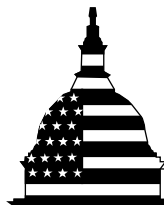

June 2012**FEDERAL WORKERS****Results of Studies on
Federal Pay Varied
Due to Differing
Methodologies****G A O**Accountability * Integrity * Reliability

Highlights of [GAO-12-564](#), a report to congressional requesters

Why GAO Did This Study

A careful consideration of federal pay is an essential part of fiscal stewardship and is necessary to support the recruitment and retention of a competent, successful workforce. Recent studies comparing the compensation of federal workers to workers in other sectors have produced varying findings. To improve understanding of federal pay setting, GAO was asked to examine (1) how annual pay adjustments for the GS system are determined; (2) the extent to which the pay increases and awards available to GS employees recognize individual performance, and how the Office of Personnel Management (OPM) provides oversight of pay increases and awards; and (3) how selected studies compare federal and private pay and total compensation and the factors that may account for the different findings.

GAO reviewed legislation, OPM regulations, executive orders, and federal agency documents; analyzed OPM data; and interviewed agency officials. GAO reviewed six studies that met three criteria: issuance since 2005, original analysis, and focus on federal and private sector compensation. GAO compared and contrasted the differences between their approaches, methodologies, and data sources, and interviewed the studies' authors, people with expertise in compensation issues, and agency officials responsible for the data. GAO provided drafts to agencies and study authors for review and comment and made technical changes as appropriate in response to comments received. One study author provided written comments concurring with the findings. GAO is not making any recommendations in this report.

View [GAO-12-564](#). For more information, contact Robert Goldenkoff at (202) 512-6806 or goldenkoffr@gao.gov.

June 2012

FEDERAL WORKERS

Results of Studies on Federal Pay Varied Due to Differing Methodologies

What GAO Found

Annual pay adjustments for the General Schedule (GS), the pay system covering the majority of federal workers, are either determined through the process specified in the Federal Employees Pay Comparability Act of 1990 (FEPCA) or set based on percent increases authorized directly by Congress. GS employees receive an across-the-board increase (ranging from 0 to 3.8 percent since FEPCA was implemented) that has usually been made in accordance with a FEPCA formula linking increases to national private sector salary growth. This increase is the same for each employee. GS employees also receive a locality increase that varies based on their location; there were 34 pay localities in 2012. While FEPCA specifies a process designed to reduce federal-nonfederal pay gaps in each locality, in practice locality increases have usually been far less than the recommended amount, which has been over 15 percent in recent years. For 2012, when there was a freeze on annual pay adjustments, the FEPCA process had recommended a 1.1 percent across-the-board increase and an average 18.5 percent locality increase.

GS employees are eligible to receive three types of pay increases and monetary awards that are linked to individual performance appraisals: within-grade increases, ratings-based cash awards, and quality step increases. Within-grade increases are the least strongly linked to performance, ratings-based cash awards are more strongly linked to performance depending on the rating system the agency uses, and quality step increases are also more strongly linked to performance.

Findings of selected pay and total compensation (pay and benefit) comparison studies varied due to different approaches, methods, and data. Regarding their pay analysis, the studies' conclusions varied on which sector had the higher pay and the size of pay disparities. However, the overall pay disparity number does not tell the whole story; each of the studies that examined whether differences in pay varied among categories of workers, such as highly or less educated workers or workers in different occupations, found such variations. Three approaches were used to compare pay:

- **human capital approach** (3 studies)—compares pay for individuals with various personal attributes (e.g., education, experience) and other attributes (e.g., occupation, firm size);
- **job-to-job approach** (2 studies)—compares pay for similar jobs of various types based on job-related attributes such as occupation, does not take into account the personal attributes of the workers currently filling them; and
- **trend analysis approach** (1 study)—illustrates broad trends in pay over time without controlling for attributes of the workers or jobs.

When looking within and across the studies, it is important to understand the studies' differences in approach, methods, and data because they impact how the studies can be interpreted. The differences among the selected studies are such that comparing their results to help inform pay decisions is potentially problematic. Given the different approaches of the selected studies, their findings should not be taken in isolation as the answer to how federal pay and total compensation compares with other sectors.

Contents

Letter		1
	Background	5
	GS Pay Adjustments Can Be Determined through FEPCA Process or Set Directly by Congress	9
	Pay Increases and Awards for GS Employees Vary in their Links to Individual Performance	14
	Findings of Selected Pay and Total Compensation Comparison Studies Varied Due to Different Approaches, Methods, and Data	22
	Concluding Observations	31
	Agency and Third-Party Comments	32
Appendix I	Objectives, Scope, and Methodology	34
Appendix II	Implementation of Locality Pay	41
Appendix III	Information on the Selected Studies' Data Sources and Methodologies for Analyzing Pay and Total Compensation	47
Appendix IV	Comments from the Project On Government Oversight	59
Appendix V	GAO Contact and Staff Acknowledgments	60
Tables		
	Table 1: Eligibility Requirements for Ratings-Based Pay Increases and Awards for GS Employees	15
	Table 2: Selected Studies' Findings on Pay	23
	Table 3: Approaches Used by Selected Studies in Analyzing Pay	24
	Table 4: Comparisons among the Selected Studies' Methodologies	26
	Table 5: Selected Studies' Findings on Total Compensation (Pay and Benefits)	28
	Table 6: Selected Studies' Data and Methodologies Used in Analyzing Pay	47

Table 7: Selected Studies' Data and Methodologies Used in Analyzing Total Compensation (Pay and Benefits)	54
Table 8: Data Sources Used in Analyzing Compensation	57

Figures

Figure 1: Annual Pay for a GS-11, Step 1 Employee in Selected Pay Localities, 2012	8
Figure 2: Congress and the President Established Across-the-Board and Locality Pay Adjustments, 2007 to 2012	13
Figure 3: Average Ratings-Based Award Amounts in Fiscal Year 2011, by Rating, 5-level Rating System	17
Figure 4: Ratings-Based Pay Increases and Awards for GS Employees for Fiscal Year 2011	19
Figure 5: Annual Pay for a GS-11 Employee in San Francisco and Rest of U.S. Pay Localities and Reported Nonfederal Equivalents, 1994 to 2011	42
Figure 6: Surveys and Models for Calculating Locality Increases Have Changed Several Times from 1990 to 2011	44

Abbreviations

BEA	Bureau of Economic Analysis
BLS	Bureau of Labor Statistics
CBO	Congressional Budget Office
CPDF	Central Personnel Data File
CPS	Current Population Survey
ECI	Employment Cost Index
EHRI-SDM	Enterprise Human Resources Integration-Statistical Data Mart
FEPCA	Federal Employees Pay Comparability Act of 1990
GL	GS pay plan that covers law enforcement officers who receive special base rates at grades 3-10 under section 403 of FEPCA
GM	GS pay plan that covers employees covered by the Performance Management and Recognition System termination provisions

GP	GS pay plan that covers GS physicians and dentists paid market pay
GR	GS pay plan that covers physicians and dentists covered by the Performance Management and Recognition System termination provisions paid market pay
GS	General Schedule
NCS	National Compensation Survey
NIPA	national income and product accounts
OCSP	Occupational Compensation Survey Program
OES	Occupational Employment Statistics
OMB	Office of Management and Budget
OPM	Office of Personnel Management
PATCO	Professional, Administrative, Technical, Clerical, and Other White-Collar
POGO	Project On Government Oversight
PPA	President's Pay Agent

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G A O

Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

June 22, 2012

The Honorable Darrell Issa
Chairman
Committee on Oversight and Government Reform
House of Representatives

The Honorable Dennis Ross
Chairman
Subcommittee on Federal Workforce, U.S. Postal Service and Labor
Policy
Committee on Oversight and Government Reform
House of Representatives

Skilled federal workers are integral to the successful operation of every government function. They are law enforcement officers, engineers, program managers, scientists, clerks, and all the other workers who carry out the federal government's business. In 2011, there were approximately 2.2 million federal civilian workers comprising about 1.6 percent of the U.S. workforce, and civilian personnel costs were about \$220 billion, comprising about 6 percent of the total federal budget.¹ A careful consideration of federal workers' pay is an essential part of fiscal and operational stewardship and is necessary to support the recruitment and retention of a competent, successful workforce. It is the policy of Congress that pay for federal workers in the General Schedule (GS), the pay system covering the majority of federal workers,² be in line with pay for comparable nonfederal workers.

The composition of the federal workforce has changed over the past 30 years, with the need for clerical and blue collar roles diminishing and

¹Numbers of federal civilian employees and personnel costs are based on the Office of Personnel Management's (OPM) Central Personnel Data File (CPDF). The CPDF data we analyzed include most executive branch civilian employees, and do not include the U.S. Postal Service, judicial branch employees, intelligence agencies, nor most legislative branch employees. Personnel costs include both pay and benefits for full-time, part-time, and temporary workers. OPM has transitioned from the CPDF to the Enterprise Human Resources Integration-Statistical Data Mart (EHRI-SDM) as of fiscal year 2010, but CPDF still exists as a quarterly extract from the EHRI-SDM. We used these quarterly extracts for our analysis.

²Excluding the U.S. Postal Service.

professional, administrative, and technical roles increasing. As a result, today's federal jobs require more advanced skills at higher grade levels than federal jobs 30 years ago. Additionally, federal jobs, on average, require more advanced skills and degrees than private sector jobs. This is because a higher proportion of federal jobs than nonfederal are in skilled occupations such as science, engineering, and program management, while a lower proportion of federal jobs than nonfederal are in occupations such as manufacturing, construction, and service work. The result is that the federal workforce is on average more highly educated than the private sector workforce.

Given the changes in the federal workforce over the last 30 years, there has been growing interest in reexamining the federal pay system—how pay is determined and how comparisons with other sectors are made. Specifically, we have reported on the importance of considering the skills, knowledge, and performance of employees as well as the local labor market in making pay decisions.³ The President's Pay Agent, the entity responsible for recommending federal locality pay adjustments to the President, has recommended that the underlying model and methodology for estimating pay gaps be reexamined to ensure that private sector and federal sector pay comparisons are as accurate as possible.

The Subcommittee on Federal Workforce, U.S. Postal Service and Labor Policy held a hearing in March 2011 on the issue of comparability in pay and benefits between the federal and nonfederal workforces.⁴ The research presented at the hearing showed varying findings on the gap in pay between federal and private sector workers as estimated by outside organizations as well as the gap between federal and nonfederal workers as estimated by the President's Pay Agent. The outside organizations' studies also varied in their findings on the gap in total compensation (pay plus benefits).⁵ The hearing raised questions about how the

³GAO, *Human Capital: Symposium on Designing and Managing Market-Based and More Performance-Oriented Pay Systems*, [GAO-05-832SP](#) (Washington, D.C.: July 27, 2005).

⁴*Are Federal Workers Underpaid: Hearing Before the House Subcommittee On Federal Workforce, U.S. Postal Service and Labor Policy of the Committee on Oversight and Government Reform*, 112th Cong. (2011).

⁵The President's Pay Agent Report addresses only pay. It does not analyze benefits. 5 U.S.C. § 5304(d)(1).

methodologies used by the various authors differed and how these differences affected their overall findings.

Accordingly, at your request, this report examines (1) how annual pay adjustments for the GS system are determined; (2) the extent to which the pay increases and awards available to GS employees recognize individual performance, and how the Office of Personnel Management (OPM) provides oversight of pay increases and awards; and (3) how selected studies compare federal and private sector pay and total compensation and the factors that may account for the different findings.

To examine how GS annual across-the-board and locality pay adjustments are determined, we reviewed legislation, OPM regulations, executive orders, Presidents' alternative pay plans, President's Pay Agent Reports, Federal Salary Council recommendations, OPM and Bureau of Labor Statistics (BLS) documents and reports, and reports by the Congressional Budget Office (CBO) and Congressional Research Service.⁶ We also examined how the methodology for determining locality pay has changed since the start of locality pay to the present. We interviewed selected members of the Federal Salary Council and its working group; the Council is to be made up of six representatives of federal employee groups and three experts in labor relations, and makes annual recommendations to the President's Pay Agent.⁷ We interviewed BLS officials, OPM officials who are knowledgeable about federal pay policy and serve as staff to the President's Pay Agent, and people with expertise in compensation issues including former federal officials experienced with pay and benefits issues.

To determine the extent to which pay increases and awards recognize individual performance, we analyzed legislation and OPM regulations on pay increases and awards available to employees in the GS pay system and identified those pay increases and awards that are determined in part by an individual's performance rating as measured by the agency's performance appraisal system. We analyzed data for employees in the GS pay plan in the aggregate on the number, percentage, and dollar amount of selected pay increases and awards; the amount of these

⁶The CBO reports referred to here do not include the January 2012 study we review in detail later in this report.

⁷Federal Salary Council members are selected by the President.

increases and awards as a portion of GS payroll (total adjusted basic pay for all employees in the GS pay plan); and the distribution of these increases and awards by rating pattern and rating levels from OPM's Central Personnel Data File (CPDF) for fiscal year 2011. To help determine the reliability and accuracy of the CPDF data elements used, we checked the data for reasonableness and the presence of any obvious or potential errors in accuracy and completeness; reviewed past GAO analyses of the reliability of CPDF data; and interviewed OPM officials knowledgeable about the data. We believe the CPDF is sufficiently reliable for the purpose of this report. To describe how OPM provides oversight of pay increases and awards, we collected and analyzed OPM guidance to agencies including regulations, memoranda, reports, fact sheets, and frequently asked questions. We also interviewed OPM officials responsible for federal pay policies to discuss the implementation of the guidance and monitoring of agencies' use of increases and awards through reports and other means; and interviewed OPM officials responsible for conducting human capital management evaluations at agencies on pay increases and awards and the overall GS pay system, among other things.

To review selected studies that compare federal and private sector pay and total compensation and describe factors that help account for the different study findings, we conducted a detailed literature review of academic journals, agency and organization publications, and other sources and applied three criteria to the results, selecting five studies that: (1) were published/issued since 2005; (2) include original analysis; and (3) have the explicit and primary purpose of comparing federal and private sector pay and total compensation.⁸ After our literature review was completed, CBO issued a study comparing federal and private sector compensation. We included this study in our review because it met our criteria. That brought the total number of selected studies up to six. We did not examine the reliability or the appropriateness of the approaches, methods, and data used by the studies, and we did not exclude any study on the basis of methodological quality. We reviewed the studies, summarized each study's methodologies and key findings, and confirmed

⁸We decided to include the President's Pay Agent Report as one of our selected studies given that it plays a major role in the overall discussion of federal pay comparability. The Pay Agent compares nonfederal (private sector, state government, and local government) and federal pay on an annual basis for locality pay setting. See app. I for additional details on the selected studies.

the accuracy of our summaries with the authors. We compared and contrasted the differences between the approaches, methodologies, and data sources of the selected studies. We interviewed the selected study authors to obtain their views on the various methodologies and data sources available, why they chose the ones they used, and their conclusions based on their work. We interviewed a number of individuals chosen for their expertise in compensation issues to obtain their views on the data sources for analyzing compensation and to provide a general context for the issues involved in comparing federal and private or nonfederal pay and total compensation. The findings regarding the selected studies are not based on input from these individuals. We interviewed officials from the Bureau of Economic Analysis (BEA), BLS, and the U.S. Census Bureau to discuss how these agencies' data are used to measure federal and private or nonfederal pay, compensation, or benefits, and limitations of their data or surveys. We also interviewed officials from OPM involved in federal pay policies. (See app. I for a more detailed discussion of our objectives, scope, and methodology.)

We conducted this performance audit from July 2011 to June 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

The GS pay system covered 69 percent of federal civilian workers in 2011, with compensation costing about \$147 billion (about 67 percent of total federal civilian compensation of about \$220 billion).⁹ The GS workforce is divided into 15 pay grades, with 10 rates of pay (referred to as steps) within each grade. Agencies use a uniform set of classification standards to determine grade levels for their positions organized within five occupational categories—Professional, Administrative, Technical,

⁹Other pay systems include the Federal Wage System (also known as the Prevailing Rate System), which covers about 9 percent of federal workers in mostly blue collar positions; the Senior Executive Service pay system for senior level managers; and other systems that are specific to agencies, such as the federal financial regulatory agencies' pay systems. The costs and percentages presented here are based on OPM's CPDF. Total compensation includes both pay and benefits.

