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Comparing the Compensation of Federal and Private-Sector Employees

Abstract

[Excerpt] The federal government competes with private-sector employers and state and local governments to attract and retain workers with the talents, skills, and experience that it needs to operate effectively. Recently, however, concern about the federal budget and about equity between the public and private sectors has focused greater attention on the costs that the federal government incurs to compensate its employees. This Congressional Budget Office (CBO) study—prepared at the request of the Ranking Member of the Senate Budget Committee—presents a statistical analysis of the differences between federal and private sector compensation. The study is accompanied by two CBO working papers, *Comparing Wages in the Federal Government and the Private Sector* and *Comparing Benefits and Total Compensation in the Federal Government and the Private Sector*, which explain in detail the methodology underlying this analysis. In keeping with CBO’s mandate to provide objective, impartial analysis, the study and the working papers do not contain any recommendations.

Keywords

private sector, employment, compensation, federal employees, Congressional Budget Office, CBO

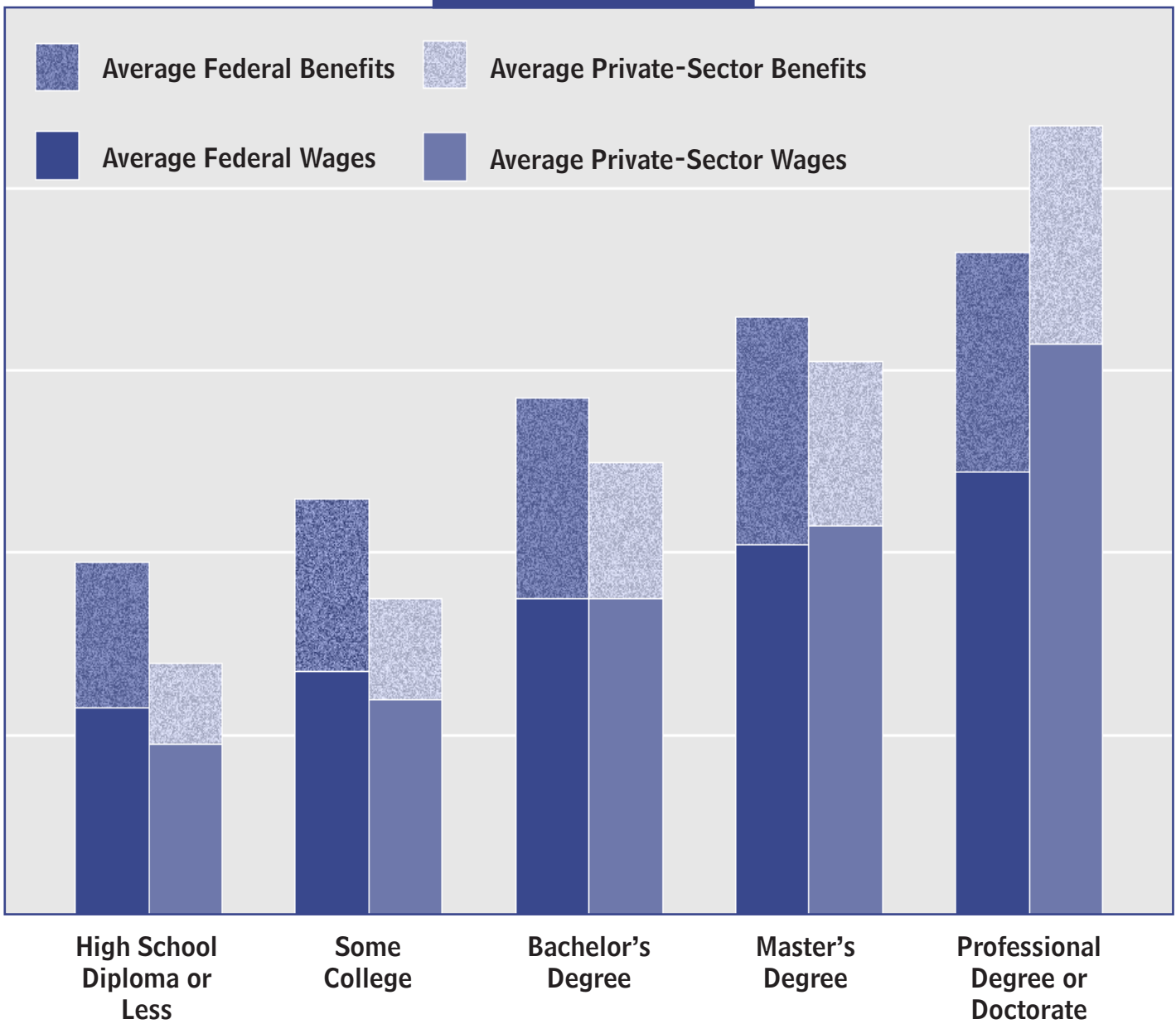
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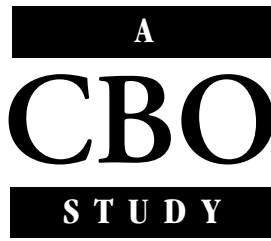
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CBO

Comparing the Compensation of Federal and Private-Sector Employees



JANUARY 2012



Comparing the Compensation of Federal and Private-Sector Employees

January 2012

Notes

Numbers in the text, tables, and figures of this study may not add up to totals because of rounding. For the same reason, the percentage differences shown in some of the tables may not correspond precisely to the dollar amounts shown.

Unless otherwise indicated, the numbers in the tables and figures apply to full-time full-year workers.

Wages, benefits, and total compensation in this study were converted to 2010 dollars using the employment cost index.

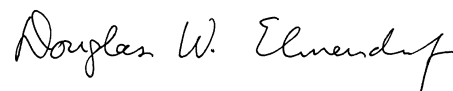


Preface

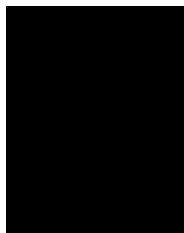
The federal government competes with private-sector employers and state and local governments to attract and retain workers with the talents, skills, and experience that it needs to operate effectively. Recently, however, concern about the federal budget and about equity between the public and private sectors has focused greater attention on the costs that the federal government incurs to compensate its employees. This Congressional Budget Office (CBO) study—prepared at the request of the Ranking Member of the Senate Budget Committee—presents a statistical analysis of the differences between federal and private-sector compensation. The study is accompanied by two CBO working papers, *Comparing Wages in the Federal Government and the Private Sector* and *Comparing Benefits and Total Compensation in the Federal Government and the Private Sector*, which explain in detail the methodology underlying this analysis. In keeping with CBO’s mandate to provide objective, impartial analysis, the study and the working papers do not contain any recommendations.

The study was written by Justin Falk of CBO’s Microeconomic Studies Division—in close collaboration with Greg Acs, Will Carrington, Molly Dahl, and Jimmy Jin of the Health and Human Resources Division—under the supervision of Joseph Kile and David Moore (formerly of CBO). Matthew Goldberg, Heidi Golding, Rob McClelland, Damien Moore, Carla Tighe Murray, Vi Nguyen, Stephanie Ruiz, Andrew Stocking, and David Torregrosa of CBO provided helpful comments. CBO also received helpful comments on one or both of the working papers from Andrew Biggs of the American Enterprise Institute, Lawrence Katz of Harvard University, Alan Krueger of Princeton University (before he became chairman of the Council of Economic Advisors), Alex Mas of Princeton University, Alicia Munnell and Laura Quinby of Boston College, Mark Musell of the City College of New York, Michael Lettau and Brooks Pierce of the Bureau of Labor Statistics, Jason Richwine and James Sherk of the Heritage Foundation, and Heidi Shierholz of the Economic Policy Institute. The Bureau of Labor Statistics and the Office of Personnel Management provided data for the analysis of benefits. The assistance of those external reviewers and data providers implies no responsibility for the final product, which rests solely with CBO.

