment tax; Railroad employees unemployment insurance; Federal employees unemployment insurance: Private supplemental unemployment

One shortcoming of the NIPA compensation data is that these figures do not include the accrual of retiree health benefits, which remain common in the public sector, albeit at lesser generosity than in the past. While many private sector retirees continue to receive retiree health benefits from their former employer, few private sector employees continue to accrue the right to future retiree health care. A second shortcoming of the NIPA data is that they do not include measures of the value of paid leave, which can differ from one sector to another. This omission is particularly important for public education, where the work year is generally shorter than in the other sectors. However, because the focus of this article is on changes in compensation by sector, for those purposes one must assume only (and more reasonably) that the relative lengths of paid leave did not change substantially between sectors over the period from 1998 to 2017.

Several summary calculations are presented in this section. Compensation figures are presented on a per-employee basis, where aggregate wages and compensation are divided by the number of full- and part-time employees reported in the NIPA.

- Per employee wages, benefits and total compensation. Changes are measured from 1998 through 2017. Figures are presented in inflation-adjusted terms, where inflation is measured using the Personal Consumption Expenditure (PCE) deflator.
- Relative wages and compensation, where per employee figures for public sector workers are expressed as a percentage of those of private sector workers. Changes are measured from 1998 through 2017.
- The normal cost of public employee pensions, expressed as a percentage of employee wages. Changes are measured from 1998 through 2017.

Results

From 1998 through 2017, the private sector workforce grew by 16 percent, from 109.7 million to 127.4 million. Over that same period the federal civilian workforce grew by 18 percent, state and local government non-education by 14 percent and state and local education by 17 percent. Table 2 shows per employee wages, benefits and total compensation in 1998 and 2017, with the 1998 figures adjusted to 2017 dollars using the personal consumption expenditure (PCE) deflator.

[Table 2. here]

Table 2 provides summary information on average wages, benefits and total compensation in the four sectors under analysis. Federal employees, with average annual salaries exceeding $88,000, stand out relative to the other three sectors where average salaries range from $47,204 in public education to $55,890 in private sector jobs. However, in the public sector

annual benefits are significantly more generous than in private sector jobs: in dollar terms, benefits in state and local government and public education are roughly twice as generous as in private sector jobs; in the federal government, benefits are nearly four times as generous as the private sector in dollar terms.

In general discussions of public sector compensation, wage data are far more readily available than information on benefits. For that reason, it may be helpful to consider the ratio of benefits to wages as an easy way to translate wages in a given sector into total compensation. In private sector jobs in 2017, benefits equaled 19 percent of average wages, while in the public sector benefit-to-wage ratios were substantially higher. In the federal government benefits equaled 44 percent of wages while state and local government and public education both paid average benefits equal to 45 percent of wages. For those concerned with pay parity between the public sectors and the private sector, by itself the public sector benefit premium over private sector employment would be sufficient to offset a public sector wage penalty of roughly 17 percent. This may be helpful in considering pay analyses that focus on comparability of wages.

Next we look at changes in wages and total compensation from 1998 through 2017. (figure 1 and table 3.) Real average wages per employee grew by 15 percent in the private sector between 1998 and 2017. Private sector wage growth outpaced wage increases in state and local government and public education, which may have led to the perception that state and local government and public school teachers have become underpaid. However, wage figures alone fail to account for the more rapid growth of fringe benefits in the public sector: in state and local government real annual benefits grew by 90 percent from 1998 to 2017, versus only 39 percent growth among private sector employers. In public education, benefits grew by 84 percent. As a

result, total per employee compensation increased faster in both state and local government and public education than in private sector jobs.

[Figure 1. here]

[Table 3. here]

However, as both figure 1 and table 3 show, federal government compensation is the standout: from 1998 to 2017, federal employees' total compensation increased by 1.50 times more than that of state and local government employees, 1.65 times more than public educators, and 1.74 times more than private sector employees. Federal wages grew by 23 percent from 1998 to 2017 while federal benefits increased by 116 percent, three times the growth of private sector benefits.

The figures presented above do not indicate whether public sector employees are "overpaid" or "underpaid." Such an evaluation can be undertaken only in the context of the skills and opportunities available to public and private sector employees. However, these figures do indicate that public sector employees, most notably federal employees but to a lesser degree state and local government employees and public education employees, have moved up the overall income distribution over the past two decades. While these data do not tell us if federal, state and local, and public education employees were appropriately compensated in 1998, relative to the average private sector employee public sector workers became better compensated over the years 1998 to 2017.

Compensation in State and Local Government

The NIPA's regional data provide figures on wages and benefits in state and local government by state, which allows for comparisons to private sector employees in the same state. For each state and the District of Columbia, two measures of changes in state and local

government employee compensation are provided. First, absolute percentage changes in the real level of salaries and benefits. Second, how the relative compensation between state and local government employees and private sector employee in the same state has changed. This second measure is designed to account for the fact that states with rapid private sector compensation growth may have been required to increase compensation to attract employees in the public sector.

Table 4 shows average wages, benefits and total compensation by sector and state for 1998 and 2017. Figures for 1998 are adjusted for inflation using the PCE deflator and expressed in 2017 dollars. These figures are mostly for reference. However, it may be of interest that in 1998, state and local government employees received the highest compensation in New York. By 2017, California had become the highest-paying state in the Union, paying total average compensation 49 percent higher than the median state. The lowest-paying state in 1998 was North Dakota; by 2017, South Dakota paid the lowest total compensation for state and local government employees, with average compensation 24 percent below the median state.

[Table 4. here]

However, compensation differences between states may be distorted by differences in the cost of living. The Bureau of Economic Analysis publishes regional price parities which equate costs between different states. For instance, the BEA figures find that the cost of living in the most expensive state, Hawaii, is 37 percent higher than that of the least expensive state, Mississippi.

Table 5 shows the BEA regional price parities along with adjusted average total compensation by sector and state. Adjusting for the local cost of living moved California from the highest-paying state to the third-highest paying state. The highest-paid state adjusting for

local costs of living was Alaska, where average total state and local government employee compensation was 31 percent above the median state. The lowest-paid state remained South Dakota, but after adjusting for the local cost of living state and local government employees in South Dakota were paid only 17 percent less than the median state.

[Table 5. here]

While interstate comparisons are of interest, state and local governments draw the vast majority of their employees from their local labor markets. For this reason, it also is helpful to compare average public sector compensation to average compensation in private employment. The two figures need not be identical: compensation is generally based on the skills of employees plus or minus a compensating differential for negative or positive aspects of the job, such as physical danger or financial risk. However, changes in those ratios over time could indicate meaningful changes in compensation policies.