Clerical, and Other White-Collar (PATCO). The GS system of classification was established by the Classification Act of 1949 in response to calls for a modernized system to ensure equity in pay setting.¹⁰ Until the late 1960s, general pay adjustments for federal employees were made through acts of Congress.¹¹ The Federal Pay Comparability Act of 1970 permanently authorized the President to adjust GS¹² pay rates annually, and established a system for recommending adjustments with the goal of increasing federal pay to be comparable with the private sector; however, we previously found that the gap between average federal and private sector salaries for similar jobs continued after implementation of the act because the recommended adjustments were not always made.¹³

The Federal Employees Pay Comparability Act of 1990 (FEPCA) created annual locality-based pay adjustments for GS employees to reduce reported gaps between federal and nonfederal pay in metropolitan areas.¹⁴ In addition, FEPCA maintained an annual across-the-board pay adjustment that is the same for each employee to keep the GS base pay schedule in line with salary growth in the general labor market, similar to what had already existed under the 1970 act.¹⁵

¹⁰Pub. L. No. 429, 63 Stat. 954 (Oct. 28, 1949).

¹¹In 1967, Congress authorized the President to make adjustments in federal salary rates for 1968 and 1969. Section 212 of the Federal Salary Act of 1967, Pub. L. No. 90-206, title II, 81 Stat. 624, 634 (Dec. 16, 1967).

¹²This authority also applied to other pay systems, including the Foreign Service pay system.

¹³GAO, *Recruitment and Retention: Inadequate Federal Pay Cited as Primary Problem by Agency Officials*, [GAO/GGD-90-117](#) (Washington, D.C.: Sept. 11, 1990).

¹⁴Pub. L. No. 101-509, title V, § 529, 104 Stat. 1389, 1427-1469 (Nov. 5, 1990). GS employees permanently stationed in foreign countries do not receive locality pay. GS employees in Alaska, Hawaii, and U.S. territories and possessions began receiving locality pay in 2010. Locality pay may be extended to certain categories of non-GS employees by the President's Pay Agent.

¹⁵Other statutory pay systems such as the Foreign Service pay system provide the same across-the-board increase to employees as the GS pay system.

Before FEPCA, federal employees doing the same job at the same level anywhere in the country were paid the same amount.¹⁶ However, there was a growing concern that it was difficult to recruit and retain skilled federal employees in areas with higher nonfederal wages. We concluded that locality-based pay adjustments were necessary.¹⁷ FEPCA established locality pay, and the President's Pay Agent designated pay localities based on Office of Management and Budget (OMB) Metropolitan Statistical Areas.¹⁸ FEPCA's goal was to reduce the gap between federal and nonfederal pay in each locality, as measured by BLS data and reported by the President's Pay Agent, to 5 percent over the course of 9 years. This goal was not met, but locality pay increases have been provided every year since locality pay was implemented in 1994, except during the pay freeze in 2011 and 2012.¹⁹ According to OPM, locality pay is now a broadly accepted practice in federal pay administration. See app. II for more information on the implementation of locality pay.

Figure 1 illustrates the extent to which locality pay has been implemented for a representative employee. The annual pay (base plus locality) in 2012 for an employee at GS-11 (approximately the midpoint grade level), step 1 is shown for selected pay localities. Examples of positions that a GS-11 employee might hold are Administrative Officer, Scientist,

¹⁶An exception was employees receiving higher special rates to address specific recruitment and retention problems.

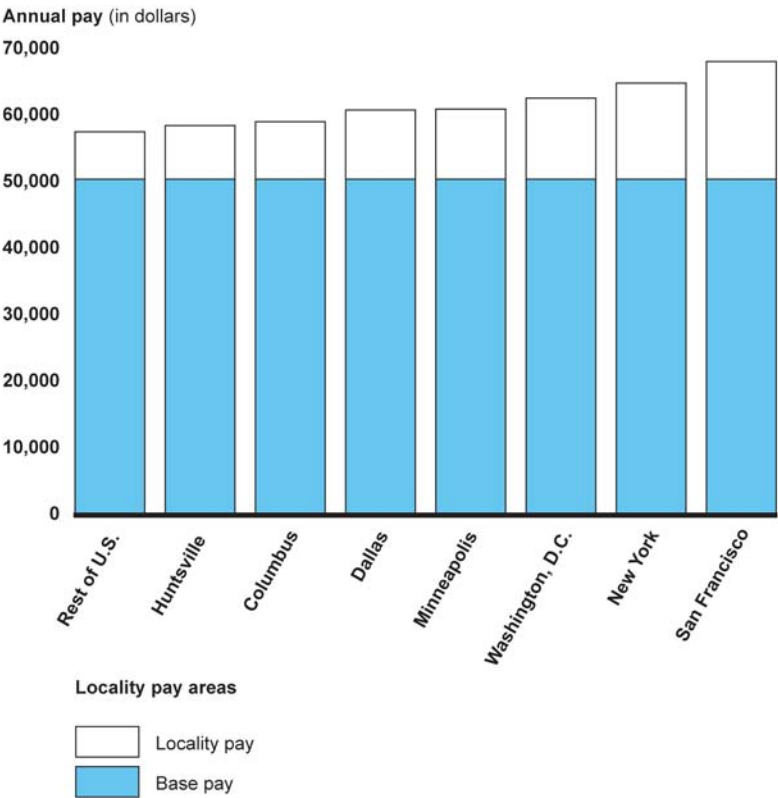
¹⁷[GAO/GGD-90-117](#).

¹⁸The Federal Salary Council has from time to time recommended criteria for selecting additional pay areas when BLS had funding for more surveys and also recommended criteria for including additional areas in existing locality pay areas. The Pay Agent makes the final decisions on pay areas. The current criteria to include a multi-county metropolitan area in an adjacent locality pay area are based on the number of GS employees and the level of commuting between the two areas. There were 28 pay localities (27 metropolitan areas plus the Rest of U.S.) in 1994 when the first locality payments were made. There have been several additions and subtractions since then. Under FEPCA, the establishment or modification of any pay locality boundary is to be achieved through regulations promulgated in accordance with notice and comment requirements. 5 U.S.C. § 5304(f)(2).

¹⁹There were no across-the-board or locality pay rate increases provided for 2011 and 2012. See section 147 of the Continuing Appropriations Act, 2011, Pub. L. No. 111-242, 124 Stat. 2607 (Sept. 30, 2010) as added by section 1(a)(2) of the Continuing Appropriations and Surface Transportation Extensions Act, 2011, Pub. L. No. 111-322, 124 Stat. 3518 (Dec. 22, 2010). Federal employees continued to receive within-grade step increases as appropriate.

Paralegal Specialist, Accountant, Engineer, Medical Records Administrator, Nurse Specialist, and Information Technology Specialist. There were 34 pay localities in the United States in 2012, composed of the states of Alaska and Hawaii, 31 metropolitan areas, and a residual locality called “Rest of U.S.” that includes all other areas in the United States and its territories and possessions. Rest of U.S. was the lowest-paying locality in 2012, with a GS-11, step 1 earning \$57,408, and San Francisco was the highest, with a GS-11, step 1 earning \$67,963. We selected additional localities with various pay rates and population sizes and from various regions to create figure 1.

Figure 1: Annual Pay for a GS-11, Step 1 Employee in Selected Pay Localities, 2012



Source: GAO analysis of OPM data.

GS Pay Adjustments Can Be Determined through FEPCA Process or Set Directly by Congress

Across-the-Board Adjustments Are Usually Based on Private Sector Salary Growth

Across-the-board adjustments are designed to keep the GS base pay schedule in line with salary growth in the general labor market. FEPCA specifies that unless the President provides for alternative pay adjustments, across-the-board pay adjustments are to be determined using a simple formula: Pay rates are to be increased by the 12-month percentage increase in the wage and salary component of the Employment Cost Index (ECI) for private sector workers, minus one-half of one percentage point. For example, the ECI reference period for the January 2013 increase is the 12-month period ending September 2011. The ECI shows that during that period, pay for private sector workers rose by 1.7 percent.²⁰ Therefore, the across-the-board increase for 2013 would be 1.2 percent. The ECI, an index compiled by the BLS and published quarterly, measures percentage changes in wages and salaries for private sector employees.

As specified in FEPCA, the President may decide to either provide across-the-board pay adjustments based on this calculation, or provide alternative pay adjustments based on national emergency or serious economic conditions affecting the general welfare.²¹ Additionally, Congress may legislate an increase that is different from the formula result or the President's alternative plan; this is not part of the process specified by FEPCA. The FEPCA formula increase has gone into effect in 12 of the 19 years since 1994; the largest increase was 3.8 percent.²² An

²⁰The ECI for September 2011 included a sample of about 12,600 private sector establishments.

²¹In evaluating economic conditions, the President is to consider a range of economic measures, including (but not limited to) Gross National Product, the unemployment rate, the budget deficit, and the Consumer Price Index.

²²We started our analysis with 1994, the first year in which the FEPCA formula, unmodified, was used.

amount lower than the formula amount went into effect in the other 7 years due to President's alternative pay plans and laws passed by Congress.²³ The smallest increase was 0 percent, during the freeze on annual pay adjustments in 2011 and 2012.²⁴

Locality Adjustments Are Usually Set by Congress

Locality adjustments are designed to reduce the gap between federal and nonfederal pay in each locality to no more than 5 percent based on surveys to be conducted by BLS. FEPCA specifies that locality pay adjustments are to be recommended by a Pay Agent designated by the President, which is to consider the views of employee organizations:

- The **President's Pay Agent** recommends annual comparability payment amounts, establishes and modifies pay localities as it considers appropriate, and submits an annual report to the President on these items. The Secretary of Labor and the Directors of OMB and OPM serve as the Pay Agent. In making its recommendations, the President's Pay Agent considers the views and recommendations of a Federal Salary Council and other employee organizations.
- The **Federal Salary Council** makes annual recommendations to the President's Pay Agent on locality pay adjustments, including the establishment or modification of pay localities, the coverage of salary surveys used to set locality pay, the process for making pay comparisons, and the level of comparability payments that should be made. The Council is to be comprised of three experts in labor relations and pay policy and six representatives of employee organizations representing large numbers of GS employees.²⁵

²³In 1994, 2010, 2011, and 2012, the lower amount was the result of a law passed by Congress. In 1996 and 1998 the lower amount was due to the President's alternative pay plan. In 1995, a law passed by Congress provided for the same lower amount as provided for in the President's alternative pay plan.

²⁴See section 147 of the Continuing Appropriations Act, 2011, Pub. L. No. 111-242, 124 Stat. 2607 (Sept. 30, 2010) as added by section 1(a)(2) of the Continuing Appropriations and Surface Transportation Extensions Act, 2011, Pub. L. No. 111-322, 124 Stat. 3518 (Dec. 22, 2010).

²⁵5 U.S.C. § 5304(e). In 2011, the employee organizations represented on the Federal Salary Council were the American Federation of Government Employees, the National Treasury Employees Union, the National Federation of Federal Employees, and the Fraternal Order of Police.

Current Process for Comparing Federal and Nonfederal Pay

The Pay Agent is charged with determining the disparities between federal and nonfederal pay in each locality. It measures federal pay based on OPM records that identify GS employees by occupation and grade level, and nonfederal pay based on BLS data.

The Pay Agent asks BLS to provide a statistical estimate of nonfederal pay rates for each locality by GS grade level and occupation (with occupations classed in five broad occupational groups - Professional, Administrative, Technical, Clerical, and Other White-Collar). BLS provides these estimates based on its National Compensation Survey (NCS), using statistical modeling to fill in some of the data.

The Pay Agent averages these pay rates together, weighting the averages by equivalent federal GS employment levels. For example, if 50 percent of federal workers in a given locality have Administrative jobs, then the average pay for nonfederal Administrative workers in that locality are weighted to account for 50 percent of the pay estimate for that locality. This is to ensure that the Pay Agent is comparing "apples to apples," i.e. comparing similar types of jobs with each other. The Pay Agent compares the resulting average nonfederal pay estimate for each locality with the average federal pay for each locality to arrive at the pay disparities. The Pay Agent bases its locality pay increase recommendations to the President on these disparities.

To recommend locality pay adjustments, the President's Pay Agent compares the annual GS base pay rates of federal workers in each area to the annual pay rates of nonfederal workers in the same area for the same levels and types of work. The sidebar provides details on this process. The target locality pay is the amount that reduces these differences to 5 percent.

The surveys and models used for making these pay comparisons have changed somewhat between the passage of FEPCA in 1990 and the 2011 President's Pay Agent Report (which recommends pay adjustments for 2013 and is the most current report available). Some changes were initiated by BLS, and some changes were made in response to concerns expressed by the Federal Salary Council or President's Pay Agent. For example, BLS changed the survey used to measure nonfederal pay in 1996; the Federal Salary Council and President's Pay Agent expressed concerns, and BLS worked together with OPM and OMB to improve the suitability of the new survey for recommending locality payments. Improvements were phased in from 2002 to 2011. Changes are summarized in app. II.

As specified in FEPCA and similar to the process for across-the-board adjustments, the President may decide to either provide locality pay adjustments based on the Pay Agent's recommendation, or provide for alternative pay adjustments based on national emergency or serious economic conditions affecting the general welfare. Additionally, Congress may legislate an average percent increase that is different from the Pay Agent's recommendation or the President's alternative plan; this is not part of the process specified by FEPCA.

For 1994, the first year that locality payments were made, FEPCA specified that the locality increase should be not less than one fifth of the amount needed to reduce the pay disparity to 5 percent.²⁶ This amount, providing a 3.95 percent average locality pay rate for the average GS employee as recommended by the Pay Agent, went into effect. In subsequent years through 2012, the effective increase has usually been

²⁶FEPCA specified that locality pay be phased in over 9 years. In 1994, the gap between federal and nonfederal pay in each locality would be reduced by two-tenths of the amount needed to reduce the pay disparity to 5 percent; in 1995, by three-tenths of the amount needed; etc.

far less than the one recommended by the Pay Agent, either due to a President's alternative pay adjustment or to a law passed by Congress.²⁷

Nonetheless, some locality pay increase has been provided every year since locality pay was implemented in 1994 (except during the pay freeze in 2011 and 2012), and reported disparities between federal and nonfederal pay by locality have been reduced. The President's Pay Agent reported that pay disparities were lower in 2011 than in 1994 in 16 of the 21 pay localities that existed in both of those years. Federal Salary Council members and OPM officials we spoke with said that FEPCA was successful in its goal of improving federal pay setting for large metropolitan areas by more closely aligning pay to local labor markets.

Figure 2 summarizes pay adjustments during the past 6 years, illustrating the differences between the President's Pay Agent recommendations and the final effective amounts. These differences were driven primarily by locality pay, since the across-the-board adjustments required under the FEPCA formula were smaller and were provided in some years, while the recommended locality adjustments were larger and were not provided. For example, for 2007, the President's Pay Agent recommended a 1.7 percent across-the-board increase to comply with the formula in FEPCA, and a 7 percent average locality increase based on BLS salary survey data. The President provided for the 1.7 percent across-the-board increase but limited the average locality increase to the alternative amount of 0.5 percent.