Chris Howlett edited the study, and Leah Mazade proofread it. Maureen Costantino prepared the report for publication, with assistance from Jeanine Rees, and designed the cover. Monte Ruffin printed the initial copies, and Linda Schimmel coordinated the print distribution. The study is available on CBO’s Web site (www.cbo.gov).



Douglas W. Elmendorf
Director



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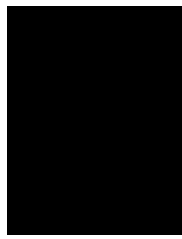
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Summary

The federal government employs about 2.3 million civilian workers—1.7 percent of the U.S. workforce—spread among more than 100 agencies in jobs that represent over 700 occupations. As a result, the government employs workers with a broad complement of talents, skills, and experience, and it competes with other employers for people who possess the mix of attributes needed to do the work of its agencies.

In fiscal year 2011, the government spent roughly \$200 billion to compensate federal civilian employees—about \$80 billion for civilian personnel working in the Department of Defense or on defense-related activities in other departments, and about \$120 billion for non-defense personnel, the majority of whom work in the Departments of Veterans Affairs, Homeland Security, Justice, the Treasury, and Agriculture. Federal employees typically receive periodic increases in their wages on the basis of performance, longevity, and changes in the cost of living. In 2010, however, lawmakers eliminated cost-of-living raises for most federal civilian workers in calendar years 2011 and 2012.

How does the compensation of federal civilian employees compare with that of employees in the private sector? That question is complicated by the fact that the federal and private-sector workforces differ in characteristics that can affect compensation, such as experience, education, and occupation. On the whole, federal workers tend to be older, more educated, and more concentrated in professional occupations than private-sector workers. To account for such differences, the Congressional Budget Office (CBO) has used data for 2005 through 2010 reported by a sample of households and employers to estimate differences between the cost of wages and benefits for federal employees and the cost of wages and benefits for similar private-sector employees, defined as those having a set of similar observable characteristics. Specifically,

in its analysis, CBO sought to account for differences in individuals' level of education, years of work experience, occupation, size of employer, geographic location (region of the country and urban or rural location), and various demographic characteristics (age, sex, race, ethnicity, marital status, immigration status, and citizenship).

Even among workers with similar observable characteristics, however, employees of the federal government and in the private sector may differ in other traits, such as motivation or effort, that are not easy to measure but that can matter a great deal for individuals' compensation. Moreover, substantial ranges of compensation exist in both the federal government and the private sector among workers who have similar observable attributes. Therefore, even within groups of workers who have such similarities, the average differences in compensation between federal and private-sector employees do not indicate whether particular federal employees would receive more or less compensation in the private sector.

CBO's analysis focuses on wages, benefits, and total compensation (the sum of wages and benefits). It is intended to address the question of how the federal government's compensation costs would change if the average cost of employing federal workers was the same as that of employing private-sector workers with certain similar observable characteristics.

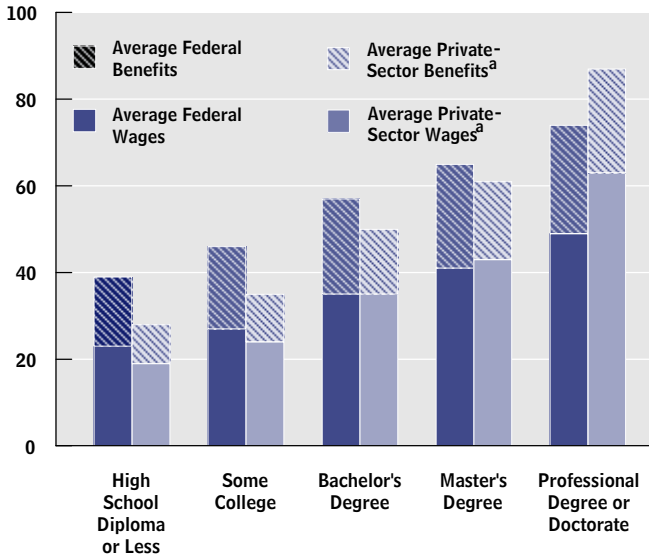
Wages

The difference between the wages of federal civilian employees during the 2005–2010 period and those of similar private-sector employees varied widely depending on the employees' educational attainment.

- Workers whose highest level of education was a bachelor's degree earned roughly the same hourly wages, on

Summary Figure 1.**Average Compensation for Federal and Private-Sector Employees, by Level of Educational Attainment**

(2010 dollars per hour)



Source: Congressional Budget Office based on data from the March Current Population Survey, the Central Personnel Data File, and the National Compensation Survey.

Note: The wages shown here include tips, commissions, and bonuses. The benefits shown here are measured as the average cost, per hour worked, that an employer incurs in providing noncash compensation.

a. Average wages and benefits for private-sector workers who resemble federal workers in their occupations, years of work experience, and certain other observable characteristics likely to affect compensation.

average, in both the federal government and the private sector (see Summary Figure 1). However, federal civilian workers with no more than a high school education earned about 21 percent more, on average, than similar workers in the private sector, whereas federal workers with a professional degree or doctorate earned about 23 percent less, on average, than their private-sector counterparts.

- Overall, the federal government paid 2 percent more in total wages than it would have if average wages had been comparable with those in the private sector, after accounting for certain observable characteristics of workers.

Those estimates do not show precisely what federal workers would earn if they were employed in the private sector. The difference between what federal employees earn and what they would earn in the private sector could be larger or smaller depending on characteristics that were not included in this analysis because such traits are not easy to measure. In addition, the estimated differences depend on how well the observable characteristics were measured in the samples of employees used by CBO and on other factors that are inherent in any statistical analysis.

The span between the wages of high- and low-paid employees was narrower in the federal government than in the private sector, even when employees' education and other observable traits were accounted for. The narrower dispersion of wages among federal employees may reflect the constraints of federal pay systems, which make it harder for managers to reward the best performers or to limit the pay of poor performers.

Benefits

During the 2005–2010 period, the federal and private sectors differed much more with regard to the costs that employers incurred in providing current and future benefits—including health insurance, retirement benefits, and paid vacation—than they did with regard to wages. Again, the extent of that difference varied according to workers' educational attainment.

- Average benefits were 46 percent higher for federal employees whose highest level of education was a bachelor's degree than for similar private-sector employees and 72 percent higher for federal employees with no more than a high school education than for their private-sector counterparts (see Summary Table 1). Among employees with a doctorate or professional degree, by contrast, average benefits were about the same in the two sectors.
- On average for workers at all levels of education, the cost of hourly benefits was 48 percent higher for federal civilian employees than for private-sector employees with certain similar observable characteristics, CBO estimates.

The most important factor contributing to differences between the two sectors in the costs of benefits is the

Summary Table 1.**Average Hourly Compensation of Federal Employees Relative to That of Private-Sector Employees, by Level of Educational Attainment**

	Difference in 2010 Dollars per Hour			Percentage Difference		
	Wages	Benefits	Total Compensation ^a	Wages	Benefits	Total Compensation ^a
High School Diploma or Less	\$4	\$7	\$10	21%	72%	36%
Bachelor's Degree	About the same	\$7	\$8	About the same	46%	15%
Professional Degree or Doctorate	-\$15	About the same	-\$16	-23%	About the same	-18%

Source: Congressional Budget Office based on data from the March Current Population Survey, the Central Personnel Data File, and the National Compensation Survey.

Notes: CBO compared average hourly compensation (wages, benefits, and total compensation, converted to 2010 dollars) for federal civilian workers and for private-sector workers with certain similar observable characteristics that affect compensation—including occupation, years of experience, and size of employer—by the highest level of education that workers achieved.