In 1998, in the median state, average state and local government employee compensation was equal to 93 percent of average private sector compensation in that state. (Table 6.) The ratios of state and local government compensation ranged from a high of 1.28 in Alaska to a low of 0.80 in Kansas. By 2017, the median ratio of state and local government to private sector compensation had risen to 1.44, ranging from a high of 2.02 in Nevada to a low of 1.16 in Indiana. This reflects the pattern, note above, of public sector employees rising in the overall income distribution among working households.

[Table 6. here]

There was no state in which average state and local government employee compensation lost ground relative to private sector compensation from 1998 to 2017. Increases in the ratio of state and local to private sector compensation ranged from a low of 0.31 in West Virginia to a

high of 0.86 in Nevada. Put another way, in the median state total pay and benefits for the average state and local government employee grew by 80 percent above inflation from 1998 to 2017 while the median state's private sector pay and benefits grew by only 19 percent. The slowest rate of state and local government compensation growth from 1998 to 2017, West Virginia's 61 percent, was faster than the most rapid growth of private sector compensation, the 60 percent increase recorded in North Dakota due to the state's booming energy industry.

Changes in State and Local Employee Pension Accruals

A major component of public employees' compensation comes via defined benefit pension plans, in which an employee accrues the right to benefits in a given year of work but those benefits are not paid until retirement. The value of these accruing annual benefit entitlements is referred to as the "normal cost" of the pension, which can be distinguished from the cost to the sponsoring employer of paying off unfunded benefit liabilities that accrued in prior years. The normal cost of a pension is often expressed as a percentage of employee wages. In this form, the normal cost of a traditional pension is comparable to employer contributions to defined contribution 401(k)-type plans, which also are generally paid as a percentage of the employee's wages.

Prior to 2013 the Bureau of Economic Analysis did not calculate normal costs of public sector pensions, but the 2013 comprehensive revision of the National Income and Product Accounts included such information, including backward revisions to prior years. These new data allow for analysis of the level and change in generosity of public employee pensions over time.

A crucial methodological choice in calculating the normal cost of a defined benefit pension is the discount rate used to calculate the present value of the future benefits earned in a

given year. Most state and local government pensions calculate normal costs and other pension-related values using a discount rate equal to the assumed rate of return on the pension's investments, which today generally ranges between 7 and 8 percent.

That approach to valuing pension liabilities has come under criticism from economists and government agencies. The reason is that public employee pension benefits are generally guaranteed, whereas a 7 to 8 percent investment return can only be obtained by taking substantial investment risk. As a result, a public pension has the obligation to step back in with additional contributions should the plan's investments fail to achieve the assumed return. Moreover, even if pension investments achieve the assumed investment return over the very long term, variations over shorter periods of time can generate substantial swings in the amounts that governments must contribution to their plans. (Biggs, 2014)

In 2014, the University of Chicago's Booth School of Business surveyed forty-four prominent professional economists with regard to public pension accounting. Those economists were asked to agree or disagree with the following statement: "By discounting pension liabilities at high interest rates under government accounting standards, many U.S. state and local governments understate their pension liabilities and the costs of providing pensions to public-sector workers." Of the thirty-seven economists who responded, 33 (89 percent) agreed that high discount rates understate pension costs. Only one economist (2 percent) disagreed, while three economists (7 percent) either were uncertain or had no opinion.

Instead, most economists and governmental agencies believe that pension liabilities should be discounted using the interest rate on investments which have similar low risk to that of public pension benefits. Among these agencies are the Federal Reserve Board, the Congressional Budget Office, the International Monetary Fund, and the Bureau of Economic Analysis, which

constructs the National Income and Product Accounts. In constructing the NIPA, the BEA values public pension benefit liabilities using a corporate bond yield. This is the same interest rate the NIPA uses to value defined benefit pension liabilities for private sector firms. Many economists argue for valuing public pension liabilities using Treasury yields, because public pension benefits carry a stronger guarantee that private sector pensions. However, the NIPA approach has the advantage that if a public and a private sector employee are promised the same benefits in retirement, those benefits will be credited to employees as the current value of compensation and to employers, whether public or private sector, as having the same cost.

In the NIPA, the discount rate used to value pension benefits is changed only periodically. While the BEA does not publish the discount rates it applies on a year by year basis, it appears that the 1998 to 2017 NIPA series began with a 6 percent nominal discount, gradually declining over time to a current rate of 4 percent. Lower interest rates increase the cost and value of pension liabilities, in real terms as well as expressed through actuarial valuations. It is more costly to promise a guaranteed benefit in future years if the interest rates on safe investments have fallen. Likewise, such a guaranteed benefit is more valuable to participants in a low interest rate environment.

The BEA publishes state-level public pension financial data only from 2000 through 2016, years which cover most but not all of the period analyzed here. Nevertheless, these figures provide insight into the level and the evolution of pension benefits being accrued by employees in the state and local government sector.

Table 7 shows the employer normal cost of state and local government pensions, by state. The employer normal cost nets out contributions made by employees, which may differ from state to state but are not a cost to employers. For 2016, the most recent year available, the median

state had a normal cost of accruing employee pension benefits equal to 14 percent of employee payroll. For context, the Bureau of Labor Statistics' National Compensation Survey finds that in 2015, the median private sector employer that offered a defined contribution plan with a match offered a maximum employer contribution equal to 3 percent of employee pay. At the 90th percentile of the distribution, the maximum employer match was 6 percent of employee wages. This illustrates that public sector defined benefit pensions are indeed substantially more generous than private sector 401(k)-type retirement plans.

[Table 7. here]

In 2016 the most generous state, Nevada, had a normal cost of state and local government employee pensions equal to 37 percent of employee pay, while the least generous state of Indiana had an employer normal cost of 6 percent of employee wages. These differences may be difficult for readers to grasp, so it may be worth illustrating how they can come about. The Nevada vs. Indiana results can be explained in three ways, using figures for 2016 obtained from the Public Plans Database maintained by the Center for Retirement Research at Boston College. First, even using public pensions' own accounting, where benefits are discounted at the assumed return on a portfolio of risky investments, Nevada's pensions are far more generous than Indiana's. For instance, the Public Employees' Retirement System of Nevada, which covers most non-public safety state and local government employees, lists an employer normal cost of 23.8 percent of employee wages, while the Indiana Public Employees Retirement Fund lists an employer normal cost of just 3.9 percent of wages. Second, the Nevada plan makes its calculations on the assumption of an 8.00 percent investment return while Indiana assumes only 6.75 percent. Pension liability calculations are very sensitive to the assumed discount rate, and so Nevada's normal cost would rise substantially more relative to its own published figures than would

Indiana's. Using back-of-the-envelope calculations it is possible to at least reasonably approximate the NIPA pension normal cost figure for Nevada and Indiana. Third, most Indiana public employees are covered by Social Security, and as their employer the government would contribute an amount equal to 6.2 percent of their wages. Most Nevada public employees do not participate in Social Security, and so their public pension would constitute their entire retirement. The Nevada and Indiana figures can be made more comparable by adding the 6.2 percent of wages employer Social Security contribution to the normal cost of Indiana public employee pensions.