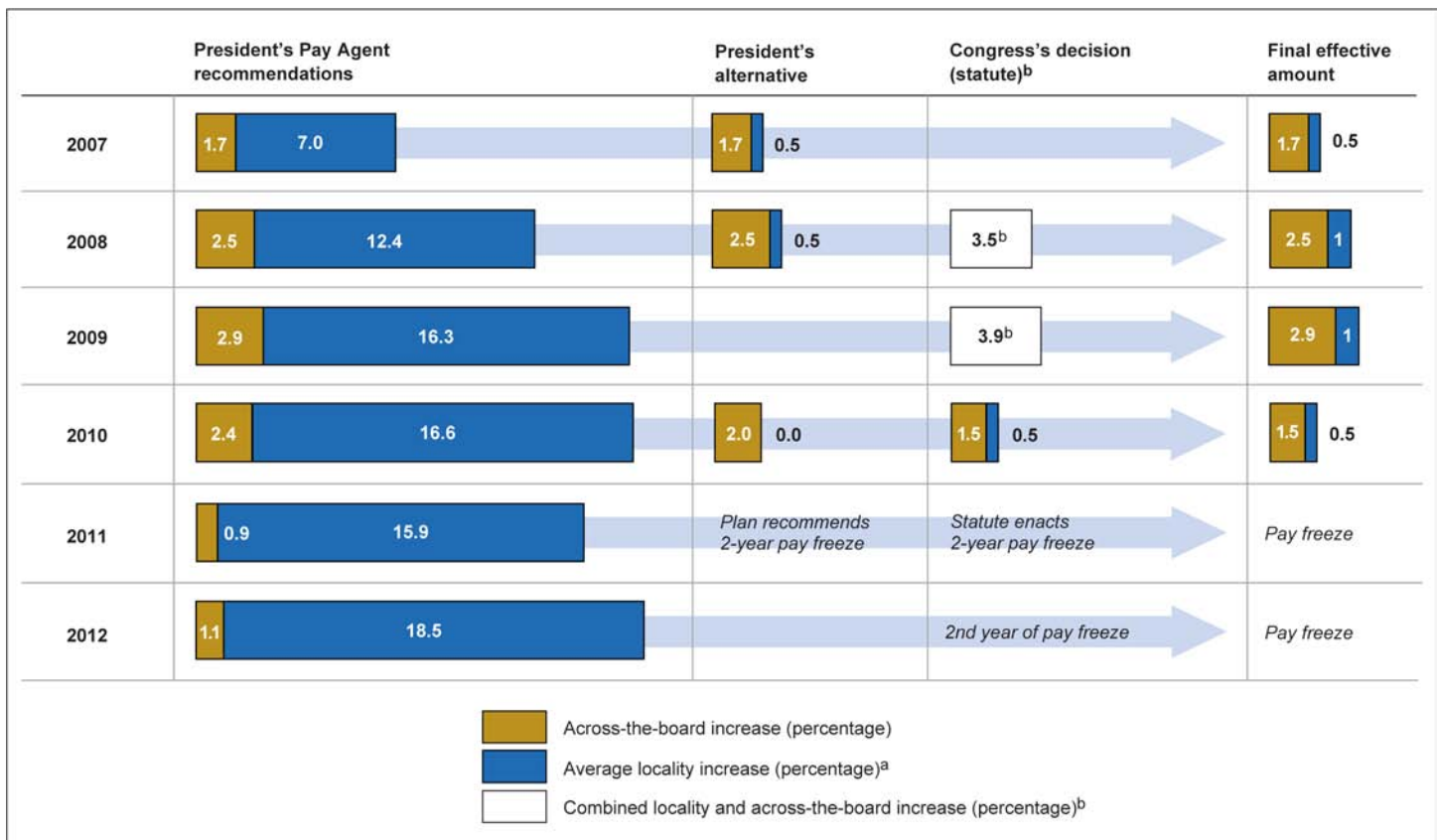
As another example, for 2012, the FEPCA process specified a 1.1 percent across-the-board increase and an average 18.5 percent locality increase, but annual pay adjustments were frozen instead.²⁸ The Pay Agent had reported that in 2010 (the reference year for setting 2012 pay), taking both across-the-board and locality pay into account, the average federal-nonfederal pay gap was 24 percent. The approximately 20 percent overall average increase recommended by the Pay Agent for

²⁷The recommended amount was provided in the first year and 25 percent of the recommended amount was provided in the second year. Less than 15 percent of the recommended amount has been provided each year after that.

²⁸See section 147 of the Continuing Appropriations Act, 2011, Pub. L. No. 111-242, 124 Stat. 2607 (Sept. 30, 2010) as added by section 1(a)(2) of the Continuing Appropriations and Surface Transportation Extensions Act, 2011, Pub. L. No. 111-322, 124 Stat. 3518 (Dec. 22, 2010).

2012 would have lowered the pay disparity to FEPCA's target of 5 percent.

Figure 2: Congress and the President Established Across-the-Board and Locality Pay Adjustments, 2007 to 2012



Source: GAO analysis of legislation and President's Pay Agent, Executive Office of the President, and OPM data.

^aAverage locality increase: The average percentage by which a GS employee's salary would increase from the previous year due to locality pay. Employees in localities with below-average pay gaps would receive lower locality adjustments, and those in localities with above-average pay gaps would receive higher adjustments.

^bIn some years, Congress specified an overall percentage increase, allowing the President to decide how much would be for locality and how much for across-the-board.

Pay Increases and Awards for GS Employees Vary in their Links to Individual Performance

The pay increases and awards available to GS employees are designed to recognize individual performance to varying degrees. Across-the-board and locality pay increases, which are given to all covered employees nearly every year, are not linked to performance at all. Awards such as suggestion/invention awards and superior accomplishment awards are designed to recognize performance without being linked specifically to performance ratings.²⁹

Three pay increases and monetary awards available to GS employees are linked to performance ratings as determined by agencies' performance appraisal systems:

- **Within-grade increases** are periodic increases in a permanent employee's rate of basic pay from one step of a grade to the next higher step within the grade.³⁰
Ratings-based cash awards are lump sum cash payments that are designed to recognize performance.³¹
- **Quality step increases** are faster-than-normal step increases that are designed to recognize excellence in performance.³²

Table 1 describes these pay increases' and awards' eligibility requirements, which include a certain level of performance, frequency limits, and agency-specified criteria.³³ As outlined in OPM regulations, agencies' performance appraisal systems can have varying ranges of summary performance rating levels—ranging from a pass/fail system with

²⁹Agencies are authorized to make these type of awards pursuant to 5 U.S.C. § 4503. OPM regulations provide that agencies may grant awards to employees or groups of employees in the form of cash, honorary or informal recognition, or time off. 5 C.F.R. § 451.104(a). The President is also authorized to make awards based on a suggestion, invention, or superior accomplishment or an exceptionally meritorious special act pursuant to 5 U.S.C. § 4504.

³⁰Agencies are required to provide within-grade increases to eligible employees under 5 U.S.C. § 5335. An agency decision to deny a within-grade increase is ultimately appealable by the employee to the Merit Systems Protection Board.

³¹Agencies are permitted to provide ratings-based cash awards to eligible employees under 5 U.S.C. § 4505a.

³²Agencies are permitted to provide quality step increases to eligible employees under 5 U.S.C. § 5336.

³³Factors that are to affect GS employee eligibility for these pay increases and awards are specified in legislation and regulations and clarified in OPM guidance.

two summary rating levels to a system with five summary rating levels.³⁴ All the systems used by the agencies include level 3, “fully successful,” which is the pass level for a pass/fail system.

Table 1: Eligibility Requirements for Ratings-Based Pay Increases and Awards for GS Employees

Increase or award^a	Performance rating required	Frequency limit or waiting period	Agency-specified criteria
Within-grade increase	At least “fully successful” (level 3).	One to 3 years’ waiting period (with longer waiting periods at higher step rates). A quality step increase does not reset the waiting period but can move an employee to a step rate with a longer waiting period.	Not applicable. Agencies are required to provide within-grade increases to all eligible employees.
Ratings-based cash award	“Fully successful” (level 3) or higher (larger awards for higher ratings).	Frequency limit, 1 per year. ^b	Yes, performance-related and other criteria, such as consideration of other recognition recently received.
Quality step increase	The highest possible rating in the agency’s system. ^c	Waiting period, 1 year since the last quality step increase.	Yes, performance-related and other criteria. ^c

Source: GAO analysis of legislation, regulations, and OPM guidance.

^aGS employees may be eligible to receive within-grade and quality step increases as well as ratings-based cash awards in the same year depending on their agencies’ criteria and the applicable waiting periods for within-grade increases.

^bPer OPM guidance, ratings-based cash awards recognize an employee’s performance over an entire rating period. Generally, performance rating periods should be 12 months. 5 C.F.R. § 430.206(a)(2).

^cEmployees not covered by 5-level systems (where “outstanding” is the highest level) must demonstrate sustained performance of high quality significantly above the “fully successful” level as determined under performance-related criteria established by the agency. 5 CFR 531.504(b).

In practice, based on our analysis of CPDF data from fiscal year 2011, the degree to which individual performance drove receipt of these pay increases and awards for employees in the GS pay plan varied. Of the three pay increases and awards we analyzed, within-grade increases

³⁴According to OPM regulations and guidance the five levels are defined as: level 1—unacceptable, level 2—level between fully successful and unacceptable, level 3—fully successful or equivalent, level 4—level between outstanding and fully successful, and level 5—outstanding or equivalent. 5 C.F.R. § 430.208. OPM defines level 3 as “fully successful or equivalent” and level 5 as “outstanding or equivalent,” allowing agencies to use different names for the same numerical performance ratings. For simplicity, we will use the terms “fully successful” and “outstanding” when referring to levels 3 and 5 for the remainder of this analysis.

were the least strongly linked to performance. Ratings-based cash awards were more strongly linked to performance depending on the rating system the agency used, and quality step increases were also more strongly linked to performance.

Within-grade increases were the least strongly linked to performance of the three pay increases and awards we analyzed, in accordance with their design. As noted in table 1, agencies are required to provide within-grade increases to employees whose performance is at least “fully successful” and who have finished their waiting period. Over 99 percent of employees in the GS pay plan³⁵ received performance ratings at or above “fully successful” in fiscal year 2011. Thirty-nine percent received within-grade increases, comprising nearly all the employees who completed their waiting period.

Ratings-based cash awards were more strongly linked than within-grade increases to performance. All GS pay plan employees may receive ratings-based cash awards every year (unlike within-grade increases), so frequency limits are not a primary determinant of who receives them. In fiscal year 2011, the degree of linkage of awards with performance ratings varied by the type of appraisal system used by the agency.

In fiscal year 2011, 81 percent of employees in the GS pay plan were covered by 5-level rating systems and other systems that allowed for distinctions between “fully successful” and higher levels of performance.³⁶ Ratings-based cash awards for these employees were given at higher

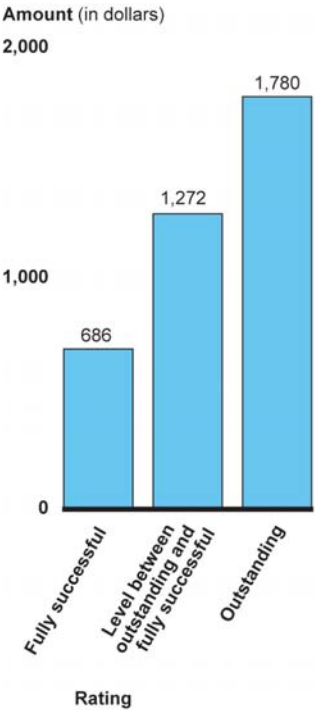
³⁵These data and other data throughout this section are based on our analysis of OPM’s CPDF for employees in the GS pay plan for fiscal year 2011. For the analysis of employees’ ratings throughout this section, we excluded employees who were coded in CPDF as “not rated.” The not rated code applies to an employee who has not yet received a rating of record under the agency performance appraisal system (e.g., someone newly hired). We also excluded employees whose ratings were missing due to data errors.

³⁶In addition to 5-level systems (which cover 63 percent of GS employees), the following systems allow for distinctions between “fully successful” and higher levels of performance: systems with rating levels 1, 3, and 5 (covering 7 percent of GS employees); systems with levels 1, 3, and 4 (covering less than 1 percent of GS employees); systems with levels 1, 3, 4, and 5 (covering 5 percent of GS employees); systems with levels 1, 2, 3, and 5 (covering 6 percent of GS employees); and systems with levels 1, 2, 3, and 4 (covering less than 1 percent of GS employees). For data regarding rating level systems, we excluded employees who were coded as not being covered by a performance appraisal system and generally do not have their performance appraised. We also excluded employees whose rating patterns were missing from the data due to data errors.

rates to employees with better performance. For example, for the 5-level system, which covered 63 percent of GS employees, awards were given to 65 percent of employees with “outstanding” ratings, 58 percent of employees with ratings “between outstanding and fully successful,” and 24 percent of employees with “fully successful” ratings. Along with the performance rating received, agency criteria were used to determine who received awards. As noted in table 1, an agency should identify any other criteria to be considered when making award recommendations and decisions, including any other awards or personnel actions that should be taken into consideration such as time off, a quality step increase, or a recent promotion.

In accordance with OPM regulations, employees with higher ratings are to receive larger ratings-based awards, and award patterns reflected this distinction in 2011, as shown in figure 3. Employees who received “outstanding” ratings within the 5-level system received the largest awards.

Figure 3: Average Ratings-Based Award Amounts in Fiscal Year 2011, by Rating, 5-level Rating System



Source: GAO analysis of OPM data.

In fiscal year 2011, about 19 percent of employees in the GS pay plan were covered by a pass/fail rating system or another system that did not allow for distinctions in performance above the “fully successful” level. Over 99 percent of employees in these systems received a “fully successful” rating in fiscal year 2011, while only 31 percent received a ratings-based award, meaning that most decisions not to provide awards were made based on other criteria than ratings. Performance ratings and agency criteria, including performance-related criteria, were used to determine who received awards.

Quality step increases were also more strongly linked to performance than within-grade increases. As shown in table 1, GS employees must perform at their agency’s highest possible level to be eligible to receive a quality step increase. About 49 percent of employees received the highest possible rating their agency’s system allowed in fiscal year 2011.³⁷ Of those employees, about 7 percent received a quality step increase. Unlike within-grade increases, the waiting period for quality step increases is 1 year for all employees, eliminating the waiting period as a primary determinant for receiving quality step increases; rather, decisions were made based on performance rating and agency criteria, including performance-related criteria.

Figure 4 illustrates the percentage of employees receiving each type of increase and award, the average amounts of the increases and awards in dollars and as a percent of the recipient’s pay, and the cost to the government of ratings-based pay increases and awards for GS employees for fiscal year 2011.

³⁷The highest possible rating could have been “outstanding,” “fully successful,” or the level in between depending on the agency’s appraisal system.

Figure 4: Ratings-Based Pay Increases and Awards for GS Employees for Fiscal Year 2011

Increase or award	Percentage receiving increase or award	Average (mean) amount of increase or award as percentage of recipient's pay ^b	Average (mean) amount of increase or award in dollars ^b	Total federal dollars spent for increase or award (millions, and as percentage of \$108 billion GS system total payroll) ^c
Within-grade increase ^a	39.1%	3.0 %	\$2,062	\$1,050.5 1% of GS payroll
Ratings-based cash award ^d	46.8%	1.8%	\$1,432	\$872.9 0.8% of GS payroll
Quality step increase	3.4%	2.8%	\$2,384	\$104.1 0.07% of GS payroll

Source: GAO analysis of OPM data.

^aNot all GS employees are eligible to receive a within-grade increase every year due to waiting periods dependent on the employee's step, as discussed in table 1.

^bAverage amounts of increases or awards as percentages of base pay and in dollars are for employees receiving awards or increases only; zero values are not included in the averages. Average percentage increases, average dollars spent, and total dollars spent on within-grade increases and quality step increases are annualized figures, i.e. full-year amounts are counted for increases that were given part of the way into the year. For within-grade increases and quality step increases, the percentage increase declines as the steps increase (except for grades 1 and 2). Average amount of increase or award in dollars and total dollars spent for increase or award are based on those records with complete award value data.

^cGS system total payroll is defined as aggregate adjusted basic pay for employees in the GS pay plan. This does not include benefits.

^dRatings-based cash awards up to 10 percent of an employee's annual rate of pay are permitted. Agency heads may authorize an award exceeding 10 percent (but not in excess of 20 percent) if exceptional performance justifies such an award. 5 U.S.C. § 4505a. Awards in excess of \$10,000 are to be submitted to OPM for approval. 5 U.S.C. § 4502(b).