Positive numbers indicate that, on average, wages, benefits, or total compensation for a given education category was higher in the 2005–2010 period for federal workers than for similar private-sector workers. Negative numbers indicate the opposite.

a. The differences shown for total compensation may not equal the sum of the differences for wages and benefits because of rounding to the nearest dollar and because of the composition of the samples used by CBO.

defined-benefit pension plan that is available to most federal employees.¹ Such plans are becoming less common in the private sector. CBO's estimates of the costs of benefits are much more uncertain than its estimates of wages, primarily because the cost of defined-benefit pensions that will be paid in the future is more difficult to quantify and because less-detailed data are available about benefits than about wages.

Total Compensation

As with its components (wages and benefits), the degree to which total compensation differed between the federal government and the private sector over the 2005–2010 period depended on workers' level of education.

- Among people whose education culminated in a bachelor's degree, the cost of total compensation averaged 15 percent more for federal workers than for similar workers in the private sector. Among people with a high school diploma or less education, total compen-

sation costs averaged 36 percent more for federal employees. By contrast, among people with a professional degree or doctorate, total compensation costs were 18 percent lower for federal employees than for similar private-sector employees, on average.

- Overall, the federal government paid 16 percent more in total compensation than it would have if average compensation had been comparable with that in the private sector, after accounting for certain observable characteristics of workers.

Scope of the Analysis

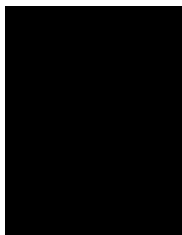
CBO's results apply to the cost of employing full-time full-year workers. The analysis focuses on those workers—who accounted for about 93 percent of the total hours worked by federal employees from 2005 through 2010—because higher-quality data are available for them than for other workers. CBO measured the cost of employing those workers as the present value of providing compensation, some of which may be paid out in the future. (A present value is a single number that expresses a flow of current and future payments in terms of an equivalent lump sum paid today.) Thus, the cost of

1. Defined-benefit plans provide retirement income that is based on fixed formulas, and the amount of that income is usually determined by an employee's salary history and years of service.

employing federal or private-sector workers includes an estimate of the cost of retirement benefits to be paid in the future to current employees. That present-value approach differs from the budgetary treatment of retirement benefits for federal workers; the cost of those benefits is recorded as federal outlays when people receive them rather than when the commitment to pay them is incurred.

A key issue in compensation policy is the ability to recruit and retain a highly qualified workforce. But assessing how changes in compensation would affect the government's ability to recruit and retain the personnel it needs is beyond the scope of this analysis. Factors other than the

amount of compensation can affect that ability. For example, greater job security and less uncertainty about the size of pay raises tend to decrease the compensation that the federal government needs to offer, relative to compensation in the private sector, to attract and retain employees. Conversely, total compensation costs for a federal employee include a greater share of costs for retirement benefits, which workers may find less valuable than an equivalent amount of cash received today. If so, and if all other things are equal, that mix of compensation would tend to increase the total amount of compensation needed to pay federal workers relative to similar workers in the private sector.



Comparing the Compensation of Federal and Private-Sector Employees

The Federal Workforce

The federal government currently employs some 2.3 million full-time workers (not counting military personnel), who are spread among a wide variety of departments, agencies, and occupations. Those workers receive compensation in the form of wages and benefits, such as health insurance and retirement pensions, at a total cost to the government of about \$200 billion a year. Of that amount, \$80 billion goes for civilian personnel who work in the area of national defense, and about \$120 billion goes for personnel who work on veterans' affairs, homeland security, the administration of justice, and other government functions.

Size of the Federal Workforce

For the past 30 years, the number of civilians employed by the federal government has hovered around 2 million people (see Figure 1).¹ During that period, federal employees have accounted for a declining share of the total U.S. workforce, because employment by the private sector and by other levels of government has grown along with the economy. In 1980, when about 79 million people worked in the private sector and 13 million worked for state or local governments, federal employees made up 2.3 percent of the workforce. By 2010, private-sector employment had reached 111 million and employment by state and local governments had reached 20 million. As a result, federal civilian employees accounted for 1.7 percent of the workforce in 2010.

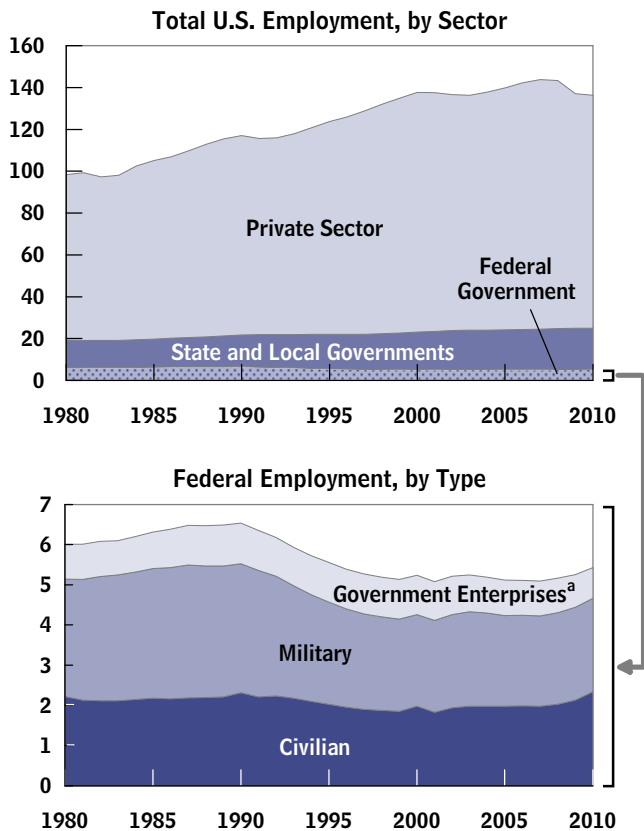
1. In this study, the size of a workforce is measured by the number of full-time and part-time employees. An alternative measure of size is the total number of hours worked. The division of the overall U.S. workforce between the federal and private sectors would be similar under that measure, because average hours worked per employee are similar in the two sectors. Those averages have not changed much in the past three decades.

Besides federal civilian workers, who are the focus of this study, the government directly or indirectly employs other people to provide various services. In particular, the armed services include some 2.3 million uniformed personnel, about 1 million of whom are reservists. The Congressional Budget Office (CBO) has analyzed the compensation of military personnel in several recent publications.² In addition, about 800,000 people work for government enterprises that typically pay for their employees' compensation through the sale of services rather than through tax revenue. (By far the largest government enterprise in terms of employment is the Postal Service.) Finally, because the federal government draws on the private sector to carry out some of its functions, a number of private-sector employees work under contract to the federal government.³ This analysis does not include military personnel or employees of self-financing government enterprises such as the Postal Service; federal contractors are included as private-sector workers.

-
2. CBO compared military compensation with private-sector compensation in the statement of Carla Tighe Murray, Senior Analyst for Military Compensation and Health Care, before the Subcommittee on Personnel of the Senate Committee on Armed Services, *Evaluating Military Compensation* (April 2010), and in a related study, *Evaluating Military Compensation* (June 2007). CBO compared military compensation with federal civilian compensation in "Analysis of Federal Civilian and Military Compensation," attachment to a letter to the Honorable Steny H. Hoyer (January 20, 2011).
 3. The compensation of federal contractors is discussed in Project on Government Oversight, *Bad Business: Billions of Taxpayer Dollars Wasted on Hiring Contractors* (Washington, D.C.: POGO, 2011). See also Paul Light, *A Government Ill Executed: The Decline of the Federal Service and How to Reverse It* (Cambridge, Mass.: Harvard University Press, 2008). In addition to federal contractors, the government supports the jobs of other private-sector employees through its purchases of goods and services produced by private firms. For example, the government buys computers and office supplies from companies in the private sector.