Next we consider how employer normal costs for state and local government pensions have changed over time. The 2000 to 2016 period encompassed both some pension benefit enhancements enacted early in the period and subsequent pension retrenchments, including both less generous benefits for newly-hired employees and higher employee contributions, often for both current employees and new hires. At the same time, the decline in safe interest rates over the 2000 to 2016 period made a guaranteed pension benefit both more costly to providers and more valuable to employees.

Table 7 shows that from 2000 to 2016, the median employer normal cost for state and local government pensions rose from 12 percent to 14 percent of employee payroll, a 13 percent increase in the relative value of newly-accruing pension benefits provided by state and local governments. Of the fifty-one states (and the District of Columbia) covered, pension benefits became more generous in 38 states and less generous in 13 states. Among states where benefits became more generous, the average increase was 28 percent. Among states where pension generosity declined, the average reduction in employer normal costs was 13 percent. The largest increase in pension benefit generosity was in Nebraska, where the employer cost increased from

5.5 percent to 10.5 percent of employee wages, a 91 percent increase in the value of annual government-financed pension benefit accruals relative to employee wages. The biggest decline in pension generosity was in Colorado, where a decline in the employer normal cost from 18.1 to 10.1 percent of employee wages produced a 41 percent reduction in the value of new pension benefits accruing to Colorado employees each year.

The figures presented here begin only in 2000, the year in which the BEA makes state-level normal cost data available. However, the aggregated state and local government pension data extend further back and show a dramatic increase in the generosity of public pension plans during the 1990s that may be of interest from a longer-term perspective. Figure 2 shows the normal cost of state and local government plans as a percentage of employee wages from 1929 through 2017, based on NIPA data. From 1940 through 1988, the normal cost of state and local pensions generally stayed within the range of 8 percent to 10 percent of employee wages, a generous employer pension contribution by current private sector standards.

[Figure 2. here]

However, from 1988 to 1992 the average normal cost of state and local government employee pensions increased from 9.6 percent to 14.9 percent of employee wages, a 53 percent increase in the generosity of newly-accruing pension benefits. From 1992 through 2017 public pension generosity continued to increase to an average employer normal cost of 16.9 percent of employee wages, a 73 percent increase on the 1988 level of generosity. While a decline in interest rates will increase the normal cost of a public pension in NIPA data, and such an increase reflects a real change in the cost of providing guaranteed future retirement benefits, most of the increase shown in Figure 2 was not the result of changes to pension discount rates. From 1998 through 2000, the NIPA calculations continued to use a 7 percent nominal discount rate in

calculating the value of pension normal costs. From 2000, the NIPA discount rate began a gradual decline, reaching 5.25 percent in 2010 and 4 percent beginning in 2013. But the vast majority of the increase in public pension generosity had taken place by then, indicating that the changes were more likely due to enhancements of the generosity of pension benefit formulas or other factors. Thus, the 1998 to 2017 compensation comparisons that are the main focus of this article began at a time when state and local government employees as well as public education employees had already received a significant increase in total compensation via more generous pensions.

Testing for Robustness

The NIPA data show that, in every state, compensation for state and local government workers has outpaced the growth of private sector pay. Likewise, average salaries and benefits in public education have increased more quickly than the private sector. Most of all, federal employee salaries and benefits have increased substantially faster than private sector, state and local government or public education pay.

Two natural objections present themselves. The first is that the figures presented here show compensation per employee, where both full and part-time employees are included. Different sectors may naturally have different shares of full-time versus part-time employees. By itself, that should not affect analysis of compensation growth. However, if the composition of full versus part-time employees changes over time between different sectors, those changes in composition – rather than changes in compensation policies – could account for differences in the growth of salaries and benefits. Unfortunately, the NIPA data used here do not differentiate full- versus part-time employees, making an easy resolution impossible.

The NIPA do provide figures for the number of full-time equivalent (FTE) employees when figures are considered at a national level. However, these FTE-based figures are unavailable at the state level in the NIPA regional data. The desire to show changes in compensation by state led me to express all figures in per employee rather than Full Time Equivalent terms. However, Table 8 shows the growth of total compensation per FTE and per employee by sector for the years 1998 to 2017. Growth rates are very similar between the two definitions for the private sector and for federal civilian employees. However, the growth of compensation is substantially greater for state and local government employees and public education employees when compensation is measured on an FTE rather than a per employee basis. This indicates that over the 1998-2017 period state and local government and public education reduced the use of part-time employees relative to the private and federal civilian sectors. This higher rate of compensation growth in state and local government and public education narrows the growth of compensation between those sectors and the federal government, but widens the growth of pay relative to the private sector.

[Table 8. here]

A second objection to these figures is that the underlying skills of public sector employees may have grown more quickly than for employees in the private sector. While human capital is difficult to measure directly, educational attainment is a commonly-used proxy. The NIPA data do not measure educational attainment by sector, so instead we turn to the Current Population Survey. Table 9 shows average years of education by sector for the years 1998 and 2007. State and local government employment is broken down between public education and general government. State and local education employees are here defined as those employed by state and local governments whose industry is classified as either “Elementary and secondary

education" or "College and universities." Non-education state and local government employees are defined as such employees outside of those industries. Private sector employees are those classified as "wage or salary, private," and exclude individuals employed by nonprofits. Federal government workers are those whose class of worker is "federal government."

[Table 9. here]

Average educational attainment increased in all sectors, as it has throughout the population. The increase in educational attainment was largest in absolute size among federal government employees at 1.0 year, but the 0.9 years increase among private sector workers was only slightly smaller. In percentage terms, which is perhaps more important to the degree that the relationship between educational attainment and compensation is linear, the federal and private sector increases are the same at 8.3 percent. Educational attainment increased slightly less in state and local government and public education, at 6.5 percent and 5.1 percent respectively. While not dispositive, these results do not point to the conclusion that the more rapid growth of salaries and benefits in public sector employment was the result of rising relative educational attainment among public sector employees.

Conclusions

Policymakers have looked with concern at rising public sector benefit costs. At the same time, public employees have argued that their salaries and benefits have fallen behind those paid in the private sector. Public sector managers are caught in between rising costs and the need to retain employees. The National Income and Product Accounts data used here cannot settle these questions, but they provide new insights into an active and important public policy discussion.

Salary growth in state and local government and public education has lagged that of the private sector. Over twenty years, average private sector wages rose by 15 percent above

inflation while state and local government pay rose by 8 percent and public education by 5 percent. Average federal salaries, however, increased by 23 percent above inflation from 1998 to 2017. Benefit growth was far more rapid in public than private sector jobs. The real value of annual employee benefits including pension accruals grew by 39 percent in the private sector from 199 to 2017. Public education benefits grew by 84 percent, state and local government benefits by 90 percent, and federal employee benefits by 116 percent. The faster growth of public sector benefits made up for slower salary growth in state and local government and public education, allowing for slightly faster growth of total compensation. In federal employment, rapid growth of benefits combined with rapid growth of salaries to produce total compensation that increased substantially more than in any other sector over the past 20 years.