OPM Provides Oversight on Awards and Increases

OPM's role with respect to awards and increases includes

- providing policy direction to agencies, including regulations,
- reporting on agencies' use of awards and increases, and
- evaluating agencies' linkage of awards and increases with results.

Agencies, in turn, must ensure they have met statutory and regulatory requirements and may develop agency-specific criteria for providing quality step increases and cash awards. According to OPM officials, awards regulations are highly decentralized because the statutes provide

agency heads, not OPM, with the authority to grant awards.³⁸ Likewise, agency heads may grant quality step increases within the limits of available appropriations and regulatory requirements.

Policy direction. To help agencies understand how to administer pay increases and awards, OPM issues regulations and supporting memoranda and posts fact sheets, frequently asked questions, and other resource documents on its website. Topics have included approaches to calculating ratings-based cash awards, tax issues for awards, how the timing of quality step increases affects within-grade increases, and recent limitations on awards given budgetary constraints. According to OPM officials, OPM responds to agency questions about guidance as needed.

Reporting. OPM provides agencies with an annual *Federal Award Statistics* report on cash awards, time-off awards, quality step increases, and other awards received by GS and other employees.³⁹ According to OPM officials, OPM uses the report to show trends and compare usage of awards between agencies and across the government. OPM also uses the report data to help inform its decisions about awards policy and monitor agency compliance with the policy, such as limitations on awards usage.

Evaluation. OPM evaluates selected agencies' human capital management systems as part of its broader strategy for maintaining human capital accountability. As part of these evaluations, OPM determines whether an agency's human capital system provides and clearly communicates linkages between employee performance expectations, performance recognition through increases and awards, and the agency's mission. OPM also reviews a sample of case files to

³⁸ 5 U.S.C. § 4503 and § 4505a. While these authorities provide agencies with the authority to make awards, OPM approval is required for awards which exceed thresholds specified in statute or regulation.

³⁹ OPM develops this report using information from CPDF and EHRI-SDM. The report is distributed to agency awards administrators and performance management program managers and to others upon request.

check that the awards granted meet the requirements of the law and regulations,⁴⁰ and assists agencies in leading their own evaluations.

OPM officials said that they have identified the following issues in regard to pay increases and awards:

- Some agencies tried to circumvent limitations on award amounts by issuing several incremental awards within a short time period.
- Some agencies granted quality step increases to compensate for low award budgets.
- Some agencies' human capital management systems did not link individual performance expectations and recognition through pay increases and awards to the accomplishment of specific mission-related goals or milestones.

When OPM determines that an agency violated the law or regulations, such as circumventing award limitations by issuing several incremental awards within short periods of time, it requires the agency to take corrective action and respond to OPM with evidence of how it addressed or plans to address the violation within 60 days. For example, according to an OPM official, corrective action may result in the agency recovering the award from the recipient and correcting the documentation for the award.

When OPM observes an issue with an agency's award implementation that does not violate regulations, OPM may recommend to the agency improvements that could be made. For example, when OPM determines that an agency has granted quality step increases to compensate for a low award budget, it recommends that the agency review its policies for granting pay increases and awards to ensure the policies comply with the intent of the laws and regulations. According to an OPM official, OPM requires an agency to respond to the recommendations made, but the agency is not required to take action on addressing the issue.

⁴⁰Specifically, OPM officials determine, among other things, whether the justification for the award is adequately based on accomplishments, whether awards link to the specific accomplishments that support the agency's mission, and whether proper authorities have approved the award.

Findings of Selected Pay and Total Compensation Comparison Studies Varied Due to Different Approaches, Methods, and Data

Selected Studies Differed in Their Conclusions and Basic Approaches to Analyzing Pay

The different study designs used by the authors of six studies resulted in varying conclusions on how federal pay differed from private sector or nonfederal pay.⁴¹ As shown in table 2, conclusions varied on which sector had the higher pay (which does not include benefits) and the size of pay disparities. All but one of the studies estimated the difference in pay after controlling for some personal and job-related attributes that can affect pay levels such as education and locality. This remaining difference is sometimes called the unexplained difference because it persists after controlling for attributes that can affect pay.

However, the overall pay disparity number does not tell the whole story; each of the studies that examined whether differences in pay varied among categories of workers, found such variations (see table 2). For example, CBO found that federal workers with graduate and professional degrees were paid less in comparison to the private sector, while workers without college degrees were paid more.

Importantly, all of the study authors acknowledged that the data they used in their analyses had limitations which could affect their findings. Any comparison of the studies needs to take these data limitations into account. For example, studies that used the Census Bureau's Current

⁴¹All of the selected studies except for the President's Pay Agent Report compared federal to private sector pay or compensation. The President's Pay Agent compared federal to nonfederal pay (not benefits) and defined federal workers as those in GS and equivalent pay plans and nonfederal workers as private sector, state government, and local government workers. The six studies defined federal workers differently for the purposes of their analyses. See app. III for additional details on the studies' methodologies.

Population Survey (CPS) were unable to directly control for years of work experience given this measure is not available in the CPS; some of the authors said that work experience is an attribute that affects how much a person is paid. Also, it was acknowledged that many federal jobs may not have equivalents in the private sector.

Table 2: Selected Studies’ Findings on Pay

Study authors and affiliations	Study title, date	Study authors’ findings on pay
Andrew Biggs and Jason Richwine —American Enterprise Institute for Public Policy Research	<i>Comparing Federal and Private Sector Compensation</i> June 2011	<ul style="list-style-type: none"> On average, federal workers’ pay was higher than private sector workers’ pay by an unexplained 14%. Federal workers with a high school education received pay 22% higher than comparable private sector workers, while those with graduate degrees received 3.9% more on average.
Congressional Budget Office	<i>Comparing the Compensation of Federal and Private-Sector Employees</i> January 2012	<ul style="list-style-type: none"> On average, federal workers’ pay was higher than private sector workers’ pay by an unexplained 2%. Federal workers with a high school education earned pay about 21% higher than similar private sector workers on average. Federal workers with professional degrees (e.g., lawyers) or with doctorates earned pay about 23% lower than similar private sector workers.
Chris Edwards —The Cato Institute	<i>Federal Pay Continues Rapid Ascent</i> August 2009	<ul style="list-style-type: none"> On average, federal workers’ pay was higher than private sector workers’ pay by an absolute amount of 58%. Study did not estimate how much of this difference was explained by personal or job-related attributes (e.g., education, experience). The difference was 25 percentage points higher than it was 8 years before.
The President’s Pay Agent	<i>Report on Locality-Based Comparability Payments for the General Schedule, Annual Report of the President’s Pay Agent 2010</i> March 2011	<ul style="list-style-type: none"> On average, federal workers’ pay was lower than nonfederal (private, state, and local) workers’ pay by an unexplained 24%. The difference varied by locality pay area.
The Project On Government Oversight (POGO)	<i>Bad Business: Billions of Taxpayer Dollars Wasted on Hiring Contractors</i> September 2011	<ul style="list-style-type: none"> On average, federal workers’ pay was higher than private sector workers’ pay by an unexplained 20% across the occupations studied.^a The direction of the differences varied across the occupations studied. For example, pay for federal Claims Assistants and Examiners was 24% lower than pay for similar private sector workers, while pay for federal Correctional Officers was 117% higher than pay for similar private sector workers.
James Sherk —The Heritage Foundation	<i>Inflated Federal Pay: How Americans Are Overtaxed to Overpay the Civil Service</i> July 2010	<ul style="list-style-type: none"> On average, federal workers’ pay was higher than private sector workers’ pay by an unexplained 22%. This difference varied by occupation. For example, for lawyers and economists the unexplained difference was less than 10%, while for security guards and stock clerks it was close to 50%.

Selected Studies Used Three Basic Approaches to Analyzing Pay, with Varying Methodologies

Source: GAO analysis of selected studies.

Notes: See app. III for a complete description of the studies' details including attributes controlled for and statistical methods used. The six studies defined federal workers differently for the purpose of their analyses. The President's Pay Agent defined federal workers as those in GS and equivalent pay plans, POGO included federal workers in the GS and wage grade pay plans covering 35 selected occupations, and the remaining four studies included civilian employees except for U.S. Postal Service workers.

^aPOGO presented the unexplained portion in total compensation (pay and benefits), not pay alone. However, the authors based the compensation difference on a pay difference, multiplied by similar factors for federal and private sector workers. Thus, according to the authors, the unexplained difference in pay would be similar to the unexplained difference in total compensation.

The studies used three basic approaches to analyze differences in pay, as shown in table 3. Each author chose the approach they thought would best describe differences in pay. The Pay Agent is mandated by law to compare the rates of pay under the GS system with the rates of pay generally paid to nonfederal workers for the same levels of work within each pay locality, as determined on the basis of appropriate BLS surveys.⁴²

Table 3: Approaches Used by Selected Studies in Analyzing Pay

Type of approach	Description	Studies that used the approach
Human capital	Compares pay for individuals taking into account personal attributes (e.g., education, job experience) and other attributes (e.g., occupation, locality, firm size). ^a Demographic personal attributes such as race and gender are taken into account. ^b	<ul style="list-style-type: none">• Biggs/Richwine• CBO• Sherk
Job-to-job	Aligns and compares pay for similar jobs of various types based on job-related attributes such as occupation and level of work (e.g., entry-level, mid-level, senior level or finer distinctions by level). Does not take into account the personal attributes of the workers currently filling the jobs. ^a	<ul style="list-style-type: none">• President's Pay Agent• POGO
Trend analysis	Illustrates broad trends in pay over time without controlling for attributes of the workers or jobs.	<ul style="list-style-type: none">• Edwards

Source: GAO analysis of selected studies.

^aMore information on attributes that can affect pay is provided in app. III.

^bAuthors using the human capital approach explained that it was important to account for the differences between the sectors in racial composition, gender, and other demographic characteristics so that the unexplained difference is isolated from these factors.

The studies' differing conclusions on the overall pay disparity between federal and private or nonfederal workers were affected by their basic approaches—human capital, job-to-job, and trend analysis. Across these

⁴²5 U.S.C. § 5304(d)(1).

approaches, data sources and types of attributes controlled for differed. Within each approach, conclusions differed due to studies' specific methodologies—specific attributes controlled for and statistical methods used.

- **Basic approaches:** Across the three basic approaches, the differences in the data sources and types of attributes controlled for (personal or job-related) contributed to the differing conclusions.⁴³
 - Data sources: The type of approach the study authors chose influenced the data sources they used. Studies using the human capital approach used data from the CPS⁴⁴ to determine the pay for federal and private sector workers. Studies using the job-to-job approach used data from BLS's National Compensation Survey (NCS)⁴⁵ to determine pay for nonfederal (Pay Agent) and private sector (POGO) workers and data from OPM to determine pay for federal workers. For the trend analysis approach, Edwards used data from BEA's national income and product accounts (NIPA)⁴⁶ tables to determine pay for federal and private sector workers.
 - Types of attributes: Most of the studies estimated the unexplained difference in pay, accounting for the fact that employees earn different amounts based on education, locality, and other personal and job-related attributes. However, studies using different basic approaches controlled for different types of attributes. Studies using the human capital approach controlled for attributes related to both the individual worker and the job the person occupied. Studies using the job-to-job approach controlled for only job-related attributes. The trend analysis approach did not control for attributes.

⁴³For a more detailed discussion about the data sources and methodologies used by the study authors, see app. III.

⁴⁴The CPS collects data in two different ways. The monthly CPS is a monthly survey of households that are asked questions regarding pay and labor market status. The Annual Social and Economic Supplement is conducted once a year (February–April). Biggs/Richwine and CBO used the Annual Social and Economic Supplement, while Sherk used the monthly CPS.

⁴⁵The NCS is a survey of employee salaries, wages, and benefits at local, regional, and national levels. The NCS does not include federal workers.

⁴⁶The NIPA data tables estimate total wages and total compensation (including noncash compensation such as the employer's contribution for health insurance) by industry across federal and private sectors.

- **Specific methodologies:** Within the human capital and job-to-job approaches, the studies controlled for different specific attributes and used different statistical methods, as shown in table 4. These differences led to differing conclusions.

Table 4: Comparisons among the Selected Studies' Methodologies

Similarities	Key differences	How the differences affected conclusions
<i>Human capital approach</i>		
<ul style="list-style-type: none"> • Controlled for both personal and job-related attributes including education, occupation, and locality. • Used a statistical method to determine the extent to which differences in pay are explained by different attributes. 	<ul style="list-style-type: none"> • Biggs/Richwine and CBO controlled for firm size, while Sherk did not. • Biggs/Richwine used a regression and CBO and Sherk used a decomposition. • CBO's decomposition took into account the wider distribution of pay among private sector workers. 	<ul style="list-style-type: none"> • The inclusion of firm size largely explains the differences between the findings of Biggs/Richwine and Sherk. According to Biggs/Richwine, if they had not controlled for firm size, they would have found almost the same pay disparity as Sherk. • According to CBO, its results largely differed from Biggs/Richwine because of the specific statistical method used which took into account the wider distribution of pay. Had CBO used the same method as Biggs/Richwine, its results for the overall pay difference would have been similar.
<i>Job-to-job approach</i>		
<ul style="list-style-type: none"> • Controlled only for job-related attributes such as occupation. • Conclusions are only generalizable to the population analyzed. 	<ul style="list-style-type: none"> • The Pay Agent matched pay rates for over 200 occupations, while POGO used 35 selected occupations that had been outsourced. • The Pay Agent matched pay rates on a locality pay area basis and POGO matched pay rates at a national level. • The Pay Agent controlled for level of work. 	<ul style="list-style-type: none"> • The different sets of occupations analyzed and the fact that the Pay Agent controlled for level of work and matched pay rates by locality may have contributed to the different conclusions.

Source: GAO analysis of selected studies.

Study Authors Differed on Which Approach Is Most Informative

The study authors and people with expertise in compensation issues that we interviewed differed in their views on which type of approach is most informative in comparing pay of workers across sectors. According to study authors who used the human capital approach, this approach is the standard method in the field of economics to compare workers' pay across sectors. The overall unexplained difference between federal and private sector pay is a way to measure the extent to which the federal government may be paying more or less for the services it receives from its workers relative to what those workers could earn in the private sector.

These findings could help inform policy decisions regarding the pay of federal workers. However, study authors (including those who used the human capital model) and people with expertise in compensation issues did not suggest that the human capital approach be used for setting an individual's rate of pay. They explained that some of the personal attributes that are associated with analyzing differences in pay using a human capital approach are demographic in nature (e.g., race, gender) and not work-related. OPM officials added that they are not aware of any employers that use the human capital approach to set pay for their employees.

The President's Pay Agent and POGO used the job to job approach in their analyses of pay differences, not the human capital approach. According to OPM officials who serve as staff to the President's Pay Agent, employees with the same human capital characteristics can choose to work in markedly different jobs with large variations in pay. POGO and some people with expertise in compensation issues said that the fundamental concept of setting pay based on the job, without taking account of the personal characteristics of individuals in similar jobs, is the most appropriate approach. They said it is not appropriate to pay individuals differently according to personal attributes, such as education or job experience, if they hold the same job. However, others said that matching individuals by occupation and level of work involved some subjective judgment and lacks transparency, which makes it difficult for other interested parties to understand the analysis.

The President's Pay Agent has stated that it has serious concerns about a process that requires a single percentage adjustment in the pay of all white-collar civilian federal employees in each locality pay area without regard to the differing labor markets for major occupational groups, and it believes that reforms of the GS system should be considered. Specifically, the Pay Agent stated that the underlying model and methodology for estimating pay gaps should be reexamined to ensure that private sector and federal sector pay comparisons are as accurate as possible.