Figure 1.
Trends in Government and Private-Sector Employment Since 1980

(Millions of people)



Source: Congressional Budget Office based on data from the national income and product accounts.

Note: This figure includes employees who work part time or part of the year.

a. Government enterprises are federal entities that typically fund their operating costs, including employees' compensation, through the sale of services rather than through tax revenue. By far the largest government enterprise in terms of employment is the Postal Service.

Agencies and Occupations

Federal civilian employees perform a broad range of tasks in more than 700 occupations. Although federal workers are employed by more than 100 departments and agencies, 57 percent of them work at three departments in the executive branch (see Figure 2):

- The Department of Defense employs more than one-third of the federal civilian workforce. Those employees work in hundreds of different occupations;

the most common are program administrator, information technology worker, and program analyst.

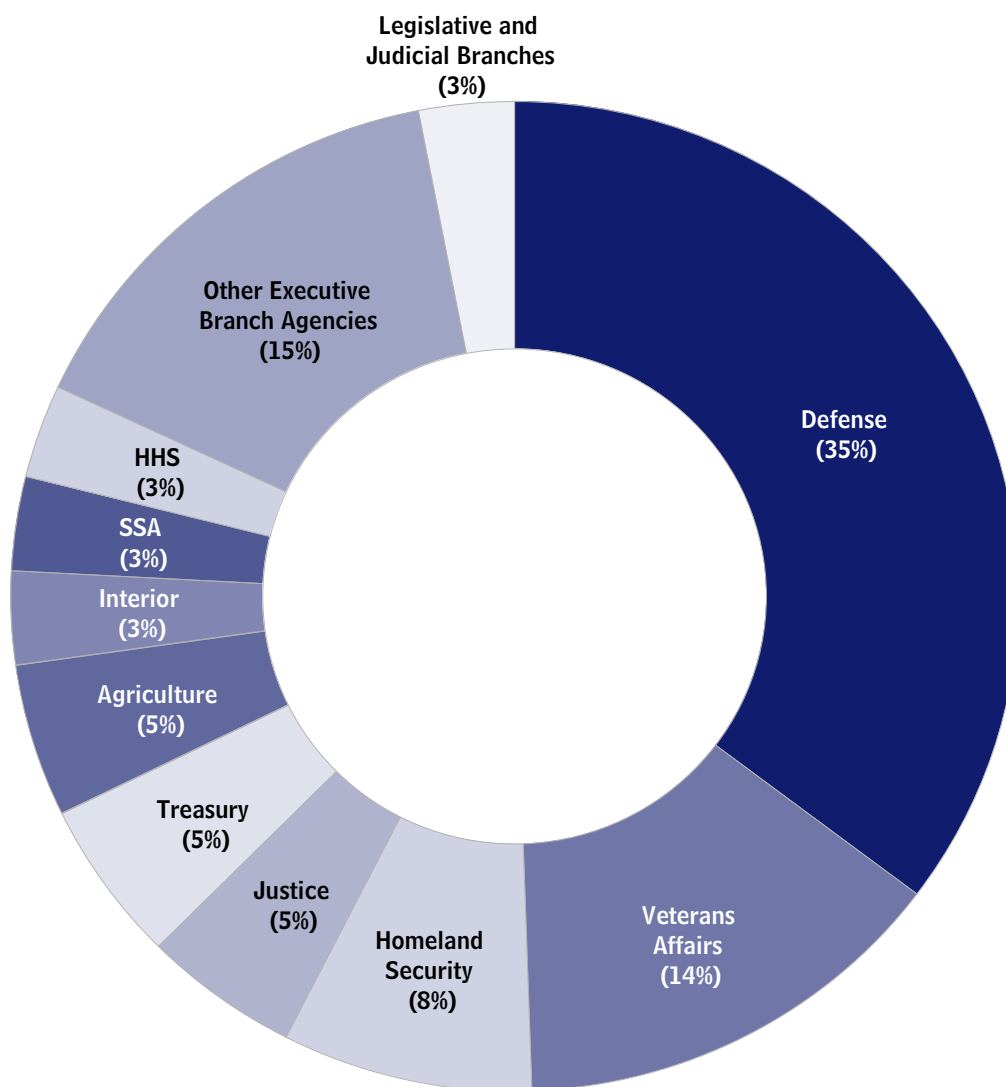
- The Department of Veterans Affairs employs 14 percent of the federal civilian workforce. About half of its employees work in various medical professions, the most common of which is nursing.
- The Department of Homeland Security employs 8 percent of the federal civilian workforce. The most common job in that department is inspector for the Transportation Security Administration, which accounts for just over a quarter of the department's employees.

Another 40 percent of federal employees work for the other departments and agencies of the executive branch. The most common occupations among those workers are information technology worker, program analyst, and criminal investigator. The remaining 3 percent of the federal workforce is employed by the legislative and judicial branches of government.

Differences Between the Federal and Private-Sector Workforces

Various characteristics of employees—including their occupation, education, and age—are likely to influence their compensation, regardless of whether they work for the federal government or the private sector. However, the federal and private-sector workforces differ in several significant ways.

For example, 33 percent of federal employees work in professional occupations, such as the sciences or engineering, compared with only 18 percent of private-sector employees; in contrast, 26 percent of private-sector employees work in occupations such as retail sales, production, or construction, compared with only 7 percent of federal employees (see Table 1 on page 4). Professional occupations generally require more formal training or experience than do the occupations more common in the private sector. Partly because of that difference, the average age of federal employees is four years higher than that of private-sector employees (45 versus 41). The greater concentration of federal workers in professional occupations also means that they are more likely to have a bachelor's degree: 51 percent of the federal workforce has at least that much education, compared with 31 percent of the private-sector workforce (see Figure 3 on page 5).

Figure 2.**Federal Civilian Employment, by Branch and Department, Fiscal Year 2010**

Source: Congressional Budget Office based on data from Census Bureau, "The 2012 Statistical Abstract: The National Data Book" (September 27, 2011), www.census.gov/compendia/statab/cats/federal_govt_finances_employment/federal_civilian_employment.html.

Notes: This figure includes federal employees who work part time or part of the year. It excludes military personnel, who total roughly the same number as federal civilian employees.

Employment is based on averages of monthly head counts for fiscal year 2010. Those counts exclude the Central Intelligence Agency, the National Security Agency, the Defense Intelligence Agency, and the National Imagery and Mapping Agency.

HHS = Department of Health and Human Services; SSA = Social Security Administration.

Table 1.**Characteristics of the Federal and Private-Sector Workforces**

(Percentage of workforce)

	Federal Government	Private Sector
Highest Educational Attainment		
High school diploma or less	20	41
Some college	29	29
Bachelor's degree	31	22
Master's degree	14	7
Professional degree or doctorate	7	3
Total	100	100
Occupation		
Professional	33	18
Management, business, financial	24	17
Administrative or office support	15	14
Service	14	12
Installation, maintenance, repair	4	5
Transportation	4	7
Production	3	9
Construction, extraction	2	6
Sales	2	11
Farming, fishing, forestry	1	1
Total	100	100
Size of Employer, by Number of Workers		
Less than 10	*	11
10 to 99	*	26
100 to 499	*	16
500 to 999	*	6
1,000 or more	99	40
Total	100	100
Region		
Northeast	13	18
South	37	35
Midwest	14	23
West	23	22
Washington, D.C., metropolitan area	14	2
Total	100	100
Memorandum:		
Average Age (Years)	45	41
Number of People in Sample	8,311	211,504

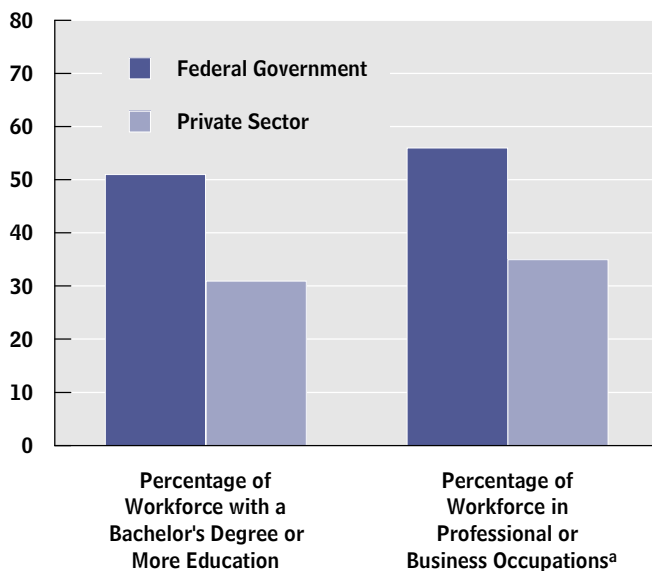
Source: Congressional Budget Office based on data for 2005–2010 from the March Current Population Survey.