The relative increases in public sector compensation do not appear to be accounted for by changes in the mix of full- and part-time employment in different sectors or increases in the relative educational attainment of public sector employees. Neither workforce characteristic changed dramatically between sectors in the two decades examined here.

The NIPA data do not indicate that all public sector employees or even the average public employee is overcompensated relative to private sector workers. At the same time, the NIPA data make it more difficult to accept claims that public sector compensation is falling dramatically behind private sector pay.

What we can factually conclude is that public sector employees have moved up in the overall income distribution over the past two decades, as exhibited by compensation that has risen relative to average private sector pay. For state and local government employees and public education employees, that upward shift has been modest. For federal employees it has been more dramatic, with federal compensation rising from 1.6 times the private sector average in 1998 to

1.9 times private sector compensation in 2017. Even these figures may understate the place of federal employees in the income distribution, given that private sector average salaries and benefits are more skewed by very high earners than is the case in the more compressed federal pay structure. As a result, median federal compensation is likely more than twice median private sector compensation. This is a good reminder that policymakers need to consider total compensation, not just wages, when discussing compensation issues. For instance, the Federal Salary Council recommends changes to federal salaries to compete with private sector positions while ignoring substantial differences in benefit generosity between the federal and private sectors.

The NIPA data raise a number of important questions for policymakers. Has public sector compensation risen above pay for similarly-qualified employees in the private sector? Does the substantially larger share of total compensation dedicated to benefits in the public sector better serve the needs of public employees and governments' need to attract and retain quality workers? These are policy questions that require different data and methods to answer. However, the NIPA data discussed here provide a more accurate baseline upon which policymakers can build.

Tables

Table 1. Composition of Public Education Occupations	
Occupation	Percent of total
Elementary and middle school teachers	28%
Secondary school teachers	9%
Postsecondary teachers	8%
Teacher assistants	7%
Education administrators	5%
Janitors and building cleaners	4%
Secretaries and administrative assistants	3%
Special education teachers	3%
Bus drivers	2%
Counselors	2%
Preschool and kindergarten teachers	2%
Cooks	1%
Child care workers	1%
Office clerks, general	1%
Other teachers and instructors	1%
Author's calculations, Current Population Survey, 2013-2017.	

Table 2. Summary Information on Wages, Benefits and Total Compensation, 2017			
	Wages	Benefits	Total Compensation
Private sector	$55,890	$10,648	$66,538
Federal government (civilian)	$88,127	$38,471	$126,598
State and local government (general government)	$50,302	$22,531	$72,833
Public education	$47,204	$21,305	$68,509
Author's calculations from National Income and Product Accounts			

Table 3. Changes in Real Per Employee Wages, Benefits and Total Compensation, 1998-2017			
	Wages	Benefits	Total Compensation
Private sector	15%	39%	38%
Federal government (civilian)	23%	116%	67%
State and local government (general government)	8%	90%	44%
State and local government education	5%	84%	40%

Table 4. Wages, Benefits and Total Compensation, Private Sector and State and Local Government, 1998 and 2017.												
	1998						2017					
	Private sector			State and local			Private sector			State and local		
State	Wages	Benefits	Total	Wages	Benefits	Total	Wages	Benefits	Total	Wages	Benefits	Total
Alabama	$30,143	$5,971	$36,114	$25,704	$7,723	$33,427	$33,829	$7,021	$40,850	$42,616	$16,525	$59,141
Alaska	$32,759	$6,730	$39,488	$37,907	$12,569	$50,476	$40,176	$9,551	$49,727	$57,924	$37,084	$95,008
Arizona	$32,667	$6,003	$38,669	$29,397	$8,248	$37,645	$38,243	$7,011	$45,254	$47,640	$19,942	$67,582
Arkansas	$27,282	$5,757	$33,039	$23,805	$6,872	$30,677	$33,839	$6,714	$40,553	$40,762	$14,133	$54,895
California	$37,440	$6,708	$44,149	$36,208	$12,627	$48,835	$48,534	$8,517	$57,051	$65,385	$33,850	$99,235
Colorado	$34,573	$6,139	$40,712	$28,977	$8,928	$37,905	$41,620	$7,374	$48,994	$50,206	$14,180	$64,386
Connecticut	$45,853	$8,349	$54,202	$37,626	$11,380	$49,006	$48,530	$9,087	$57,617	$59,502	$27,472	$86,975
Delaware	$40,032	$8,002	$48,034	$30,907	$11,224	$42,131	$43,121	$9,190	$52,311	$52,719	$21,376	$74,094
District of Columbia	$54,662	$9,345	$64,007	$42,157	$14,614	$56,771	$71,247	$11,829	$83,077	$79,124	$30,199	$109,323
Florida	$31,727	$5,914	$37,641	$30,207	$10,587	$40,794	$35,754	$6,443	$42,196	$50,013	$17,169	$67,182
Georgia	$36,122	$6,287	$42,408	$27,549	$8,820	$36,369	$39,659	$7,367	$47,026	$43,071	$20,401	$63,471
Hawaii	$29,994	$6,247	$36,241	$30,335	$8,423	$38,758	$35,684	$8,054	$43,739	$52,751	$21,458	$74,209
Idaho	$25,807	$5,278	$31,085	$23,902	$9,082	$32,983	$30,746	$6,680	$37,426	$37,807	$15,726	$53,533
Illinois	$40,445	$7,625	$48,069	$32,300	$10,338	$42,638	$46,231	$9,114	$55,346	$52,539	$25,483	$78,022
Indiana	$34,136	$6,957	$41,093	$26,409	$7,172	$33,581	$38,449	$8,666	$47,115	$40,518	$13,910	$54,428
Iowa	$28,533	$5,923	$34,455	$25,891	$6,910	$32,802	$35,550	$8,027	$43,577	$44,509	$19,028	$63,536
Kansas	$30,363	$6,296	$36,659	$23,221	$5,948	$29,169	$35,546	$7,464	$43,010	$38,482	$14,789	$53,271
Kentucky	$30,374	$6,251	$36,625	$24,821	$7,582	$32,403	$35,458	$7,488	$42,946	$41,367	$17,296	$58,663
Louisiana	$31,125	$5,941	$37,066	$24,319	$6,548	$30,867	$34,989	$7,193	$42,182	$43,654	$19,918	$63,573
Maine	$26,984	$5,710	$32,694	$25,578	$8,162	$33,740	$33,050	$6,777	$39,827	$41,361	$18,934	$60,295
Maryland	$35,995	$6,316	$42,311	$32,633	$11,295	$43,929	$42,462	$8,006	$50,468	$58,306	$25,210	$83,517
Massachusetts	$42,653	$7,553	$50,206	$34,157	$10,745	$44,902	$52,514	$9,467	$61,981	$60,889	$28,499	$89,389
Michigan	$39,946	$8,407	$48,353	$31,145	$9,772	$40,917	$40,282	$8,350	$48,632	$48,626	$21,580	$70,206
Minnesota	$36,249	$7,000	$43,249	$29,295	$8,371	$37,666	$44,295	$8,986	$53,281	$49,106	$17,728	$66,834
Mississippi	$27,274	$5,451	$32,726	$22,354	$6,273	$28,627	$28,871	$6,021	$34,892	$38,749	$13,205	$51,954
Missouri	$33,181	$6,283	$39,464	$25,738	$8,751	$34,488	$38,402	$7,275	$45,677	$41,449	$17,568	$59,018
Montana	$22,007	$4,635	$26,641	$22,457	$7,417	$29,874	$29,270	$5,903	$35,173	$41,314	$15,688	$57,002
Nebraska	$29,215	$6,106	$35,321	$26,245	$6,500	$32,745	$36,229	$7,763	$43,992	$45,849	$17,204	$63,053