Selected Studies Used Different Methods to Include Benefits in Estimates of Total Compensation

Five studies found a wide range of disparities in benefits as part of total compensation (pay and benefits) between the federal and private sector workforces, as shown in table 5. (The President’s Pay Agent Report did not include an analysis of benefits as part of total compensation.)⁴⁷ Most studies presented the disparity in terms of total compensation, not just the benefits portion, because the levels of some benefits—for example, most retirement benefits—are a function of pay rates, years of service, and type of plan. The five studies included benefit comparisons in an effort to capture the cost of benefits to the federal government.⁴⁸

As with their analyses of pay, the study authors acknowledged that limitations in data affected their analyses of total compensation and could affect their findings, as discussed below table 5. These limitations need to be taken into account when comparing the studies. Additionally, the studies do not all analyze the same group of federal workers; for example, POGO analyzed workers in 35 selected occupations.

Table 5: Selected Studies’ Findings on Total Compensation (Pay and Benefits)	
Study author	Study authors’ findings
Biggs/ Richwine	The average federal worker’s total compensation package was 61% higher than that of a comparable private sector worker.
CBO	The average federal worker’s total compensation package was 16% higher than that of a comparable private sector worker.
Edwards	The average federal worker’s total compensation package was 100% higher than that of an average private sector worker. Study did not control for attributes in its analysis.
POGO	On average, the federal worker’s total compensation package was 20% higher than that of a private sector worker across the occupations studied.
Sherk	The average federal worker’s total compensation package was 30-40% higher than that of a comparable private sector worker.

Source: GAO analysis of selected studies.

⁴⁷The President’s Pay Agent Report addresses only pay. It does not analyze benefits. 5 U.S.C. § 5304(d)(1).

⁴⁸In its study, POGO also compared the total annual compensation for federal employees with federal contractor billing rates in order to determine whether the current costs of federal service contracting serves the public interest. Any comparison of government and contractor employee costs is outside the scope of our work.

The wide range of estimates between the studies is due to the different data sources, types of benefits analyzed, and specific methodologies used.

Data sources. Study authors agreed that available data were less adequate for comparing federal to private sector benefits than pay. Benefits data at the individual level are not available from a single source so the studies used multiple sources. This makes it challenging to compare across the sectors. For example, some data sources, such as the CPS, ask workers questions about their pay, but do not ask about the cost of their benefits because workers generally do not know the monetary value of their benefits. As a result, study authors used data sources such as the NCS that ask employers questions about the cost of their workers' benefits. Additionally, different studies drew from different data sources, contributing to the range of different results.

- Biggs/Richwine used BLS's NCS data, specifically the Employer Costs for Employee Compensation portion for private sector worker data. For federal workers, they used the OPM/OMB civilian position full fringe benefit cost factor—a percent factor describing the cost of benefits relative to salaries.⁴⁹ To capture benefits the OPM/OMB source did not cover, Biggs/Richwine used OPM's *Federal Civilian Work Force Statistics: Work Years and Personnel Costs Report* to determine paid leave, and the Annual Social and Economic Supplement of the CPS to estimate job security.
- POGO used NCS data on private sector workers. For federal workers, it used the OPM/OMB civilian position full fringe benefit cost factor as Biggs/Richwine did.
- CBO used more detailed data from the NCS and OPM for private sector and federal workers, respectively. These data were not publically available.
- Edwards and Sherk both used BEA's NIPA data. According to BEA, this data source includes annual intra-governmental payments to amortize the accumulated unfunded liability of the Civil Service Retirement and Disability trust fund. This reduces the data's accuracy

⁴⁹OMB, through Circular A-76, requires agencies to use standard cost factors to estimate certain costs of government performance including the cost of benefits for civilian personnel. Based on actuarial analysis by OPM, this cost factor expresses the value of certain federal benefits as a percentage of salaries and is used to compare the compensation of federal workers relative to that of private sector workers who might perform the same duties.

for measuring compensation for current workers, according to the study authors that used the data.⁵⁰ Sherk used OPM data to correct for this issue of federal retiree benefits.

Benefits analyzed. The studies included different types of benefits in their analyses, contributing to the range of different results. In addition, the study authors made assumptions in determining the value of benefits.

- All of the studies included health insurance, retirement benefits, and the employer portion of mandatory government benefits such as Social Security.
- Biggs/Richwine, CBO, and POGO (for private sector workers only) included paid leave, while Sherk did not.
- Biggs/Richwine included job security, asserting that federal workers are less likely to experience periods of unemployment than private sector workers and so can expect a higher income for a given salary over the course of a year.
- All of the studies relied on estimates of future benefits, which requires assumptions to be made about the present value of the benefit, which may introduce uncertainty in the estimates. According to BEA, estimates of the present value of future benefits are inherently dependent on assumptions about the discount rate, participant separation rates, retirement ages, mortality, and even future pay increases and future inflation.⁵¹ As a result, the amount of money that has to be set aside today to pay for tomorrow's benefits could be different.

Specific methodologies. It was not possible to estimate the cost of benefits directly while controlling for differences between the federal and private workforces, so most authors used various indirect methodologies.

⁵⁰BEA officials agree this amortization payment for the unfunded liability should not be counted as a benefit that accrues to current workers. In 2013, BEA is planning revisions to its time series of compensation estimates that will correct this problem.

⁵¹More appropriate estimates of federal retirement costs may be available in the future. According to agency officials, BEA, which estimates the cost to the government of retirement benefits in order to derive compensation estimates for the NIPA tables, is moving to an accrual approach for both private and government compensation that will more accurately account for benefit promises to future retirees. As part of a comprehensive revision to the NIPA tables in 2013, this change will lead to revisions to BEA's time series of compensation estimates.

The indirectness increased uncertainty, and the wide range of methodologies led to different results.

- CBO developed a model to estimate the relationship between federal workers' pay and the cost of the benefits they received, and an analogous model for private sector workers. CBO imputed employee benefits using those models, then compared benefits for federal and private sector workers controlling for personal and job-related attributes, just as they did for pay, to estimate the portion of the difference in total compensation unexplained by attributes. CBO was the only study to use a model that allowed for varying benefits-to-pay ratios for different pay levels.
- Sherk calculated the difference in average total compensation for federal and private sector workers. He used his estimates of the unexplained difference in pay from the human capital model and applied this to the difference in average total compensation. He assumed the unexplained difference in total compensation was the same as the unexplained difference in pay.
- Biggs/Richwine used different benefits-to-pay ratios for federal workers and private sector workers. They applied these ratios to the unexplained differences in pay from their human capital model to obtain the unexplained difference in total compensation. Biggs/Richwine assumed the unexplained difference in total compensation was the same as the unexplained difference in pay.
- POGO used different benefits-to-pay ratios for federal workers and private sector workers. It applied these ratios to differences in pay for the selected occupations in each sector to obtain the percent difference in total compensation for these occupations.
- Edwards calculated the difference in average total compensation for federal and private sector workers. He did not control for attributes between the workers.

Concluding Observations

The findings of the selected studies comparing federal and private sector pay and total compensation varied because they used different approaches, methods, and data. When looking within and across the studies, it is important to understand these differences because they impact how the studies can be interpreted. On the one hand, the human capital approach compares pay for individuals taking into account personal attributes such as education and job experience. Study authors who used this approach said that analyzing federal and private sector workers' pay was a way to measure the extent to which the federal government may be overpaying or underpaying its employees compared to what they could earn in the private sector. On the other hand, the job-

to-job approach compares pay for similar jobs on such job-related attributes as occupation and level of work rather than personal attributes. The President's Pay Agent, which used this approach, examined how pay for GS and nonfederal jobs compared for the same occupations and levels of work within the same locality pay areas with the goal of reducing existing pay disparities. Simply put, the differences among the selected studies are such that comparing their results to help inform pay decisions is potentially problematic. Given the different approaches of the selected studies, their findings should not be taken in isolation as the answer to how federal pay and total compensation compares with other sectors.

As stated earlier, we have reported on the importance of considering the skills, knowledge, and performance of federal employees as well as the local labor market in making pay decisions.⁵² The President's Pay Agent has recommended that the underlying model and methodology for estimating the pay gaps be reexamined to ensure that private sector and federal sector pay comparisons are as accurate as possible. As a step in this direction, the administration recommended in its September 2011 deficit reduction proposal that Congress establish a Commission on Federal Public Service Reform composed of members of Congress, representatives from the President's Labor-Management Council, members of the private sector, and academic experts to identify fundamental reforms for the federal government's human capital systems including compensation reform. As of June 2012, such a commission has not been established.

Agency and Third-Party Comments

We provided a draft of this report to the Secretary of Commerce (for Census), the Commissioner of BLS, and the Directors of BEA and OPM for their review and comment. The Census Bureau had a technical comment on the draft report, which we incorporated into the final report. BEA and BLS had no comments on the draft report. OPM provided technical comments on the draft report, which we incorporated as appropriate.

We provided applicable sections of the draft report to the authors of the selected compensation comparison studies for their review and comment. Biggs/Richwine and CBO provided technical comments, which we

⁵²[GAO-05-832SP](#).

incorporated as appropriate. Edwards and Sherk did not have any comments on the draft section. POGO provided written comments (see app. IV). In its letter, POGO stated it concurred with our draft finding that many factors hinder public and private sector pay comparisons, such as a lack of detailed data. POGO also suggested that we analyze OPM federal-nonfederal salary comparisons as part of our final report. We believe this information is already addressed in other sections of the report, which POGO did not receive for comment. In these sections, we discuss in detail how annual pay adjustments are determined including the President's Pay Agent process, which uses the comparisons referred to by POGO.

As we agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution of it until 30 days from the date of this letter. At that time, we will send copies of this report to the appropriate congressional committees; the Secretary of Commerce; the Commissioner of BLS; the Directors of BEA, Census, and OPM; and other interested parties. In addition, the report will be available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-6806 or goldenkoffr@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in app. V.



Robert Goldenkoff
Director
Strategic Issues

Appendix I: Objectives, Scope, and Methodology

This report examines (1) how annual pay adjustments for the General Schedule (GS) system are determined; (2) the extent to which the pay increases and awards available to GS employees recognize individual performance, and how the Office of Personnel Management (OPM) provides oversight of pay increases and awards; and (3) how selected studies compare federal and private sector pay and total compensation and the factors that may account for the different findings.

To examine how the GS annual across-the-board and locality pay adjustments are determined, we reviewed legislation, OPM regulations, executive orders, Presidents' alternative pay plans, President's Pay Agent Reports, Federal Salary Council recommendations, OPM and Bureau of Labor Statistics (BLS) documents and reports, and reports by the Congressional Budget Office (CBO) and Congressional Research Service.¹ We also examined how the methodology for determining locality pay has changed since the start of locality pay to the present. We interviewed selected members of the Federal Salary Council and its working group; the Council is to be made up of six representatives of federal employee groups and three experts in labor relations, and makes annual recommendations to the President's Pay Agent.² We interviewed BLS officials, OPM officials who are knowledgeable about federal pay policy and serve as staff to the President's Pay Agent, and people with expertise in compensation issues including former federal officials experienced with pay and benefits issues. To provide background information illustrating a range of pay areas, we selected localities including the lowest paid locality, highest paid locality, and other localities to include a range of pay rates, population sizes, and geographic regions.

To determine the extent to which pay increases and awards recognize individual performance, we analyzed legislation and OPM regulations on pay increases and awards available to employees in the GS pay system and identified those pay increases and awards that are determined in part by an individual's performance rating as measured by the agency's performance appraisal system. These pay increases and awards are: within-grade increases, quality step increases, and ratings-based cash awards. We recognize that there are other types of pay increases and

¹The CBO reports referred to here do not include the January 2012 study we review in detail later in this report.

²Federal Salary Council members are selected by the President.

awards that reflect an individual's contributions, such as suggestion/invention and superior accomplishment awards, and pay increases that do not reflect an individual's performance at all including across-the-board and locality pay adjustments. We identified eligibility requirements outlined in the legislation and regulations and clarified in OPM guidance that can affect a GS employee's eligibility for the increase or award, such as a waiting period given the individual's position in the pay grade, frequency of receiving an increase or award, and agency-specific criteria.

To provide statistics on how the pay increases and awards were distributed among GS employees, we analyzed data from OPM's Central Personnel Data File (CPDF) for fiscal year 2011.³ The data we examined included only federal employees in the GS pay plan. The GS classification and pay system includes several pay plan codes: GS (covered by pay system established under 5 U.S.C. chapter 53, subchapter III); GM (covers employees covered by the Performance Management and Recognition System termination provisions of Pub. L. No. 103-89); GL (covers law enforcement officers who receive special base rates at grades 3-10 under section 403 of FEPCA); GP (covers GS physicians and dentists paid market pay under 38 U.S.C. § 7431(c)); and GR (covers physicians and dentists covered by the Performance Management and Recognition System termination provisions who are paid market pay under 38 U.S.C. § 7431(c)). In addition to the GS pay plan, the GM and GL pay plans are used in federal-nonfederal pay comparisons to set locality pay. For the purposes of this analysis, we excluded the GM and GL pay plans because the GS pay plan covers the majority of the individuals in the GS, GM, and GL pay plans. We also excluded the GP and GR pay plans since individuals in these pay plans are no longer limited to GS rates of pay and they receive market pay under a different pay system.

We analyzed CPDF data for employees in the GS pay plan in the aggregate on the number, percentage and dollar amount of quality step increases, within-grade increases, and ratings-based cash awards; the

³The CPDF is a database that contains individual records for most federal employees and is the primary governmentwide source for information on federal employees. OPM has transitioned from the CPDF to the Enterprise Human Resources Integration-Statistical Data Mart (EHRI-SDM) as of fiscal year 2010, but CPDF still exists as a quarterly extract from the EHRI-SDM. We used these quarterly extracts for our analysis.

amount of these increases and awards as a portion of the GS payroll (total adjusted basic pay for all employees in the GS pay plan); and the distribution of these increases and awards by rating pattern and rating levels. For the award/increase amounts as percentages of recipients' pay, we excluded employees whose adjusted basic pay amount was missing. For the calculations based on ratings, we excluded employees who were coded in CPDF as "not rated". The not rated code applies to an employee who has not yet received a rating of record under the agency performance appraisal system (e.g., someone newly hired). We also excluded employees whose ratings were missing due to data errors. For calculations based on rating levels or patterns (e.g., 5-level system), we excluded employees who were coded as not being covered by a performance appraisal system and generally do not have their performance appraised. We also excluded employees whose rating patterns were missing from the data due to data errors.

To help determine the reliability and accuracy of the CPDF data elements used, we checked the data for reasonableness and the presence of any obvious or potential errors in accuracy and completeness. For example, we excluded employees who were coded as receiving an increase or award in error (e.g., individuals who received a level 1 or 2 rating and a within-grade increase or ratings-based cash award) from our data. We also reviewed past GAO analyses of the reliability of CPDF data⁴ and interviewed OPM officials knowledgeable about the data to discuss the data's accuracy and steps OPM takes to ensure they are reliable. For example, in its checks of the data, OPM excludes data where the dollar value is zero for ratings-based cash awards and within-grade and quality step increases. Also, for within-grade and quality step increases, OPM checks to make sure values for current and prior adjusted basic pay exist and the difference is greater than zero. On the basis of these procedures,

⁴For example, GAO, *Women's Pay: Gender Pay Gap in the Federal Workforce Narrows as Differences in Occupation, Education, and Experience Diminish*, [GAO-09-279](#) (Washington, D.C.: Mar. 17, 2009).

we believe the data we used from the CPDF are sufficiently reliable for the purpose of this report.⁵

To describe how OPM provides oversight of pay increases and awards, we collected and analyzed OPM guidance to agencies on administering relevant pay increases and awards including regulations, memoranda, reports, fact sheets, and frequently asked questions. We interviewed OPM officials responsible for federal pay policies to discuss the implementation of the guidance and monitoring of agencies' use of increases and awards through reports and other means, and we interviewed OPM officials responsible for conducting human capital management evaluations at agencies on pay increases and awards to determine how they evaluate agencies' linkage of pay increases and awards with organizational results and monitor the overall GS system, among other things.