Note: * = between zero and 0.5 percent.

Figure 3.

Differences in Education and Occupations Between the Federal and Private-Sector Workforces

(Percent)



Source: Congressional Budget Office based on data for 2005–2010 from the March Current Population Survey.

- a. Corresponds to the professional, management, business, and financial occupations in Table 1. About 61 percent of the workers in those occupations have at least a bachelor's degree, compared with 18 percent of the workers in other occupations.

Likewise, 21 percent of federal employees have a master's, professional, or doctoral degree, compared with 9 percent of private-sector employees.

The characteristics of employers, as well as those of workers, are different in the federal government and the private sector. Many federal agencies are quite large; the biggest, the Department of Defense, employs about 800,000 civilian workers. Nearly all federal employees work for entities that have at least 1,000 workers, whereas only about 40 percent of private-sector employees work for entities of that size.

The federal government and the private sector also differ in the extent to which their workers are represented by unions, which can influence employees' compensation. About 21 percent of federal workers are members of unions, compared with only 8 percent of private-sector workers. In addition, the occupations in which union membership is common vary between the two sectors.

The services that the federal government provides are needed across the nation, so federal employees work in a wide variety of locations. For instance, nurses and doctors who work at veterans' hospitals, security screeners at airports, and air traffic controllers are spread throughout the United States. In all, about 14 percent of federal employees work in or around Washington, D.C. (compared with 2 percent of the private-sector workforce); the other 86 percent of federal workers—about 2 million people—are located throughout the country in roughly similar proportions to workers in the private sector.

The attributes of the federal workforce are more like those of private-sector workers at large firms than those of workers at small firms, because both large firms and federal agencies tend to require a workforce that is more specialized and educated than small firms do. Many federal employees have expertise in specific roles, as over 95 percent of them work in agencies that divide tasks among more than 100 occupations. That degree of specialization is not possible for small employers. In addition, only 27 percent of workers at small firms have at least a bachelor's degree, whereas the proportion of workers with that level of education is greater at large firms (37 percent) and in the federal government (51 percent).

CBO's Approach to Analyzing Compensation for Federal and Private-Sector Workers

How would the federal government's compensation costs differ if the average cost of employing federal workers was the same as that of employing workers in the private sector with certain similar observable characteristics? To address that question, CBO examined average compensation costs for employees in the federal government and the private sector, accounting for differences in those characteristics. The comparison between the two sectors is based on the cost that an employer incurs in providing compensation, including salaries and wages, a share of health insurance premiums, retirement benefits, and payroll taxes (which fund government benefit programs).

The cost of benefits provided to retirees was measured as the present value of future obligations—that is, as a single number that expresses a flow of current and future payments in terms of an equivalent lump sum paid today. Such benefits are not necessarily paid by the employer in the year that someone works. In particular, retirement

Table 2.**Federal and Private-Sector Wages, by Level of Educational Attainment**

	Average Wages (2010 dollars per hour)		Percentage Difference in Average Wages Between Federal and Private Sectors
	Federal Government	Private Sector ^a	
High School Diploma or Less	23.50	19.40	21
Some College	27.10	23.60	15
Bachelor's Degree	35.30	34.80	2
Master's Degree	41.20	43.40	-5
Professional Degree or Doctorate	48.50	63.20	-23
All Levels of Education	32.30	31.60	2

Source: Congressional Budget Office based on data for 2005–2010 from the March Current Population Survey.

Note: Wages are measured as an average hourly wage rate and include tips, commissions, and bonuses.

a. Average wages for private-sector workers who resemble federal workers in their occupations, years of work experience, and certain other observable characteristics likely to affect wages.

benefits for federal workers are recorded as federal spending when someone receives those benefits during retirement.

In both the federal government and the private sector, compensation may depend on a number of factors that can be observed and measured. CBO sought to account for differences in those factors—education, occupation, years of work experience, geographic location (region of the country and urban or rural location), size of employer, and certain demographic characteristics (age, sex, race, ethnicity, marital status, immigration status, and citizenship). That approach produces a comparison between the average compensation of federal workers and the average compensation of private-sector workers who have certain similar observable attributes (for more details about that approach, see Appendix A). Because education plays a particularly large role, CBO reports its results for five levels of educational attainment: high school diploma or less, some college, bachelor's degree, master's degree, and doctorate or professional degree.

People's compensation is also affected by many characteristics that are not easy to observe or measure, such as their natural ability, personal motivation, and effort. The degree to which federal and private-sector employees may differ with regard to those characteristics is much harder to quantify, and no adjustments were made for those attributes in this analysis.

Comparison of Wages in the Federal Government and the Private Sector

Using data from the Current Population Survey and the analytic approach described above, CBO compared average hourly wages for federal civilian workers, by the highest level of education they achieved, with average hourly wages for private-sector workers who have certain similar observable traits that affect wages. CBO also compared the range between low and high wages for federal workers with the wage range for similar workers in the private sector.

Average Wages

By CBO's estimate, the extent to which hourly wages differed for federal employees and private-sector employees with certain similar observable traits during the 2005–2010 period varied greatly according to workers' educational attainment:

- Federal employees with no more than a high school diploma earned 21 percent more per hour, on average, than private-sector employees with the same amount of education (see Table 2).
- Employees whose highest level of education was a bachelor's degree—about one-third of the federal workforce—earned roughly the same average wage in the federal government as in the private sector.

- Federal workers with a doctorate or professional degree earned 23 percent less per hour, on average, than similar workers in the private sector.

On average, for employees at all education levels, wages were 2 percent higher for workers in the federal government than for private-sector workers with certain similar observable characteristics, CBO estimates. That finding implies that the government paid 2 percent more in total wages for the federal civilian workforce than it would have if average wages had been comparable with those in the private sector, after accounting for the differences in workers' characteristics.

If CBO had not structured the analysis so as to compare workers with similar observable traits, the difference in average wages between the two sectors would have been much larger. Comparing federal and private-sector employees with similar educational attainment was the most important element, for two reasons: Highly educated workers tend to earn much higher wages than less educated workers, and federal employees have more education, on average, than employees in the private sector. Accounting for differences in other characteristics was also important because federal employees tend to work in higher-paying occupations and to have more years of work experience, which also tend to be associated with higher wages. Finally, employees of large firms tend to earn more per hour than employees of small firms, and federal employees are more than twice as likely as private-sector employees to work for entities that employ at least 1,000 people.⁴

It is not certain, however, that the large size of federal agencies implies that federal workers would receive the higher wages typical at large firms if they moved to the private sector. On the one hand, jobs are likely to be more specialized in the federal government and at large private firms than they are at smaller firms, so large private-sector employers might value the specialized skills of federal workers, which suggests that accounting for the size of the employer leads to a more meaningful comparison of wages. On the other hand, the higher wages paid by large

private firms may not reflect pay for skills that are transferable between the federal and private sectors, so adjusting for the employer's size could understate the difference between average federal and private-sector wages for workers with similar traits. If adjustments for the employer's size are removed from the comparison, the difference between average federal and private-sector wages for all workers rises from 2 percent to 9 percent, and similar changes occur in the differences for workers at each level of education.