Nevada	$34,802	$7,117	$41,919	$34,993	$13,499	$48,492	$36,260	$6,497	$42,756	$54,317	$31,842	$86,158
New Hampshire	$33,674	$6,126	$39,800	$26,782	$9,203	$35,985	$41,612	$7,799	$49,411	$45,243	$20,451	$65,694
New Jersey	$44,959	$8,668	$53,627	$40,270	$11,408	$51,677	$46,669	$8,676	$55,345	$64,177	$25,246	$89,423
New Mexico	$26,786	$5,188	$31,974	$26,759	$8,197	$34,956	$32,730	$6,863	$39,593	$43,460	$17,086	$60,546
New York	$46,642	$8,132	$54,774	$37,869	$16,790	$54,659	$53,297	$9,355	$62,652	$61,526	$36,673	$98,200
North Carolina	$32,435	$6,237	$38,672	$27,544	$7,981	$35,526	$37,900	$7,146	$45,046	$45,466	$16,768	$62,235
North Dakota	$24,778	$4,977	$29,755	$20,976	$5,651	$26,627	$39,212	$8,436	$47,648	$41,904	$16,934	$58,838
Ohio	$35,290	$7,171	$42,462	$29,003	$10,052	$39,055	$39,308	$8,315	$47,623	$48,560	$20,759	$69,319
Oklahoma	$26,904	$5,386	$32,290	$23,612	$6,635	$30,247	$32,997	$6,925	$39,922	$39,994	$14,992	$54,985
Oregon	$32,067	$6,716	$38,783	$29,516	$13,210	$42,726	$39,175	$7,851	$47,026	$54,474	$26,667	$81,141
Pennsylvania	$35,706	$7,415	$43,121	$31,932	$11,574	$43,507	$41,610	$8,900	$50,510	$49,596	$26,982	$76,577
Rhode Island	$33,719	$7,037	$40,756	$33,662	$10,421	$44,083	$40,027	$8,294	$48,322	$57,779	$21,489	$79,267
South Carolina	$30,291	$6,053	$36,344	$26,202	$7,348	$33,550	$34,232	$6,968	$41,200	$46,285	$17,809	$64,094
South Dakota	$24,032	$4,838	$28,870	$21,102	$7,051	$28,152	$31,600	$6,542	$38,143	$36,815	$13,723	$50,538
Tennessee	$31,753	$6,113	$37,866	$25,702	$8,056	$33,759	$36,840	$7,124	$43,963	$42,135	$18,458	$60,593
Texas	$34,935	$6,352	$41,287	$26,606	$6,858	$33,464	$40,539	$7,255	$47,794	$47,963	$18,871	$66,834
Utah	$29,617	$5,390	$35,007	$24,983	$9,882	$34,866	$35,494	$7,462	$42,957	$41,242	$17,466	$58,708
Vermont	$27,264	$5,544	$32,808	$26,857	$8,359	$35,216	$32,406	$7,551	$39,957	$46,690	$20,318	$67,008
Virginia	$35,674	$6,392	$42,066	$28,176	$8,844	$37,021	$43,701	$7,614	$51,315	$47,273	$20,042	$67,315
Washington	$37,729	$7,653	$45,381	$31,055	$10,203	$41,258	$48,585	$8,897	$57,482	$56,668	$22,618	$79,286
West Virginia	$28,012	$6,787	$34,799	$23,556	$7,988	$31,545	$33,962	$7,769	$41,731	$37,677	$13,196	$50,873
Wisconsin	$33,083	$7,302	$40,385	$28,596	$9,696	$38,291	$38,914	$8,633	$47,547	$43,238	$23,492	$66,730
Wyoming	$25,688	$4,951	$30,640	$24,001	$6,452	$30,453	$32,203	$7,168	$39,371	$46,735	$23,058	$69,793
Author's calculations from National Income and Product Accounts data. 1998 figures are expressed in 2017 dollars, adjusted using the PCE deflator.												

Table 5. Compensation Adjusted for Regional Price Parities, by Sector, 2017.						
		Total Compensation		Rank		
State	Regional Price Index (2016)	Private sector	State and local	Private sector	State and local	State and Local, Unadjusted
Alabama	86.6	$ 47,171	$ 68,292	32	29	38
Alaska	105.4	$ 47,179	$ 90,140	31	2	4
Arizona	95.9	$ 47,188	$ 70,472	30	21	20
Arkansas	86.9	$ 46,666	$ 63,170	34	38	45
California	114.4	$ 49,869	$ 86,744	18	4	2
Colorado	103.0	$ 47,567	$ 62,511	28	40	28
Connecticut	108.7	$ 53,005	$ 80,013	8	8	7
Delaware	100.2	$ 52,206	$ 73,947	9	17	16
District of Columbia	115.9	$ 71,680	$ 94,326	1	1	1
Florida	99.7	$ 42,323	$ 67,384	43	30	22
Georgia	92.1	$ 51,060	$ 68,916	15	26	32
Hawaii	118.4	$ 36,941	$ 62,677	51	39	15
Idaho	93.0	$ 40,243	$ 57,562	48	50	47
Illinois	98.9	$ 55,961	$ 78,890	3	11	13
Indiana	90.3	$ 52,176	$ 60,274	10	46	46
Iowa	90.2	$ 48,311	$ 70,439	26	22	31
Kansas	90.5	$ 47,525	$ 58,863	29	48	48
Kentucky	87.8	$ 48,913	$ 66,815	21	32	42
Louisiana	90.4	$ 46,662	$ 70,324	35	23	30
Maine	98.4	$ 40,475	$ 61,275	46	43	37
Maryland	109.5	$ 46,089	$ 76,271	37	14	9
Massachusetts	107.8	$ 57,496	$ 82,921	2	6	6
Michigan	93.3	$ 52,124	$ 75,248	11	15	17
Minnesota	97.5	$ 54,647	$ 68,548	4	27	24
Mississippi	86.4	$ 40,384	$ 60,132	47	47	49
Missouri	89.5	$ 51,035	$ 65,941	16	34	39
Montana	94.1	$ 37,378	$ 60,576	50	44	43
Nebraska	90.5	$ 48,609	$ 69,672	24	24	33
Nevada	97.4	$ 43,898	$ 88,458	41	3	8
New Hampshire	105.9	$ 46,658	$ 62,034	36	41	27
New Jersey	113.2	$ 48,891	$ 78,995	22	10	5