To review selected studies that compare federal and private sector pay and total compensation and describe factors that help account for the different study findings, we reviewed the studies, summarized each study's methodologies and key findings, and confirmed the accuracy of our summaries with the authors. We compared and contrasted the differences between the approaches, methodologies, and data sources of the selected studies. We interviewed the selected study authors to obtain their views on the various methodologies and data sources available, why they chose the ones they used, and their conclusions based on their work. From July through December 2011, we conducted a detailed literature review of academic journals, agency and organization publications, and grey literature to identify the selected studies.⁶ We applied three criteria for study selection to the results—(1) studies that were published/issued since 2005; (2) studies that include original analysis; and (3) studies that have the explicit and primary purpose of

⁵We previously reported that governmentwide data from the CPDF were 96 percent or more accurate. See GAO, *OPM's Central Personnel Data File: Data Appear Sufficiently Reliable to Meet Most Customer Needs*, [GAO/GGD-98-199](#) (Washington, D.C.: Sept. 30, 1998). Also, in a document dated February 28, 2008, an OPM official confirmed that OPM continues to follow the CPDF data quality standards and procedures contained in our 1998 report.

⁶Grey literature comprises documents produced by government, academia, business and industry in print and electronic formats that are protected by intellectual property rights, but not controlled by commercial publishers.

comparing federal and private sector pay and total compensation. Using these criteria, we identified at that time the following five studies as our proposed set to review (with the option to add other studies that may be issued during the course of our engagement and meet our criteria), see below:

- *Comparing Federal and Private Sector Compensation*, Andrew Biggs and Jason Richwine, American Enterprise Institute for Public Policy Research, June 2011. (Co-author Richwine is from The Heritage Foundation.)
- *Federal Pay Continues Rapid Ascent*, Chris Edwards, The Cato Institute, August 2009.
- *Report on Locality-Based Comparability Payments for the General Schedule, Annual Report of the President's Pay Agent 2010*, The President's Pay Agent, March 2011.
- *Bad Business: Billions of Taxpayer Dollars Wasted on Hiring Contractors*, The Project On Government Oversight, September 2011.
- *Inflated Federal Pay: How Americans Are Overtaxed to Overpay the Civil Service*, James Sherk, The Heritage Foundation, July 2010.

All of the selected studies except for the President's Pay Agent compared federal to private sector pay and total compensation. The President's Pay Agent compared federal to nonfederal pay (not benefits) and defined nonfederal as private sector, state government, and local government. We decided to include the President's Pay Agent Report as one of our selected studies given that it plays a major role in the overall discussion of federal pay comparability. The President's Pay Agent encompasses the Secretary of Labor and Directors of OPM and the Office of Management and Budget (OMB). To inform our understanding of the Pay Agent's report and process, we interviewed OPM officials who are staff to the Pay Agent, members of the Federal Salary Council and its working group including officials from the National Treasury Employees Union and the American Federation of Government Employees, and officials at BLS, which provides the nonfederal data used for the Pay Agent's analysis.

Through our literature review, we also identified articles and papers that compare compensation in other sectors (state and local government to private sector, or industry to industry). Additionally, we identified discussions of the selected studies' findings and methodologies and of the issues of federal and private sector pay and total compensation comparison in general to further inform our review of the studies. We interviewed a number of individuals chosen for their expertise in compensation issues to obtain their views on the data sources for

analyzing compensation and to provide a general context for the issues involved in comparing federal and private or nonfederal pay and total compensation. The findings regarding the selected studies are not based on input from these individuals. Representing a wide range of perspectives and experiences related to compensation issues, we identified these individuals through our literature review, background research on the topic, and recommendations from the study authors and other individuals knowledgeable about compensation issues. The selected individuals, some of whom were selected authors of the discussions noted above, included a university professor who has done research on compensation issues across sectors, a private sector compensation consultant, a staff member who researches compensation at an organization with a policy focus, and former senior federal officials who are experienced in federal pay and benefits issues. We interviewed officials from the Bureau of Economic Analysis (BEA), BLS, and Census Bureau to discuss how these agencies' data are used to measure federal and private or nonfederal pay, compensation, or benefits, and limitations of their data or surveys. We also interviewed officials from OPM involved in federal pay policies. We asked everyone we interviewed about their views on the strengths and limitations of the data sources used in the studies.

We also asked everyone we interviewed, as applicable, to identify any additional studies that address our criteria for study selection. They did not identify any additional studies that met our criteria, but provided additional information, such as background articles. However, in January 2012, after our literature review was concluded, CBO issued a report:

- *Comparing the Compensation of Federal and Private-Sector Employees*, Congressional Budget Office, January 2012.

We included this study in our review because it met our criteria. This brought the total number of studies up to six. We interviewed the authors of the CBO study to obtain their views on the various methodologies and data sources available, why they chose the ones they used, their conclusions based on their work, and our understanding of their work.

We did not examine the reliability or the appropriateness of the approaches, methods, and data used by the six selected studies in our scope, and we did not exclude any study on the basis of methodological quality.

We conducted this performance audit from July 2011 to June 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: Implementation of Locality Pay

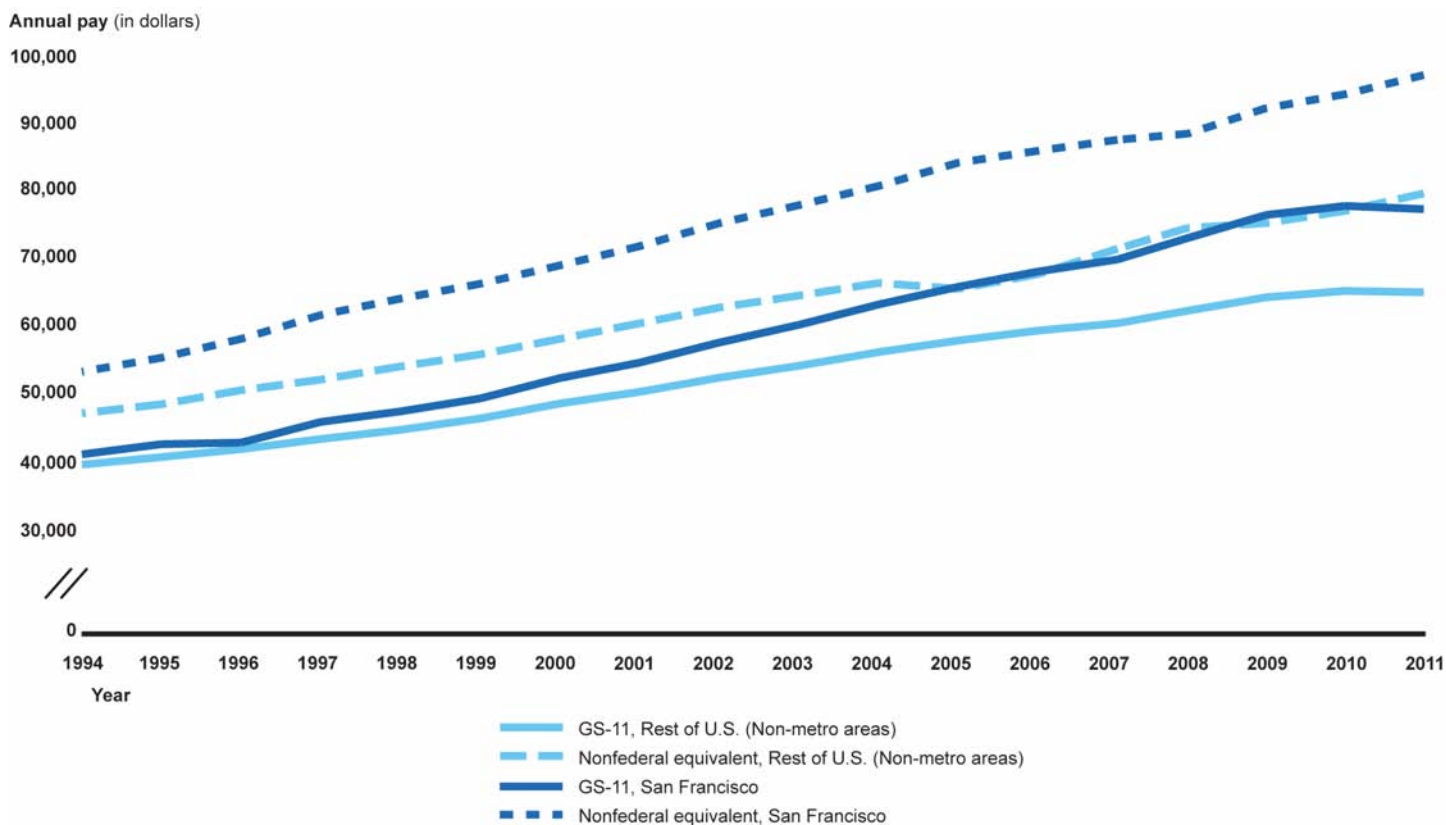
Locality Payments from 1994 to 2011

Even though the full locality payments recommended by the President's Pay Agent have not been provided after locality pay was implemented in 1994, some locality increase has been provided each year since that time except during the pay freeze in 2011 and 2012. The President's Pay Agent reported that pay disparities were lower in 2011 than in 1994 in 16 of the 21 pay localities that existed in both of those years.

Figure 5 shows the relative pay rates for a GS-11 employee (approximately the midpoint grade level) in San Francisco and in the Rest of U.S. (the residual locality for areas not included in one of the other pay localities) and nonfederal equivalents based on the President's Pay Agent Reports. In 1994, the pay disparity between federal and nonfederal workers in San Francisco at the GS-11 level was 30 percent, which decreased to 26 percent by 2011 (the most recent year for which disparity data is available). In 1994, the pay disparity between federal and nonfederal workers in the Rest of U.S. locality at the GS-11 level was 19 percent, which increased to 22 percent by 2011.¹

¹These percentages are the remaining pay gaps after taking locality pay into account. Relative pay rates for GS-11, the midpoint level, differ somewhat from relative pay rates for the average worker across grade levels. For example, while the disparity for GS-11 workers in the Rest of U.S. locality went up by 3 percent between 1994 and 2011, it went down by 2 percent for the average worker in the Rest of U.S. locality over that same time.

Figure 5: Annual Pay for a GS-11 Employee in San Francisco and Rest of U.S. Pay Localities and Reported Nonfederal Equivalents, 1994 to 2011



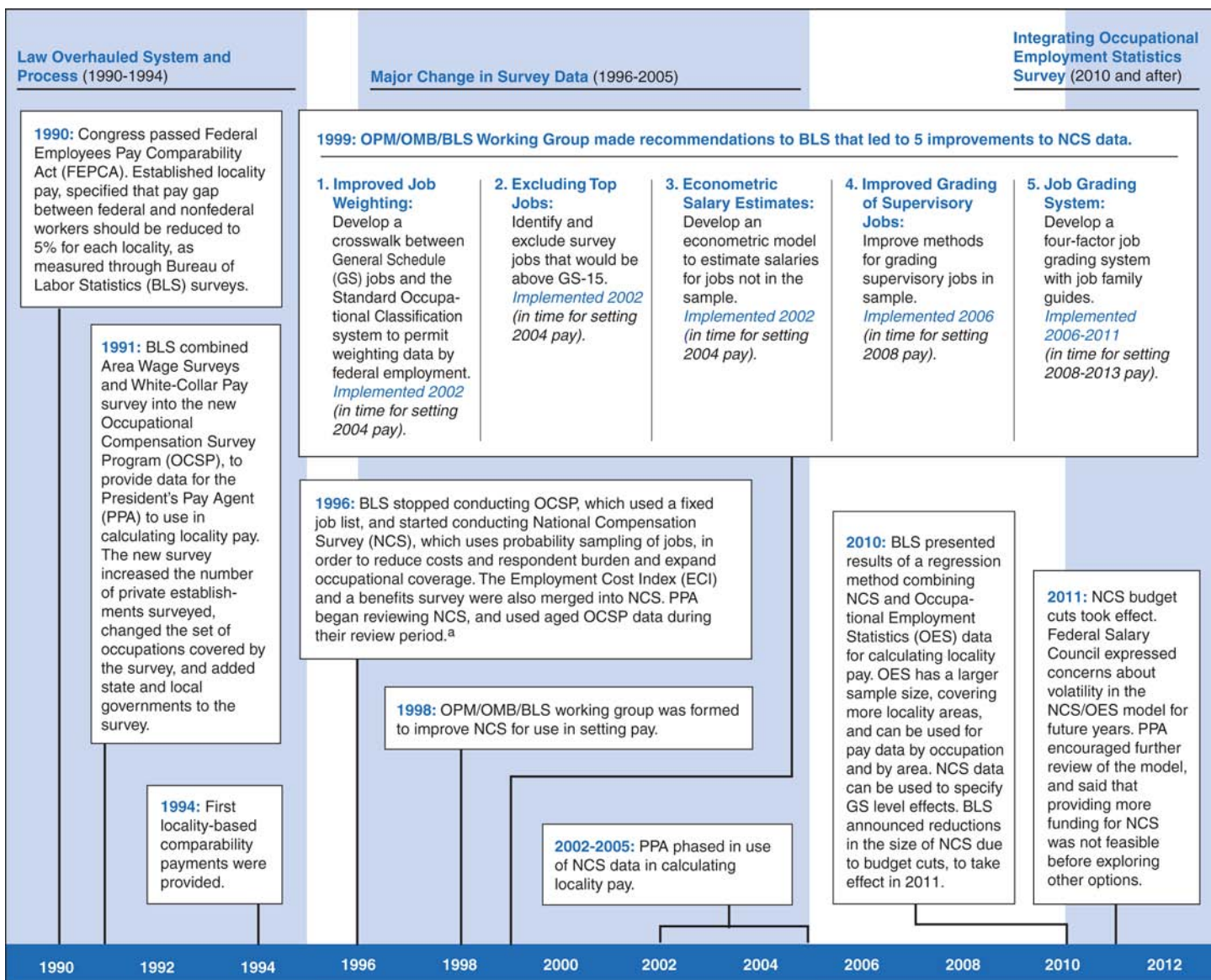
Source: GAO analysis of OPM data.

Note: There were 34 pay localities in the United States in 2011, composed of Alaska, Hawaii, 31 metropolitan areas, and the Rest of U.S. locality. San Francisco had the highest pay rate and Rest of U.S. had the lowest pay rate of these 34 areas. GS-11 salaries and nonfederal equivalents are based on the President's Pay Agent Reports.

**Changes to Surveys and
Models for Calculating
Locality Pay**

There have been several changes to the surveys and models used for locality pay setting between the passage of the Federal Employees Pay Comparability Act (FEPCA) in 1990 and the Pay Agent process and report for 2011, the most current report available. Changes are illustrated in figure 6 and additional information is below.

Figure 6: Surveys and Models for Calculating Locality Increases Have Changed Several Times from 1990 to 2011



Source: GAO analysis of legislation and PPA, Federal Salary Council, BLS, and OPM data.

^aSee below for more information on the difference between the OCSP's fixed job list and the NCS's probability sampling approach.

Major Change in Survey Data: Change from Fixed Job List to Probability Sampling

From 1991 to 1996, BLS conducted the Occupational Compensation Survey Program (OCSF) to collect data on pay of nonfederal workers.² OCSF used a fixed list of 3 to 8 positions in each of the five PATCO categories (Professional, Administrative, Technical, Clerical, and Other White-Collar) to represent the range of different white collar jobs. In 1996, there were 26 different positions - for example, Scientist (a professional position) and Key Entry Operator (a clerical position). Each position had one or more levels - for example, Scientist I to Scientist VIII; Key Entry Operator I and Key Entry Operator II. BLS referred to a particular position at a particular level (e.g., Scientist I) as a "job." BLS asked surveyed establishments to identify positions they had that corresponded to one of the representative jobs. BLS and OPM worked together to write, test, and maintain survey job descriptions tied to a single GS grade level.

In 1996, BLS stopped conducting the OCSF and started conducting the National Compensation Survey (NCS), which uses probability sampling of jobs. BLS randomly selected positions at surveyed nonfederal establishments and determined which Standard Occupational Classification System job, PATCO category, and GS grade corresponded to the selected jobs. The Employment Cost Index (ECI) and a benefits survey were also merged into NCS. These changes were made to reduce costs and respondent burden and expand occupational coverage.