Differences between the average wages of federal and private-sector employees with the same measured traits could reflect the effect of personal characteristics that cannot be measured, or differences in the way that the federal government and the private sector determine pay, or a combination of those factors. The data do not allow CBO to gauge the degree to which each of those factors affects differences in average wages between the sectors.

The findings of CBO's analysis vary from the results of other recent studies of public- and private-sector wages. That variation is largely attributable to differences in analytic methods. The distinction between those methods, and the relationship of CBO's analysis to previous research, is discussed at length in a CBO working paper.⁵

To address the question of how the government's costs for wages and salaries would change if federal workers cost the same amount to employ as similar private-sector workers, CBO focused on differences in the *averages* of wages, which are closely tied to total government spending on the pay of federal employees. Other studies that found larger differences between federal and private-sector pay used a different measure of wages.⁶ However, that measure overstates the differences between the cost of employing federal workers and similar private-sector workers because the dispersion of wages (the range from low to high wages) differs between those groups.

4. Besides accounting for differences in those observable characteristics, CBO compared federal workers with private-sector workers who had similar demographic traits, but that adjustment did not have much effect on the difference between average federal and private-sector wages.

5. Justin Falk, *Comparing Wages in the Federal Government and the Private Sector*, Congressional Budget Office Working Paper 2012-3 (January 2012), section II.

6. See Andrew Biggs and Jason Richwine, *Comparing Federal and Private Sector Compensation*, Economic Policy Working Paper 2011-02 (Washington, D.C.: American Enterprise Institute, June 2011); and James Sherk, *Inflated Federal Pay: How Americans Are Overtaxed to Overpay the Civil Service*, Working Paper CDA 10-05 (Washington, D.C.: Heritage Foundation Center for Data Analysis, July 2010).

Besides the use of averages, another key feature of CBO's approach was comparing workers with similar characteristics, such as education, experience, and occupation. Other research that has compared the average pay of federal and private-sector workers who have similar jobs has found that the average salary for federal employees is much lower than the average for private-sector workers in comparable jobs.⁷ However, by focusing the comparisons on specific, detailed occupations, that research may have ended up comparing federal workers with private-sector workers who have more experience.⁸

The Distribution of Wages

In addition to looking at average wages, CBO examined the distribution of wages for federal workers and for private-sector workers with certain similar observable characteristics in each category of educational attainment. It then compared wages in the two sectors at the 10th, 25th, 75th, and 90th percentiles of those distributions.⁹ Among employees with no more than a bachelor's degree, low-wage workers (those at the 10th and 25th percentiles) earned more in the federal government than in the private sector. By contrast, among employees with a bachelor's or higher degree, high-wage workers (those at the 90th percentile) earned less in the federal government than in the private sector.

Both high and low wages tend to be less prevalent in the federal government than in the private sector, so the range between those wages—the dispersion of wages—tends to be narrower for federal employees. For example, as measured by the range from the 10th to the 90th percentile, the dispersion of wages was smaller for federal employees with a bachelor's or higher degree than for similar private-sector employees. That difference was especially marked for people with a professional degree or doctorate (see Figure 4).

The narrower dispersion of wages among federal workers may reflect the constraints of federal pay systems, which

make it harder for managers to reward the highest performers or to limit the compensation of the lowest performers. Most federal workers compensated under pay schedules move to progressively higher pay levels as they become eligible for those levels on the basis of their years of federal employment. (For more details about those pay schedules, see Appendix B.) However, federal pay systems also include tools that managers can use to reward some top performers.

Comparison of Benefits in the Federal Government and the Private Sector

The federal government and most large private employers provide various forms of noncash compensation, such as retirement benefits, health insurance, and paid leave. The cost of providing those benefits varies greatly among private-sector employers as well as between the federal government and the private sector. Smaller private employers generally offer less-generous health insurance and other benefits; some do not offer such benefits at all. However, almost all employers are required to pay various payroll taxes to fund all or part of the benefits that workers or retirees receive through the Social Security, Medicare, unemployment insurance, and workers' compensation programs.

In both the federal government and the private sector, the cost of some benefits, such as retirement benefits and paid leave, is based largely on the wages that employees receive. Thus, the factors that determine an employee's wages—such as education, occupation, and experience—will also influence the cost that an employer incurs to provide those benefits. For example, workers with more education tend to receive more-expensive benefits as well as higher wages. The cost of other benefits, by contrast, is not directly affected by the wages that employees receive. In particular, the cost of providing health insurance for federal workers depends directly on the insurance plan chosen and on whether an employee has single or family coverage (although that cost may be indirectly affected by the employee's wages if higher-income workers tend to choose more-expensive insurance plans).

CBO compared the cost of the benefits provided to federal and to private-sector employees, accounting for the same differences in workers' characteristics that were relevant to determining wages. For consistency with the measure of hourly wages, the cost of benefits was measured on an hourly basis by dividing estimates of the annual

7. Federal Salary Council, *Level of Comparability Payments for January 2013* (November 22, 2011).

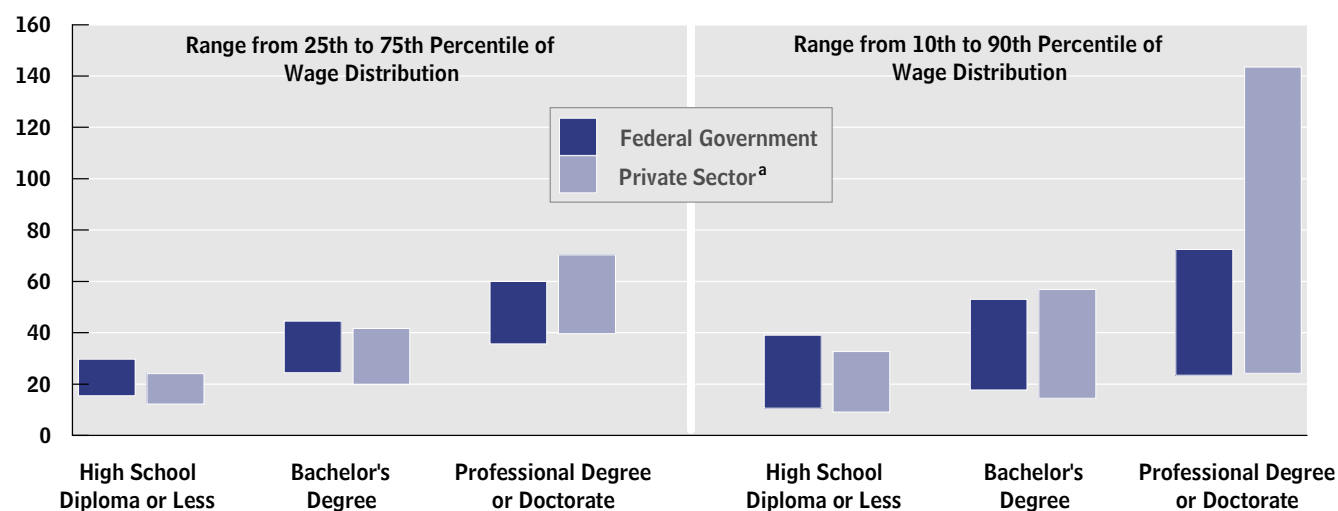
8. See Melissa Famulari, "What's in a Name? Title Inflation in the Federal Government" (draft, University of Texas at Austin, August 2002), www.econ.ucsd.edu/~mfamular/FederalPrivatepay.pdf.

9. For details about how CBO constructed the wage distributions, see Justin Falk, *Comparing Wages in the Federal Government and the Private Sector*, Congressional Budget Office Working Paper 2012-3 (January 2012), section V.