New Mexico	93.6	$ 42,300	$ 64,686	44	36	36
New York	115.6	$ 54,198	$ 84,948	6	5	3
North Carolina	90.9	$ 49,556	$ 68,465	19	28	34
North Dakota	91.5	$ 52,074	$ 64,303	12	37	40
Ohio	89.3	$ 53,330	$ 77,625	7	13	19
Oklahoma	89.0	$ 44,856	$ 61,781	39	42	44
Oregon	99.8	$ 47,120	$ 81,304	33	7	10
Pennsylvania	98.4	$ 51,332	$ 77,822	13	12	14
Rhode Island	99.6	$ 48,516	$ 79,586	25	9	12
South Carolina	90.3	$ 45,626	$ 70,979	38	20	29
South Dakota	88.3	$ 43,197	$ 57,235	42	51	51
Tennessee	90.2	$ 48,740	$ 67,176	23	31	35
Texas	96.9	$ 49,323	$ 68,972	20	25	25
Utah	97.3	$ 44,149	$ 60,337	40	45	41
Vermont	101.6	$ 39,328	$ 65,953	49	33	23
Virginia	102.3	$ 50,161	$ 65,802	17	35	21
Washington	105.5	$ 54,485	$ 75,153	5	16	11
West Virginia	87.6	$ 47,638	$ 58,074	27	49	50
Wisconsin	92.8	$ 51,236	$ 71,907	14	19	26
Wyoming	96.7	$ 40,715	$ 72,175	45	18	18
Author's calculations, from NIPA and BEA data.						

Table 6. Growth of Wages, Benefits and Compensation, Private Nonfarm Sector and State and Local Government 1998 to 2017.											
	Growth of Wages		Growth of Benefits		Growth of Total Compensation		Ratio, state/local to private compensation			Rank, compensation growth	
State	Private sector	State and local	Private sector	State and local	Private sector	State and local	1998	2017	Change, 1998-2017	Absolute	Relative
Alabama	12%	66%	18%	114%	13%	77%	0.93	1.45	0.52	36	20
Alaska	23%	53%	42%	195%	26%	88%	1.28	1.91	0.63	17	25
Arizona	17%	62%	17%	142%	17%	80%	0.97	1.49	0.52	27	23
Arkansas	24%	71%	17%	106%	23%	79%	0.93	1.35	0.43	30	42
California	30%	81%	27%	168%	29%	103%	1.11	1.74	0.63	4	12
Colorado	20%	73%	20%	59%	20%	70%	0.93	1.31	0.38	46	44
Connecticut	6%	58%	9%	141%	6%	77%	0.90	1.51	0.61	34	9
Delaware	8%	71%	15%	90%	9%	76%	0.88	1.42	0.54	38	15
District of Columbia	30%	88%	27%	107%	30%	93%	0.89	1.32	0.43	8	36
Florida	13%	66%	9%	62%	12%	65%	1.08	1.59	0.51	48	33
Georgia	10%	56%	17%	131%	11%	75%	0.86	1.35	0.49	40	21
Hawaii	19%	74%	29%	155%	21%	91%	1.07	1.70	0.63	11	11
Idaho	19%	58%	27%	73%	20%	62%	1.06	1.43	0.37	49	51
Illinois	14%	63%	20%	146%	15%	83%	0.89	1.41	0.52	18	19
Indiana	13%	53%	25%	94%	15%	62%	0.82	1.16	0.34	50	45
Iowa	25%	72%	36%	175%	26%	94%	0.95	1.46	0.51	7	28

Kansas	17%	66%	19%	149%	17%	83%	0.80	1.24	0.44	19	29
Kentucky	17%	67%	20%	128%	17%	81%	0.88	1.37	0.48	24	27
Louisiana	12%	80%	21%	204%	14%	106%	0.83	1.51	0.67	3	3
Maine	22%	62%	19%	132%	22%	79%	1.03	1.51	0.48	31	37
Maryland	18%	79%	27%	123%	19%	90%	1.04	1.65	0.62	15	10
Massachusetts	23%	78%	25%	165%	23%	99%	0.89	1.44	0.55	6	13
Michigan	1%	56%	-1%	121%	1%	72%	0.85	1.44	0.60	44	8
Minnesota	22%	68%	28%	112%	23%	77%	0.87	1.25	0.38	35	43
Mississippi	6%	73%	10%	110%	7%	81%	0.87	1.49	0.61	23	6
Missouri	16%	61%	16%	101%	16%	71%	0.87	1.29	0.42	45	38
Montana	33%	84%	27%	112%	32%	91%	1.12	1.62	0.50	13	41
Nebraska	24%	75%	27%	165%	25%	93%	0.93	1.43	0.51	9	22
Nevada	4%	55%	-9%	136%	2%	78%	1.16	2.02	0.86	32	1
New Hampshire	24%	69%	27%	122%	24%	83%	0.90	1.33	0.43	20	40
New Jersey	4%	59%	0%	121%	3%	73%	0.96	1.62	0.65	43	4
New Mexico	22%	62%	32%	108%	24%	73%	1.09	1.53	0.44	42	46
New York	14%	62%	15%	118%	14%	80%	1.00	1.57	0.57	26	17
North Carolina	17%	65%	15%	110%	16%	75%	0.92	1.38	0.46	39	32
North Dakota	58%	100%	69%	200%	60%	121%	0.89	1.23	0.34	2	47