The President's Pay Agent began reviewing the NCS in 1996, with input from the Federal Salary Council. During the time of their review, they used OCSF data, aged to a common reference date based on the ECI, to calculate pay disparities and recommend locality pay. In 1998, they determined that the NCS was not suitable for use without improvements, and a working group with representatives of OPM, BLS, and OMB was formed to recommend improvements. The working group made recommendations in 1999 that led to five improvements in the NCS data. The improvements were implemented starting in 2002, at which point the Pay Agent began to phase in use of NCS data. The recommendations are outlined in figure 6 above.

²The OCSF and the National Compensation Survey (NCS), described later in this appendix, were designed to provide compensation data for use in implementing locality pay; at the same time, the surveys met a variety of other government needs as well as private sector needs.

Integrating Occupational
Employment Statistics Survey
and Reducing Sample Size of
NCS

In 2008, the Federal Salary Council asked BLS to explore the use of additional sources of pay data so the Council could better evaluate the need for establishing additional locality pay areas, especially in areas where the NCS could not provide estimates of nonfederal pay. BLS developed a model to combine data from the Occupational Employment Statistics (OES) survey, another BLS survey, with NCS data in order to increase locality coverage. In 2010, due to budget cuts, BLS announced a reduction in the size of the NCS sample, and said that the model results from the combined surveys could still be used to calculate pay gaps. According to BLS officials, only the size of the NCS sample has changed, not the substance of what is collected, and the reduction should not affect the ability to determine levels of work.

The Federal Salary Council wrote in its 2011 memo to the President's Pay Agent that it had concerns about the reduction. For 2011, the final year when the larger NCS data set was available, the Federal Salary Council reviewed modeled results both with and without the reduction, and found concerning discrepancies (about a 5 point average difference in computed pay gaps). In its memo, the Council recommended that the Pay Agent use only NCS data for setting pay until the new model is better understood, and that the full NCS survey be reinstated. The Council wrote that it plans to continue working with OPM and BLS to study the NCS/OES model.

The President's Pay Agent wrote in its 2011 report dated March 2012 that it does not consider more funding for NCS to be feasible before exploring other options. The Pay Agent supported the Council's plan to continue its review of the new model and to focus on the impact of dropping roughly half of the NCS sample on the volatility of the model. The Pay Agent also noted that the administration recommended Congress establish a Commission on Federal Public Service Reform composed of members of Congress, representatives from the President's Labor-Management Council, members of the private sector, and academic experts to identify fundamental reforms for the federal government's human capital systems including compensation reform. As of June 2012, such a commission has not been established.

Appendix III: Information on the Selected Studies' Data Sources and Methodologies for Analyzing Pay and Total Compensation

Pay Analysis

The six selected studies used different data sources and methodologies to analyze differences in pay between the federal and private sector or nonfederal workforces, as shown in table 6. They also varied slightly in how they defined the federal workforce and restricted their analysis of workers.

Table 6: Selected Studies' Data and Methodologies Used in Analyzing Pay

Study authors and affiliations	Data source used	Description of workforce	Attributes controlled for	Methodology used
Andrew Biggs and Jason Richwine— American Enterprise Institute for Public Policy Research	<ul style="list-style-type: none"> Annual Social and Economic Supplement of the Current Population Survey (CPS) (2006-2010) for federal and private sector workers.^a 	<ul style="list-style-type: none"> Federal workers defined as civilian, non-postal workers. Restricted the analysis to full-time, full-year workers earning more than \$9,000. 	<ul style="list-style-type: none"> Hours worked per week Experience (age minus years of education minus 6) Experience-squared to account for non-linear effects Years of education Firm size (6 categories) Occupation (10 categories) Immigration status Locality (state of residence) Race Gender Marital status Year dummies to account for inflation <p>Also included interaction terms, such as 'experience × education' and 'marital status × gender'.</p>	<ul style="list-style-type: none"> Analyzed differences in annual pay (while controlling for hours worked). Used a statistical method (log linear regression) to determine the extent to which differences in pay are explained by other attributes in addition to hours worked.
Congressional Budget Office	<ul style="list-style-type: none"> Annual Social and Economic Supplement of the CPS (2006-2011) for federal and private sector workers. 	<ul style="list-style-type: none"> Federal workers defined as civilian, non-postal workers. Restricted the analysis to full-time, full-year workers. 	<ul style="list-style-type: none"> Occupation (24 categories) Education Experience (age minus years of education minus 6) Age Firm size Locality (5 geographic regions and urban or rural location) Sex Race Ethnicity Marital status Immigration status Citizenship 	<ul style="list-style-type: none"> Analyzed differences in hourly pay. Used a statistical method (decomposition) to determine the extent to which differences in pay are explained by different attributes. Decomposition took into account the wider distribution of pay among private sector workers.

**Appendix III: Information on the Selected
Studies' Data Sources and Methodologies for
Analyzing Pay and Total Compensation**

Study authors and affiliations	Data source used	Description of workforce	Attributes controlled for	Methodology used
Chris Edwards— The Cato Institute	<ul style="list-style-type: none"> • BEA's national income and product accounts (NIPA) data (2000-2008) for federal and private sector workers. 	<ul style="list-style-type: none"> • Federal workers defined as civilian, non-postal workers. 	None	<ul style="list-style-type: none"> • Calculated average percentage change of compensation across the federal and private sectors.
The President's Pay Agent	<ul style="list-style-type: none"> • OPM data (2010) for federal workers. • NCS data (2010) for nonfederal (private, state and local government) workers. 	<ul style="list-style-type: none"> • Federal workers defined as GS and equivalent pay plan workers covering over 200 occupations. • Equivalent pay plans include GM and GL.^b 	<ul style="list-style-type: none"> • Occupation (over 200 categories) • Level of work • Locality (34 locality areas) 	<ul style="list-style-type: none"> • Matched pay rates in the federal government to pay rates in the nonfederal sector in over 200 federal occupations, 15 levels of work, and 34 locality areas. • Results of study apply to GS pay plan employees.
The Project On Government Oversight (POGO)	<ul style="list-style-type: none"> • OPM data (2009) for federal workers. • NCS data (2009) for private sector workers. 	<ul style="list-style-type: none"> • Federal workers defined as GS pay plan and wage grade pay plan (one of the blue-collar pay plans under the Federal Wage System) workers covering 35 selected occupations. 	<ul style="list-style-type: none"> • Occupation (35 occupational categories) 	<ul style="list-style-type: none"> • Matched pay rates in the federal government with pay rates in the private sector at the national level by 35 occupation groups, covering 500 service activities (such as Budget Analyst or Security Guard) that had been outsourced. • Results of study apply to the 35 selected occupations.

Appendix III: Information on the Selected Studies' Data Sources and Methodologies for Analyzing Pay and Total Compensation

Study authors and affiliations	Data source used	Description of workforce	Attributes controlled for	Methodology used
James Sherk— The Heritage Foundation	<ul style="list-style-type: none"> Monthly CPS (2006-2009) for federal and private sector workers. 	<ul style="list-style-type: none"> Federal workers defined as civilian, non-postal workers. Included only federal workers who work in public administration based on Census definitions.^c Restricted the analysis to full-time workers between ages 25 and 65. Excluded those earning less than \$5 or more than \$60 per hour. 	<ul style="list-style-type: none"> Age Education Marital status Race Gender Citizenship and nativity Locality (State) Year of survey Size of metropolitan area Occupation (three specifications: no occupational controls, 22 broad occupational controls, 65 detailed occupations that exist in both the federal government and private sector.) 	<ul style="list-style-type: none"> Analyzed differences in hourly pay. Used a statistical method (decomposition) to determine the extent to which differences in pay are explained by different attributes.

Source: GAO analysis of selected studies.

^aThe CPS collects data in two different ways. The monthly CPS is a monthly survey of households that are asked questions regarding pay and labor market status. The Annual Social and Economic Supplement is conducted once a year (February–April). This survey is sometimes called the March CPS. Biggs/Richwine and CBO used the Annual Social and Economic Supplement, while Sherk used the monthly CPS. Dates indicate when the surveys were conducted. The surveys ask about annual earnings over the prior calendar year.

^bSee app. I for more information on the other pay plans (GM and GL) that OPM considers to be equivalent to the GS pay plan in its comparisons between federal and nonfederal pay.

^cCensus definitions of public administration are provided in the North American Industry Classification System code 92. Most federal workers are included, but postal workers and some other federal employees are excluded—for example, some employees of federal schools, hospitals, transportation facilities, utilities, and the Government Printing Office.

Controlling for Attributes in Analyzing Pay

Studies could control for many attributes—personal or job-related—to help explain the differences between federal and private sector pay, as shown in the previous table. The types of attributes the selected study authors controlled for depended on the type of approach used to analyze pay—human capital or job-to-job. For example, the human capital approach controls for personal attributes (e.g., education, job experience) and job-related attributes (e.g., occupation, firm size). The job-to-job approach involves controlling for job-related attributes (e.g., occupation, level of work) without considering the personal attributes of the workers. The trend analysis approach does not control for any attributes. Attributes such as occupation, level of work, firm size, locality, education, and job experience were considered relevant by several of the studies' authors and people with expertise in compensation issues that we interviewed.

- **Occupation:**¹ Controlling for occupation allows a study to account for different pay rates for different types of jobs. The distribution of occupations in the federal government is different from the private or nonfederal sector, which may be a factor that explains differences in pay. For example, according to the CBO study, 33 percent of the federal workforce compared with 18 percent of the private sector workforce was in a professional occupation. A job-to-job approach, as demonstrated by the study authors who used the approach, involves matching federal workers to equivalent positions in another sector. POGO limited its comparison to 35 selected occupations, while the Pay Agent used over 200 occupations. According to one of the people with expertise that we interviewed, one challenge with this approach is the difficulty of finding nonfederal equivalents for certain positions, such as the Federal Bureau of Investigation agents, that only exist in the government. Another person with expertise said matching occupations across sectors is a subjective process. In contrast, study authors using the human capital approach used fewer and much broader occupational groups. For example, Biggs/Richwine used 10 categories, while Sherk and CBO used 22 and 24, respectively. In addition to his analysis of the overall pay disparity, Sherk analyzed pay data with and without occupation controls, and reported that less was explained when occupation was not included in the analysis.
- **Level of Work:** Controlling for level of work (or grade level) allows a study to account for different pay rates for different levels of job complexity and responsibility (e.g., entry-level, mid-level, senior level or finer distinctions by level). Level of work encompasses types of duties performed, the scope and effect of the work, the level of difficulty and responsibility, and the level of supervision received. It can be difficult to measure level of work since levels are defined differently in different workplace settings. Of the studies we examined, only the President's Pay Agent Report controls for level of work. For federal employment in the GS pay system, there are 15 grade levels. To compare these with levels in nonfederal workplaces, BLS economists ranked nonfederal positions based on four factors: knowledge, job controls and complexity, contacts (nature and

¹Occupation is defined by BLS as a set of activities that employees are paid to perform. Employees that perform essentially the same tasks (such as lawyers or engineers) are in the same occupation, whether or not they work in the same industry. A number of jobs can be classified into an occupation. For example, a lawyer could practice family law or international treaty law. These different jobs would be classified under the occupation "lawyer."

purpose), and physical environment.² One person with expertise observed that the human capital approach does not recognize that there are many different levels within an occupation such as accountant or lawyer.

- **Firm size:** Controlling for firm size allows a study to account for the effect of the number of workers in a firm. Some of the study authors asserted that large firms tend to offer higher salaries and greater benefits than smaller firms, but they differed on the decision to control for this attribute. CBO and Biggs/Richwine felt that federal workers should be compared to private sector workers at similarly sized institutions (e.g., firms with at least 1,000 workers) and included a measure of firm size in their analyses. The reasons the authors cited included large firms requiring more occupational specialization or higher levels of skill than smaller firms. Sherk said he chose not to control for firm size because he views it as a proxy for individual ability in the private sector—the larger firms pay a premium to hire more capable individuals and the associated pay reflects that. He said this is not the case in the federal government; the federal government does not selectively hire employees from large corporations but competes for hiring with all sizes of firms in the private sector. Sherk felt that including firm size could bias results if more productive workers tend to work in larger firms in the private, but not the federal sector. A person with expertise we interviewed agreed that a larger firm would pay more and have better benefits and noted that large firms are in head-to-head hiring competition with the federal government. In 2008, the President's Pay Agent decided to include data from all establishments in its locality pay recommendations to increase the amount of data available for jobs. Since locality pay began in 1994, the Pay Agent had used only data from large

²BLS defines the four factors and provides guidance to economists on how to apply the factors in leveling the jobs. For knowledge, BLS describes this factor separately for the broad categories of occupations, such as professional accounting, information technology, and business administration. "Knowledge" is defined as the level of knowledge expected for the occupation at progressively higher levels of work. For the other three factors, BLS provides descriptions that apply to all occupations. "Job controls and complexity" covers the amount and type of directions received, the complexity of the work, and the nature of the work within a job. "Contacts" covers the nature and purpose of contacts within a job but outside the supervisory chain; for example, contacts are routine and structured or nonroutine and unstructured, to convey simple information or to influence, control, or debate, with other employees of the same agency, other agencies, members of Congress, or others. "Physical environment" covers the nature of risk, and the amount of physical demands within the job.

establishments in its calculations.³ According to a person with expertise that we interviewed, the larger sample of data helps improve the quality of the job matching.

- **Locality:** Controlling for locality differences allows a study to account for the pay rates in the local labor market. Differences in locality are central to a locality pay system and may be important in a nationwide comparison if federal workers tend to work in areas in which private sector or nonfederal pay is also high, such as certain urban areas. The Pay Agent analysis measures disparities for each of the 34 localities separately and within each locality matches federal workers to nonfederal worker equivalents.⁴ In cases where BLS did not survey a specific job at a specific level of work, it used a regression model to determine the salary that would be expected based on the worker's occupation, level of work, and locality. In contrast, the studies using the human capital approach explored national differences, and did not attempt to determine differences by locality areas. In their analysis, Biggs/Richwine and Sherk controlled for differences in locality by state while CBO used five geographic regions (Northeast, South, Midwest, West, and Washington, D.C. metropolitan area) and urban or rural location.
- **Education:** Controlling for education allows a study to account for the effect of formal schooling that the workers have received. Increased education can increase productivity and result in higher pay by employers. The human capital approach can control for this attribute. Sherk and CBO controlled for education by grouping levels of education into degrees obtained as defined by the CPS such as high school, bachelor's degree, and other degrees as well as high school dropout and some college, no degree.⁵ In contrast, Biggs and Richwine controlled for education by converting degree obtained into a variable representing years of education. The POGO study did not control for education because according to the authors, education level does not reflect the individual's contribution to or output of the

³A firm may consist of one or more establishments.

⁴See app. II for more information on the implementation of locality pay since 1994.

⁵For analysis, CBO used 11 levels of educational attainment based on CPS education data. When reporting, CBO grouped these into five categories: high school diploma or less, some college, bachelor's degree, master's degree, and professional degree or doctorate. Sherk used 7 levels for analysis: high school dropout; high school graduate; some college, no degree; associate's degree; bachelor's degree; master's degree; and professional degree or doctorate.

organization. An individual with a master's degree and a PhD may be paid the same pay rate in the market if they are producing the same output.

- **Job experience:** Controlling for job experience allows a study to account for the length of time an individual has spent working. Experience both at a specific job and in general can affect pay, presumably because it can affect productivity, which can be accounted for in the human capital approach. Biggs/Richwine, CBO, and Sherk considered job experience a relevant attribute. However, the CPS does not include a direct measure of job experience. As a result, the studies use proxies to measure experience. For example, Biggs/Richwine and CBO used a common approach for measuring experience, "age minus years of education minus 6," while Sherk included age in his model.⁶ According to a university professor we interviewed who has done research on compensation issues across sectors, there is no data set that measures how long a private sector worker has been out of the workforce or how long a worker has been working for a given employer. Age can be used as a proxy, but age does not reflect time out of the workforce for child-rearing or other reasons.