Figure 4.

Distribution of Federal and Private-Sector Wages, by Level of Educational Attainment

(Wages, 2010 dollars per hour)



Source: Congressional Budget Office based on data for 2005–2010 from the March Current Population Survey.

a. Average wages for private-sector workers who resemble federal workers in their occupations, years of work experience, and certain other observable characteristics likely to affect wages.

cost that an employer incurred to provide those benefits by the number of hours that an employee worked during the year.

As with wages, differences in the cost of benefits in the federal government and the private sector varied by employees' highest level of education (see Table 3). For example, CBO estimates that, relative to costs for similar workers in the private sector, benefit costs were about:

- 72 percent higher, on average, for federal workers with a high school diploma or less education;
- 46 percent higher, on average, for federal workers with just a bachelor's degree; and
- Roughly the same, on average, for federal workers with a professional degree or doctorate.

On average for workers at all education levels, benefits for federal employees cost about \$20 per hour worked, whereas benefits for private-sector employees with certain similar observable characteristics cost \$14, CBO estimates. Thus, benefits for federal workers cost 48 percent more per hour worked, on average, than benefits for

private-sector workers with similar observable attributes. Benefits also constituted a larger share of compensation for federal workers, accounting for 39 percent of the cost of total compensation, compared with 30 percent in the private sector.

Much of the higher benefit cost incurred by the federal government stems from differences in retirement benefits. The federal government provides retirement benefits to its workers through both a defined-benefit plan and a defined-contribution plan, whereas many large private-sector employers have replaced defined-benefit plans with defined-contribution plans.¹⁰ The federal government also provides subsidized health insurance to qualified retirees, an arrangement that has become uncommon in the private sector. As a result, deferred compensation accounts for a greater portion of total compensation in the federal government than in the private sector, on

10. Defined-benefit plans provide retirement income that is based on fixed formulas, and the amount of that income is usually determined by an employee's salary history and years of service. In contrast, the amount of retirement income provided by a defined-contribution plan, such as a 401(k) account, depends on the performance of the account's investments as well as on the amount of contributions made by the employer and employee.

Table 3.**Federal and Private-Sector Benefits, by Level of Educational Attainment**

	Average Benefits (2010 dollars per hour)		Percentage Difference in Average Benefits Between Federal and Private Sectors
	Federal Government	Private Sector ^a	
High School Diploma or Less	15.50	9.00	72
Some College	18.50	10.90	71
Bachelor's Degree	21.80	14.90	46
Master's Degree	24.10	17.70	36
Professional Degree or Doctorate	24.70	24.10	2
All Levels of Education	20.10	13.60	48

Source: Congressional Budget Office based on data from the March Current Population Survey, the Central Personnel Data File, and the National Compensation Survey.

Note: Benefits are measured as the average cost, per hour worked, that an employer incurs in providing noncash compensation. The average benefits shown here are for workers at institutions that employ at least 1,000 people.

a. Average benefits for private-sector workers who resemble federal workers in their occupations, years of work experience, and certain other observable characteristics likely to affect benefits.

average. That difference could affect the types of workers who choose federal employment over private-sector employment. Federal pension and health care benefits for retirees are likely to attract workers who plan to stay with the same employer for many years, because the value of those benefits rises sharply if an employee waits to leave federal service until he or she is eligible for an immediate pension (at which point the employee is generally also eligible to receive federal health care benefits in retirement).

Comparisons of benefits by other researchers have not used data that allow federal employees to be compared with private-sector employees who have similar job-related attributes.¹¹ Those comparisons have found bigger differences between average federal and private-sector benefits. However, CBO's analysis indicates that a large portion of such differences is attributable to the fact that federal workers have more years of education and experience, on average, than private-sector workers do.

CBO's estimates of differences in benefits between the two sectors are more uncertain than its estimates of differences in wages. That greater uncertainty reflects the

complexity of measuring benefits and the extrapolations that were necessary to integrate data sets from various sources (for more details about those sources, see Appendix A).

Comparison of Total Compensation in the Federal Government and the Private Sector

CBO combined its analyses of wages and benefits to assess differences between the federal government and the private sector in total compensation for workers with certain similar observable characteristics:

- Among people with a high school diploma or less education, total compensation costs were 36 percent higher, on average, for federal employees than for similar private-sector employees (see Table 4).
- Among people whose education ended in a bachelor's degree, the cost of total compensation averaged 15 percent more for federal workers than for similar workers in the private sector.
- Among people with a professional degree or doctorate, by contrast, total compensation costs were 18 percent lower, on average, for federal employees than for private-sector employees with similar attributes.

11. For details, see Justin Falk, *Comparing Benefits and Total Compensation in the Federal Government and the Private Sector*, Congressional Budget Office Working Paper 2012-4 (January 2012), section II.

Table 4.**Federal and Private-Sector Total Compensation, by Level of Educational Attainment**

	Average Total Compensation (2010 dollars per hour)		Percentage Difference in Average Total Compensation Between Federal and Private Sectors
	Federal Government	Private Sector ^a	
High School Diploma or Less	39.10	28.70	36
Some College	45.70	34.70	32
Bachelor's Degree	57.20	49.70	15
Master's Degree	65.30	60.50	8
Professional Degree or Doctorate	73.20	89.60	-18
All Levels of Education	52.50	45.40	16

Source: Congressional Budget Office based on data from the March Current Population Survey, the Central Personnel Data File, and the National Compensation Survey.

Note: Total compensation consists of wages and benefits. The average compensation shown here is for workers at institutions that employ at least 1,000 people. Because a broader sample was used to compare wages than to compare benefits, the numbers shown here for total compensation may not equal the sum of the numbers for wages and benefits shown in Tables 2 and 3.

a. Average total compensation for private-sector workers who resemble federal workers in their occupations, years of work experience, and certain other observable characteristics likely to affect compensation.

For workers at all education levels, the cost of total compensation averaged about \$52 per hour worked for federal employees, compared with about \$45 per hour worked for employees in the private sector with certain similar observable characteristics. Thus, total compensation was about 16 percent higher, on average, for federal workers than for similar private-sector workers, indicating that the government spent about 16 percent more on total compensation than it would have if average compensation had been comparable with that in the private sector, after accounting for differences in those characteristics.

In part because employees appear to value wages and benefits differently, comparisons of total compensation are an incomplete indicator of the government's ability to recruit and retain a qualified workforce. In this analysis, benefits are measured in terms of the cost that employers incur in providing them, which might not match the value that employees place on benefits. An implication is that differences in benefits might not compensate for apparently countervailing differences in wages, even if the

measured differences in benefits and wages are of similar sizes. On the one hand, workers tend to pay less income tax on compensation that takes the form of benefits than they do on wages, which enhances the value of benefits. On the other hand, some recent research indicates that workers are willing to pay only a small portion of the cost of funding an increase in pension benefits, which suggests that they value wages more highly than pension benefits.¹² A broader assessment of how changes in the amount or composition of total compensation would affect the government's ability to recruit and retain a qualified workforce is beyond the scope of this analysis.

12. Maria D. Fitzpatrick, "How Much Do Public School Teachers Value Their Retirement Benefits?" (draft, Cornell University, Department of Policy Analysis and Development, September 2011), <http://www.human.cornell.edu/pam/people/loader.cfm?csModule=security/getfile&PageID=78384>. That study includes a discussion of why defined-benefit pensions are still common in the public sector even though the value that workers place on them appears to be lower than their cost.