Ohio	11%	67%	16%	107%	12%	77%	0.92	1.46	0.54	33	18
Oklahoma	23%	69%	29%	126%	24%	82%	0.94	1.38	0.44	22	39
Oregon	22%	85%	17%	102%	21%	90%	1.10	1.73	0.62	16	14
Pennsylvania	17%	55%	20%	133%	17%	76%	1.01	1.52	0.51	37	31
Rhode Island	19%	72%	18%	106%	19%	80%	1.08	1.64	0.56	25	24
South Carolina	13%	77%	15%	142%	13%	91%	0.92	1.56	0.63	12	5
South Dakota	31%	74%	35%	95%	32%	80%	0.98	1.32	0.35	28	49
Tennessee	16%	64%	17%	129%	16%	79%	0.89	1.38	0.49	29	26
Texas	16%	80%	14%	175%	16%	100%	0.81	1.40	0.59	5	7
Utah	20%	65%	38%	77%	23%	68%	1.00	1.37	0.37	47	48
Vermont	19%	74%	36%	143%	22%	90%	1.07	1.68	0.60	14	16
Virginia	23%	68%	19%	127%	22%	82%	0.88	1.31	0.43	21	34
Washington	29%	82%	16%	122%	27%	92%	0.91	1.38	0.47	10	30
West Virginia	21%	60%	14%	65%	20%	61%	0.91	1.22	0.31	51	50
Wisconsin	18%	51%	18%	142%	18%	74%	0.95	1.40	0.46	41	35
Wyoming	25%	95%	45%	257%	28%	129%	0.99	1.77	0.78	1	2
Author's calculations from National Income and Product Accounts data. Growth rates are adjusted for inflation using the PCE deflator.											

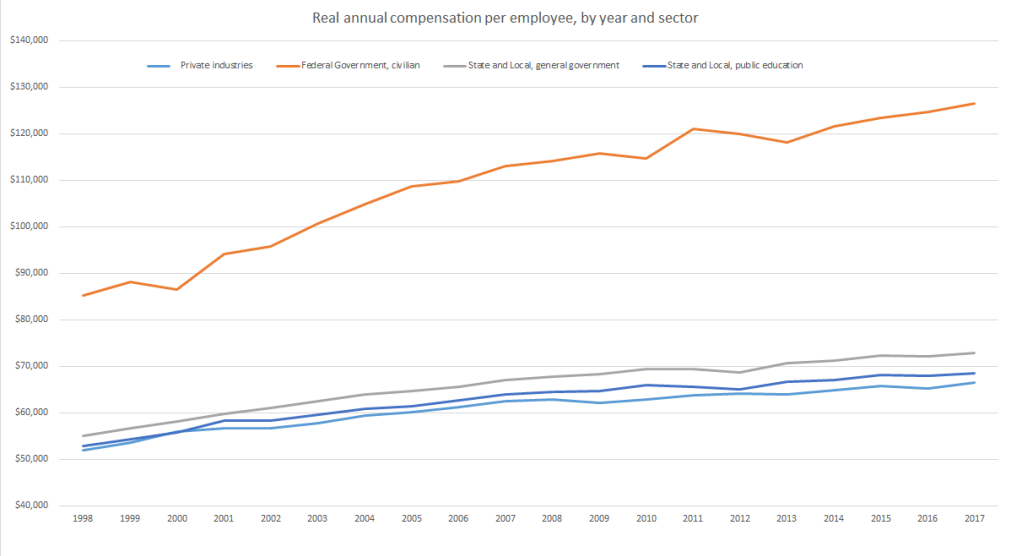
Table 7. Normal Cost of State and Local Government Pensions as a Percent of Employee Wages, 2000 to 2016																					
																		Change, 2000 to 2016		Generosity Rank	
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	% point	%	2000	2016
Alabama	12	12	12	12	13	13	12	12	13	13	14	14	12	13	13	14	14	2	19	28	23
Alaska	11	11	11	10	11	11	13	14	12	11	12	12	12	14	14	15	15	4	32	31	18
Arizona	14	15	15	14	15	15	15	15	15	16	18	17	17	19	19	20	20	6	39	14	6
Arkansas	14	14	14	13	14	13	13	13	12	12	15	14	14	16	16	15	15	1	4	15	20
California	19	20	22	22	24	24	23	23	23	24	26	24	23	28	27	26	26	6	31	6	3
Colorado	18	18	17	17	18	17	15	14	13	13	12	9	9	10	10	10	10.1	-8	-44	7	45
Connecticut	11	11	10	10	11	11	11	11	11	11	12	12	12	14	15	16	16	5	45	33	14
Delaware	12	12	11	11	12	12	12	11	12	12	13	12	11	13	13	12	11	0	-2	29	39
District of Columbia	14	14	14	15	16	16	16	16	16	15	15	16	14	15	15	14	15	1	6	17	19
Florida	17	17	17	16	16	15	15	15	15	15	16	13	11	13	12	11	10	-7	-40	10	43
Georgia	18	18	17	17	19	17	16	16	15	15	15	15	14	17	17	17	16	-1	-8	9	15
Hawaii	10	11	11	11	12	11	11	12	13	13	15	16	16	19	18	18	18	8	73	37	10
Idaho	14	14	13	12	12	12	12	13	13	13	14	14	13	15	15	14	14	0	1	16	22
Illinois	22	23	23	23	25	25	25	25	25	25	28	28	28	32	31	28	26	4	18	3	2
Indiana	9	8	8	8	7	8	8	9	8	8	9	8	7	8	8	7	6	-2	-29	46	51
Iowa	9	9	9	9	10	10	10	10	10	11	12	11	10	13	13	14	14	5	54	45	28
Kansas	9	9	9	10	10	10	10	10	10	11	13	13	13	14	13	12	12	3	27	42	37
Kentucky	13	13	14	14	15	14	12	11	11	11	12	12	13	15	15	15	13	0	0	21	29
Louisiana	13	13	13	13	14	14	15	15	14	14	15	15	14	16	16	15	15	3	20	24	17
Maine	11	11	10	10	11	11	11	11	11	11	12	11	9	11	11	11	11	**0**	-2	35	40
Maryland	14	13	13	13	13	13	13	13	13	13	15	13	13	16	16	14	14	0	2	19	27
Massachusetts	15	15	14	14	15	15	15	15	15	15	17	17	17	19	19	20	19	4	27	12	7
Michigan	10	10	10	10	11	10	10	9	9	9	10	9	8	9	9	8	8	-2	-21	40	50
Minnesota	13	13	12	12	13	13	13	13	12	12	12	11	11	13	13	13	13	0	3	23	31
Mississippi	10	10	11	11	12	12	12	12	12	12	12	12	12	15	14	14	14	4	35	38	24
Missouri	18	17	17	18	19	19	19	19	19	19	22	20	18	22	21	21	18	0	2	8	9
Montana	11	11	11	12	13	12	12	12	12	12	14	13	12	15	15	14	13	3	24	36	30
Nebraska	5.5	5	5	6	7	7	7	7	7	7	8	8	8	10	10	10	10.5	5	91	51	42
Nevada	25	25	26	25	27	27	27	27	29	30	34	34	34	39	38	37	37	12	49	2	1
New Hampshire	12	12	13	13	14	15	14	14	13	13	15	12	10	11	11	11	11	-2	-14	25	41
New Jersey	11	12	13	13	13	13	13	13	13	14	15	13	11	12	11	10	9	-2	-14	34	47
New Mexico	13	13	13	13	15	15	17	18	18	18	19	18	17	20	18	17	17	4	31	22	13