Total Compensation Analysis

The selected studies varied in the data sources used, benefits included, and methodologies chosen in analyzing benefits as a part of total compensation, as shown in table 7. The President's Pay Agent is mandated to analyze pay, not benefits, so its study is not included in the following table.

⁶Although measures of length of service are available for federal workers from OPM data, in the application of the human capital model, a common data source must be used for both sectors. This is because of the possibility of differences in how the different variables, such as education or pay, are measured across data sources.

**Appendix III: Information on the Selected
Studies' Data Sources and Methodologies for
Analyzing Pay and Total Compensation**

Table 7: Selected Studies' Data and Methodologies Used in Analyzing Total Compensation (Pay and Benefits)

Study author	Data sources used	Benefits included	Methodology used
Biggs/ Richwine	Federal: <ul style="list-style-type: none"> OPM/OMB cost factor on the cost of benefits relative to salaries—civilian position full fringe benefit cost factor, as used in update to OMB circular A-76. OPM data on levels of paid leave from <i>Federal Civilian Work Force Statistics: Work Years and Personnel Costs Report</i>, fiscal year 2005. Annual Social and Economic Supplement of the CPS to estimate job security. Private: <ul style="list-style-type: none"> BLS's NCS, Employer Costs for Employee Compensation for firms with greater than 100 employees. 	<ul style="list-style-type: none"> Health insurance Life insurance Disability Insurance Retirement benefits—defined benefit and defined contribution plans Employer portion of mandatory government benefits such as Social Security and Medicare Paid leave Supplemental pay (e.g., overtime, shift differentials, nonproduction bonuses) Benefit of greater job security (only federal) Workers' compensation Unemployment programs Bonuses/awards (only federal) 	<ul style="list-style-type: none"> Used estimates of benefits in the private sector from BLS data and estimates of benefits in the federal sector from OMB and OPM data. Added additional compensation elements such as job security. Assumed that the unexplained portion of the benefits as shown in the data was the same as the unexplained portion found in pay, estimated from a human capital model. This difference in benefits used took into account firm size, but not individual characteristics.
CBO	Federal: <ul style="list-style-type: none"> Unpublished data from OPM were used to obtain the relationship between pay and benefits. Obtained information on attributes and pay of workers from the CPS. Private: <ul style="list-style-type: none"> Unpublished data from BLS's NCS was used to obtain relationship between pay and benefits Obtained information on attributes and pay of workers from the CPS. 	<ul style="list-style-type: none"> Health insurance Retirement benefits—defined benefit and defined contribution plans Employer portion of mandatory government benefits such as Social Security and Medicare Paid leave Workers' compensation Unemployment programs 	<ul style="list-style-type: none"> Obtained estimates of the relationship between pay and benefits for the private and federal sectors. Using this relationship, for each individual in the CPS, used the rate of annual pay to obtain a predicted value of benefits. Then, applied a human capital model to estimate the portion of the difference in total compensation unexplained by attributes.
Edwards	Federal and Private: <ul style="list-style-type: none"> BEA's NIPA data: <ul style="list-style-type: none"> 6.2D (Compensation of Employees by Industry), 6.3D (Wage and Salary Accruals by Industry), 6.5D (Full-Time Equivalent Employees by Industry). 	<ul style="list-style-type: none"> Health insurance Life insurance Retirement benefits—defined benefit and defined contribution plans Employer portion of mandatory government benefits such as Social Security and Medicare Paid leave 	<ul style="list-style-type: none"> Calculated the difference in average total compensation between federal and private sector workers. Did not determine the percentage explained by attributes.

**Appendix III: Information on the Selected
Studies' Data Sources and Methodologies for
Analyzing Pay and Total Compensation**

Study author	Data sources used	Benefits included	Methodology used
POGO	Federal: <ul style="list-style-type: none"> OPM/OMB cost factor for the cost of benefits relative to salaries—civilian position full fringe benefit cost factor, as used in update to OMB circular A-76. Private: <ul style="list-style-type: none"> BLS's NCS cost factor for cost of benefits relative to salary. 	<ul style="list-style-type: none"> Health insurance Life insurance Retirement benefits—defined benefit and defined contribution plans Employer portion of mandatory government benefits such as Social Security and Medicare Supplemental pay (only private) Paid leave (only private) Workers' compensation Unemployment programs Bonuses/awards (only federal) 	<ul style="list-style-type: none"> Used the cost factor for benefits for federal (36.25%) and private (33.5%) sectors. Applied these cost factors to pay estimates for the 35 occupations in each sector and determined the difference in total compensation.
Sherk	Federal: <ul style="list-style-type: none"> BEA's NIPA data: 6.2D (Compensation of Employees by Industry), 6.3D (Wage and Salary Accruals by Industry), 6.5D (Full-Time Equivalent Employees by Industry). OPM data on federal retirees who are receiving benefits under the Civil Service Retirement System. Private: <ul style="list-style-type: none"> Annual Social and Economic Supplement of the CPS. BEA's NIPA data: 6.2D (Compensation of Employees by Industry), 6.3D (Wage and Salary Accruals by Industry), 6.5D (Full-Time Equivalent Employees by Industry). 	<ul style="list-style-type: none"> Health insurance Life insurance Retirement benefits—defined benefit and defined contribution plans Employer portion of mandatory government benefits such as Social Security and Medicare 	<ul style="list-style-type: none"> Used the difference in average total compensation for federal and private sectors obtained from BEA data. Used the CPS data to determine observable differences in pay between private sector and federal workers. Assumed that the unexplained compensation premium in the BEA data was the same as the unexplained portion found in pay estimated from a human capital model. Used OPM data to adjust for the fact that federal retirees who are receiving benefits under the Civil Service Retirement System are included in BEA's NIPA data for current federal workers.

Source: GAO analysis of selected studies.

Data Sources Used in Compensation Analysis

The study authors had a variety of data sources to choose from in analyzing pay and total compensation. They chose the data sources for their studies based on their overall approach and data needs. The study authors and people with expertise in compensation issues that we interviewed identified strengths and limitations of two common data

sources the studies used in analyzing pay or total compensation—the CPS and NCS. Agency officials who oversee these data sources also weighed in on the use of the data in analyzing compensation.

- **Current Population Survey.** The CPS—and in particular, the monthly CPS—has a large sample size relative to other data sources enabling analyses that would not have been possible in data sets with a smaller sample size. According to Sherk, he used the monthly CPS because he needed at least 30 valid observations of occupations in both the public and private sectors for his analysis comparing detailed occupations. The Annual Social and Economic Supplement of the CPS has questions that are more in-depth than the monthly CPS and it contains measures of job tenure, educational degree, and firm size. Individuals interviewed for the monthly or Annual Social and Economic Supplement of the CPS are self-reporting in their responses, which can result in reporting errors. As an example of an error that could occur, individuals who work for a contractor employed by the federal government could identify themselves as federal employees, which would be incorrect. Census officials said that there are CPS interviewer manuals to assist interviewers in helping respondents with their answers.
- **National Compensation Survey.** BLS conducts the NCS by interviewing employers, which allows for cost data on pay and benefits to be directly collected from employers as opposed to individuals self-reporting the information. While the survey covers all sectors, it does not collect data on federal workers, which—according to the study authors who used the NCS—results in the need to piece together different sources of benefits information in order to get comparable data. The NCS also provides detailed pay information by occupational work level that is based on the duties and responsibilities of a job, which is a key source of information for the President's Pay Agent when determining locality pay adjustment amounts. Recently, the sample size for the NCS was reduced, and BLS has developed a model to determine locality pay using a combination of the NCS and the Occupational Employment Statistics (OES) survey. The OES is a larger survey with broader coverage of locality areas than the NCS, but it does not contain information on levels of work. (See app. II for additional information on locality pay and the use of these surveys.)

The following table provides additional details on the data sources relevant for analyzing compensation across sectors including a description of the data source and supporting methodology.

**Appendix III: Information on the Selected
Studies' Data Sources and Methodologies for
Analyzing Pay and Total Compensation**

Table 8: Data Sources Used in Analyzing Compensation

Data source, affiliated agency	Description	Sample and methodology
Civilian Position Full Fringe Benefit Cost Factor OPM and OMB	OMB through Circular A-76 requires agencies to use standard cost factors to estimate certain costs of government performance including the cost of benefits for civilian personnel. This cost factor identifies the cost of benefits relative to salaries for federal workers. Covers the cost of benefits for federal civilian employees in four categories: <ul style="list-style-type: none"> • insurance and health benefit; • standard civilian retirement benefit; • Medicare benefit; and • miscellaneous fringe benefits including workmen's compensation, bonuses, awards that are based on annual performance ratings, and unemployment programs. Does not include the value of paid leave, supplemental pay, and several small categories of benefits.	<ul style="list-style-type: none"> • Cost factor based on OPM's actuarial analyses. • Updated most recently in an OMB memo from 2008.
Current Population Survey Department of Commerce, Census Bureau Department of Labor, BLS	Provides labor statistics for the U.S. population. <ul style="list-style-type: none"> • The monthly CPS is a household survey with information on the employment and unemployment experience of the nation's population, classified by age, sex, race, education, geographic area, and a variety of other characteristics. • The Annual Social and Economic Supplement of the CPS adds questions to the monthly CPS covering household and family characteristics, marital status, geographic mobility, foreign-born population, income from the previous calendar year, poverty, work status/occupation, health insurance coverage, noncash benefits, and education. 	<ul style="list-style-type: none"> • The monthly CPS covers about 54,000 households. The sample is selected to represent the civilian population cutting across all sectors. • The Annual Social and Economic Supplement includes additional households. The sample includes estimates for the nation as a whole and for individual states and other geographic areas. This supplement is conducted annually (February-April).
Federal Civilian Work Force Statistics: Work Years and Personnel Costs Report OPM	Provides a wide range of federal workforce data on work years expended, payroll costs, fringe benefit expenses, types of leave used and its value, and other compensation items. Most recent published report is from fiscal year 2005.	<ul style="list-style-type: none"> • All executive branch agencies with over 100 employees including the U.S. Postal Service.
Job Openings and Labor Turnover Survey Department of Labor, BLS	Provides data on job openings, hires, quits, layoffs and discharges, and other separations. These data serve as demand-side indicators of labor shortages at the national level. There is no demographic information on employees. Covers all U.S. nonagricultural industries in the public and private sectors.	<ul style="list-style-type: none"> • Data are from a sample of approximately 16,000 U.S. businesses covering all nonagricultural industries in the public and private sectors. • Separation data are disaggregated into three types: voluntary (quits), involuntary (layoffs and discharges), and other (includes death and retirement). • BLS does not determine whether a separation is due to seasonal work.

**Appendix III: Information on the Selected
Studies' Data Sources and Methodologies for
Analyzing Pay and Total Compensation**

Data source, affiliated agency	Description	Sample and methodology
National Compensation Survey Department of Labor, BLS	Covers local, regional, and national occupational earnings. Covers state and local governments and private industry. Components of NCS include: <ul style="list-style-type: none"> • Employment Cost Index: average quarterly changes in wage, benefit, and compensation rates for a fixed market basket of labor services. • Employer Costs for Employee Compensation: quarterly employer cost levels, including average hourly employer cost. • Employee Benefits Survey: incidence and provisions of employee benefits. 	<ul style="list-style-type: none"> • Conducted by interviews with employers covering 11,400 establishments and 50,500 sampled occupations. • Federal employees are not included. • The North American Industry Classification System is used to stratify establishments by industry and the Standard Occupational Classification system is used to classify occupations.
National Income and Product Accounts Department of Commerce, BEA	Estimates total wages and total compensation including noncash compensation such as the employer's contribution for health insurance by industry across all sectors. Total compensation includes employer contributions to: social insurance—such as Social Security and Medicare; health insurance; pension and profit sharing plans. The value of paid leave is included in the total compensation calculations as wages and salaries.	<ul style="list-style-type: none"> • Data largely originate from public sources, such as government surveys (e.g., the Quarterly Census of Employment and Wages) and administrative data (e.g., the Social Security Administration and OPM). • Data for general government compensation exclude federal workers in government enterprises such as postal workers.
Occupational Employment Statistics (OES) Survey Department of Labor, BLS	Covers occupational employment and wage rates of wage and salary workers in private industry, and state, local, and federal government employees on an hourly and annual basis, including mean and median earnings for all areas — national, state, Metropolitan Statistical Areas, and the nonmetropolitan balance of state areas.	<ul style="list-style-type: none"> • 200,000 business establishments /6 months by substate area and industry, over 3 years, for 1.2 million total business establishments. Substate areas are Metropolitan Statistical Areas and one or more balance-of-state areas which cover the remaining non-Metropolitan Statistical Area portions of the state. • The North American Industry Classification System is used to stratify establishments by industry and the Standard Occupational Classification system is used to classify occupations.
Office of Personnel Management Federal Employee Data OPM	Provides selected data elements on federal civilian employees from the Central Personnel Data File and Enterprise Human Resources Integration-Statistical Data Mart. FedScope is the public access source for this data. Data includes age, gender, length of service, grade, occupation, salary, type of appointment, agency, location, and Metropolitan Statistical Area.	<ul style="list-style-type: none"> • Data covers most agencies in the executive branch. Exceptions from coverage include the uniformed military, intelligence agencies, the White House, Tennessee Valley Authority, the Board of Governors of the Federal Reserve, and the U.S. Postal Service. • Coverage of the legislative branch is limited to the Government Printing Office, the U.S. Tax Court, and selected commissions.

Source: GAO analysis of data sources for compensation.

Appendix IV: Comments from the Project On Government Oversight



June 6, 2012

Mr. Robert Goldenkoff
Director, Strategic Issues
U.S. Government Accountability Office
441 G St, NW
Washington, DC 20548

Mr. Goldenkoff,

Thank you for providing the Project On Government Oversight (POGO) with the opportunity to review the draft report, *Federal Workers: Results of Studies on Federal Pay Varied Due to Differing Methodologies* (GAO-12-564).

Based on the draft report, or portion thereof, provided to POGO, we concur with the draft report's finding that many factors hinder public and private sector pay comparisons. For example, the lack of detailed data on both salaries and compensation (which includes salary, benefits, and all incidental costs that should be considered when comparing the public and private sector workforce) makes it nearly impossible to draw empirical conclusions about one sector being underpaid. Simply stated, federal agencies collect salary and compensation information pursuant to numerous models that permit agencies and others to manipulate data when conducting an analysis.

The numerous formulas utilized in human capital and job-to-job comparisons often lead to very different results. Data collection and quality issues often hinder the analysis of information related to salary, benefits, education, locality, experience, and personal attributes, which inhibits a scientific review of public and private pay.

We suggest that the final report and subsequent reports include an analysis of Office of Personnel Management (OPM) salary comparisons. Those comparisons utilize a consolidated human capital and job-to-job approach, which provides some evidence that public employees are underpaid when compared to the private sector.¹

Finally, the draft report states that government and contractor cost comparisons were outside the scope of GAO's analysis. As we emphasized in our *Bad Business* report,² this issue should not be ignored as the government considers ways to reduce federal government spending.

Sincerely,

Scott H. Amey
General Counsel

¹ One comparison clearly shows that federal pay for a government engineer is lower than private sector pay. Office of Personnel Management, "Use of Bureau of Labor Statistics Data for Setting General Schedule Pay," <http://www.opm.gov/oca/pay/html/UsingBLSDData.asp> (Downloaded June 6, 2012)

² Project On Government Oversight, *Bad Business: Billions of Taxpayer Dollars Wasted on Hiring Contractors*, September 13, 2012. <http://www.pogo.org/pogo-files/reports/contract-oversight/bad-business/co-gp-20110913.html#Government%20Cost%20Studies>

Appendix V: GAO Contact and Staff Acknowledgments

GAO Contact

Robert Goldenkoff, (202) 512-6806, goldenkoffr@gao.gov

Staff Acknowledgments

In addition to the contact named above, Trina Lewis (Assistant Director), Laurel Beedon, Benjamin Bolitzer, Sara Daleski, Karin Fangman, Robert Gebhart, Janice Latimer, Rebecca Shea, and Meredith Trauner made key contributions to this report.

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