Appendix A: CBO's Analytic Approach

In both the federal government and the private sector, compensation may depend on a number of factors that can be observed and measured. In its analysis, the Congressional Budget Office (CBO) adjusted for differences between federal and private-sector workers in the following factors: education, occupation, years of work experience, geographic location (region of the country and urban or rural location), size of employer, and certain demographic characteristics (age, sex, race, ethnicity, marital status, immigration status, and citizenship).¹ Those adjustments produced a comparison between the average compensation of federal workers and the average compensation of private-sector workers who have certain similar observable attributes. Because education plays an especially important role, CBO reported its results for five levels of educational attainment: high school diploma or less, some college, bachelor's degree, master's degree, and doctorate or professional degree. (More details about the statistical methods used in the analysis can be found in two accompanying working papers.)²

CBO analyzed hourly wages in the federal government and the private sector using data for 2005 through 2010

1. Such adjustments do not completely account for differences in occupations and work experience between the federal and private-sector workforces. Experience is measured as the length of time that the worker may have been in the labor force, which does not capture the relevance or quality of work experience. Occupations are classified in 24 broad categories, which in some instances group together federal and private-sector workers who do not perform similar duties.
2. Justin Falk, *Comparing Wages in the Federal Government and the Private Sector*, Congressional Budget Office Working Paper 2012-3 (January 2012), and *Comparing Benefits and Total Compensation in the Federal Government and the Private Sector*, Congressional Budget Office Working Paper 2012-4 (January 2012).

from the Current Population Survey (CPS). That survey of households by the Bureau of Labor Statistics (BLS) contains a large amount of information about the attributes and earnings (including salary, overtime pay, tips, commissions, and bonuses) of roughly 8,000 federal and 210,000 private-sector workers over that period. The CPS sample was limited to full-time full-year workers, who accounted for about 93 percent of the total hours worked by federal employees over the 2005–2010 period.

CBO also analyzed how the cost to employers of providing benefits differed in the federal government and the private sector. As with wages, differences in benefits can stem from disparities in various factors, including attributes of employees that can be measured easily, attributes that cannot be measured easily, and the approaches used to determine compensation in the two sectors. The CPS does not include comprehensive information about employees' benefits, so for that comparison, CBO supplemented the CPS with data on the benefits of private-sector workers from BLS's National Compensation Survey and with data on the benefits of federal workers from the Central Personnel Data File maintained by the Office of Personnel Management (OPM).

The BLS and OPM data were used to calculate the relationship in each sector between an employee's wages and the benefits that he or she receives. CBO then used those relationships to estimate benefits for the workers surveyed in the CPS, on the basis of their wages and sector of employment. Using those estimates, CBO compared the average cost of benefits for federal and private-sector workers at the five levels of educational attainment described above, with adjustments for the other factors measured in the CPS (such as occupation, years of work experience, demographic traits, location, and size of

employer). That approach allowed CBO to compare the benefits of federal employees with those of private-sector employees who have certain similar job-related attributes—something not possible with the data that other researchers have used for comparisons of benefits. However, CBO’s estimates of the differences in benefits

between the two sectors are more uncertain than its estimates of the differences in wages. That greater uncertainty reflects the complexity of measuring benefits and the extrapolations that were necessary to integrate the CPS, BLS, and OPM data sets.



Appendix B: Wage and Benefit Systems for Federal Employees

The federal government compensates its employees with a mix of wages and benefits. Wages, which are mostly determined by various salary schedules, depend on an employee's job description, qualifications, experience, performance, location, and other factors. Some benefits are determined mainly by formulas that depend on a worker's annual salary or hourly wage, his or her years of service, and legal requirements that affect all employees in the public and private sectors; other benefits are largely unrelated to those factors.

The salary schedules and formulas that govern federal employees stem from classifications, guidelines, and laws enacted over many decades, including the Classification Act of 1949 and the Federal Employees Pay Comparability Act of 1990. The latter law states that federal salaries should be set at rates that are comparable with nonfederal salaries "for the same levels of work within the same local pay area."¹

Wages

For most federal employees, salaries or wages are determined by their rank in a pay schedule.² In particular, the salaries of about 63 percent of federal workers are based on the General Schedule, which consists of 15 pay grades—each with 10 pay levels, or "steps"—for 34 different metropolitan areas. Cash compensation for other federal employees is based on various other pay systems.

Some of those systems—such as the Federal Wage System, which covers about 9 percent of federal workers—are similar to the General Schedule; other systems differ more. As of 2010, about 12 percent of federal employees were governed by pay systems that the Office of Personnel Management classified as performance based. Such systems typically give managers more discretion in setting an employee's wages, within the confines of wage ranges that are determined by the employee's job classification.³

The salary for any particular worker covered by a federal pay schedule depends on the characteristics of the job and of the person filling it. Different job classifications—such as statistician or nurse—are linked to different grade levels, so salaries and wages are determined by the requirements of the job. Employees' qualifications and experience also influence their rank in a pay schedule. Over time, individual employees routinely move to higher levels of pay by advancing through their pay schedule on the basis of their experience and performance.⁴ Employees who perform well can advance more quickly than average, and employees who perform poorly can be denied such step increases, but most federal workers compensated under pay schedules move to progressively higher grades as they are eligible. That system ensures that employees in the same type of job who have similar tenure receive similar pay, but it limits managers' flexibility

1. Federal Employees Pay Comparability Act of 1990, 5 U.S.C. 5301.

2. Federal workers are also eligible for cash awards and retention allowances, but such incentives typically account for a small portion of their total wages.

3. Some federal pay systems, such as the Senior Biomedical Research Service, are oriented toward paying market-based rates to highly educated workers. Those systems apply to a small fraction of the federal workforce.

4. Federal pay systems are discussed in more detail in Congressional Budget Office, *Characteristics and Pay of Federal Civilian Employees* (March 2007).

to reward workers who perform well or to constrain the salaries of workers who perform poorly.

Benefits

Like many employers in the private sector, the federal government also compensates its workers with noncash benefits such as retirement accounts, partial payment of health insurance premiums, and paid leave.

Retirement

Almost all federal workers participate in the Federal Employees Retirement System (FERS) or the Civil Service Retirement System (CSRS). In this analysis, estimates of the cost of federal pension benefits focus on FERS, which covers about 82 percent of current federal employees who work full time and almost all such employees newly hired by the government. People who began federal employment after 1983 are not eligible to participate in CSRS, which is being replaced by FERS. Under both systems, the government provides most of the funding for an employee's pension, and the amount of the pension depends on the employee's salary, length of federal service, and age at retirement. Federal workers may also choose to participate in the Thrift Savings Plan (TSP), which is similar to 401(k) accounts in the private sector. For employees subject to FERS, the federal government matches a portion of their contributions to their TSP accounts. (For workers subject to the CSRS, those contributions are not matched by the government.)

Health Insurance

Most federal workers are eligible to buy health insurance through the Federal Employees Health Benefits program, and certain federal retirees are eligible to retain that

coverage in retirement. On average, the government pays about 70 percent of the cost of health insurance premiums through that program.⁵

Paid Leave

Most federal employees receive 10 paid holidays a year; they also earn between 13 and 26 days of annual leave (vacation leave) per year depending on their length of federal service. In addition, most federal workers are eligible for up to 13 days of paid sick leave annually.

Other Benefits

The federal government, like private-sector employers, is also required to bear costs for certain legally mandated benefits for its current workers and retirees. Both the government and its employees pay payroll taxes for Social Security, Medicare, workers' compensation, and unemployment benefits. (Many of the federal employees who participate in CSRS do not accrue Social Security benefits and do not pay Social Security payroll taxes; likewise, the federal government does not pay Social Security taxes for those workers.)

The federal government and some employers in the private sector also provide other types of benefits, such as subsidies for employees' education or commuting expenses. Those benefits are typically less costly than retirement benefits, health insurance, and paid leave. (Estimating the cost of those smaller benefits is beyond the scope of this analysis.)

5. Specifically, the government pays either 72 percent of the weighted average premium for all plans or 75 percent of the premium for the plan an enrollee chooses, whichever is less.