New York	20	20	20	20	22	22	22	22	22	23	24	24	23	27	27	26	24	4	20	4	4
North Carolina	12	12	12	12	13	13	13	12	12	13	13	12	12	14	14	13	13	0	2	26	33
North Dakota	8	8	8	7	8	8	8	8	8	8	9	10	9	11	11	12	12	4	55	48	35
Ohio	14	16	16	16	18	17	17	17	17	17	19	18	17	19	18	17	16	2	18	18	16
Oklahoma	10	9	9	10	11	10	11	11	10	10	11	11	10	12	12	12	12	2	18	41	38
Oregon	29	28	28	26	22	19	18	18	18	18	20	20	19	22	20	19	19	-10	-34	1	8
Pennsylvania	20	20	21	21	23	23	23	22	22	22	24	23	21	25	23	22	21	1	4	5	5
Rhode Island	9	9	9	9	9	10	10	11	9	9	10	11	11	11	11	10	10	1	16	47	46
South Carolina	9	9	9	8	8	8	9	9	9	10	11	11	9	10	9	8	8	-1	-7	44	49
South Dakota	6	6	8	9	10	10	9	10	10	10	11	12	10	11	12	12	12	5	86	49	36
Tennessee	12	12	11	12	13	13	13	13	12	13	14	14	13	15	15	15	14	2	16	27	25
Texas	13	14	15	15	16	14	13	12	12	13	14	15	15	18	18	18	18	4	31	20	11
Utah	16	16	15	16	16	16	16	16	16	17	18	17	16	18	17	15	15	-2	-11	11	21
Vermont	10	10	10	10	11	11	11	12	12	11	12	9	7	9	9	9	8	-2	-17	39	48
Virginia	11	11	12	12	13	11	10	10	11	11	12	12	11	13	13	13	13	1	12	32	32
Washington	12	11	11	11	11	11	12	12	13	12	13	12	13	15	14	13	13	1	9	30	34
West Virginia	6	6	6	6	6	6	6	6	7	8	8	9	9	11	11	10	10	4	73	50	44
Wisconsin	15	15	15	15	17	18	17	17	17	18	19	20	18	18	17	17	17	2	16	13	12
Wyoming	9	9	9	10	10	9	8	8	9	10	12	13	12	14	14	14	14	5	55	43	26
Author's calculations from BEA pension and wage data.																					

Table 8. Growth of Compensation per Full-Time Equivalent and Per Employee, 1998-2017, by Sector.		
	Growth per FTE	Growth per employee
Private industries	37%	38%
Federal Civilian	69%	67%
State and local	52%	44%
Public Education	51%	40%
Author's calculations from NIPA data.		

Table 9. Average years of educational attainment by sector, 1998 and 2017.				
	1998	2017	Change (years)	Change (percent)
Wage-salary, private	11.1	12.0	0.9	8.3%
Federal, civilian	12.3	13.4	1.0	8.3%
State/local, non-education	12.0	12.8	0.8	6.5%
State/local, education	13.6	14.3	0.7	5.1%
Source: Current Population Survey.				

Figure 1.


Real annual compensation per employee, by year and sector
Private industries
Federal Government, civilian
State and Local, general government
State and Local, public education
$140,000
$130,000
$120,000
$110,000
$100,000
$90,000
$80,000
$70,000
$60,000
$50,000
$40,000
1998
1999
2000
2001
2002
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2005
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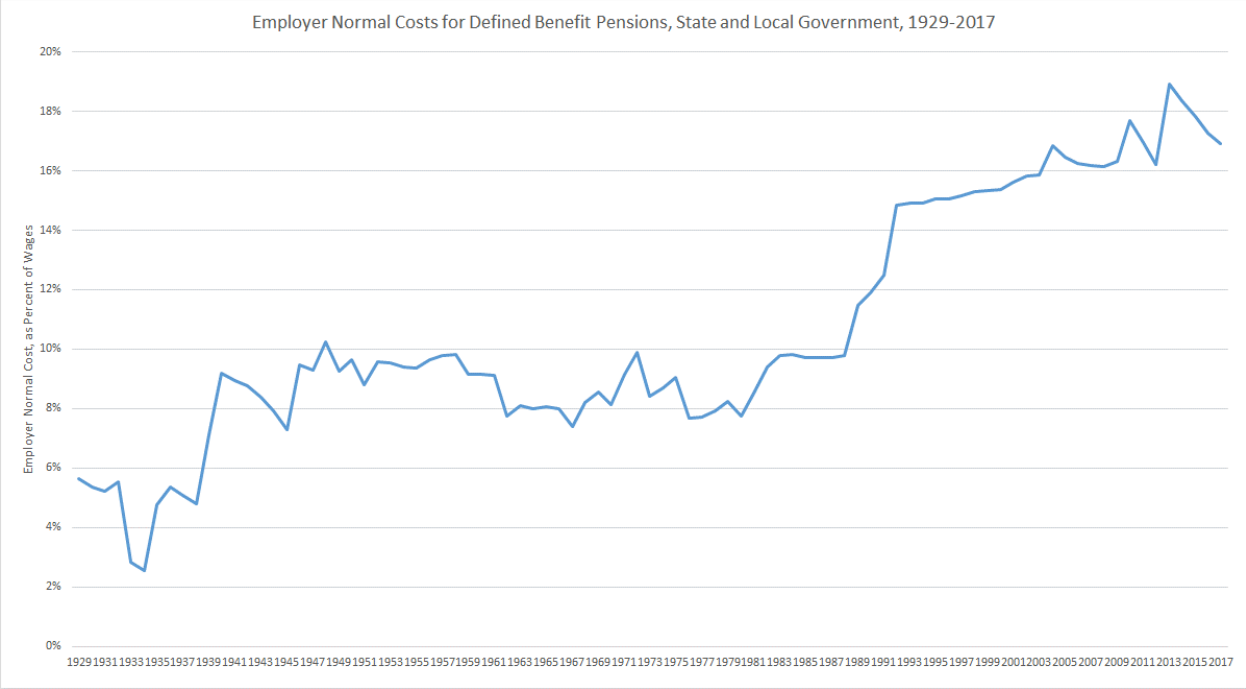
2009
2010
2011
2012
2013
2014
2015
2016
2017

Figure 2.


Employer Normal Costs for Defined Benefit Pensions, State and Local Government, 1929-2017
Employer Normal Cost, as Percent of Wages
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
1929 1931 1933 1935 1937 1939 1941 1943 1945 1947 1949 1951 1953 1955 1957 1959 1961 1963 1965 1967 1969 1971 1973 1975 1977 1979 1981 1983 1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009 2011 2013 2015 2017

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