

## Guidance for Agencies Conducting Gender Pay Data Analysis

### I. Purpose

This document provides an overall guide for agencies to conduct their own gender pay data analysis. The Office of Personnel Management (OPM) recommends agencies conduct data analysis similar to the analysis conducted for OPM's April 2014 report, "Governmentwide Strategy on Advancing Pay Equality in the Federal Government." The purpose of conducting this analysis is to:

1. Identify areas where potential gender-related pay disparities exist within an agency;
2. Determine if there are identifiable, and statistically reliable, reasons for those disparities; and
3. Provide a basis for the development of targeted strategies to reduce gender-related pay disparities, to the extent possible.

The following overview refers to a more detailed description of the process OPM used to conduct the Governmentwide gender pay analysis—"Detailed Analyses of Governmentwide Data on Gender Pay Differences for White-Collar Employees." This more detailed document can be obtained by emailing OPM's Pay and Leave office at [pay-leave-policy@opm.gov](mailto:pay-leave-policy@opm.gov).

### II. OPM's Data Sources and Analysis Process

#### 1. Population

OPM analyzed workforce data reported by agencies to OPM's central data system. The population was limited to:

- Employees in the Executive branch;
- Employees in pay status;
- Employees with a "permanent" appointment (i.e., appointment without time limitation); and
- Employees with a non-seasonal full-time work schedule.

#### 2. Factors

OPM's study included the factors listed below that describe employee characteristics, along with the selected subpopulations established for each factor.

- Age
- Bargaining unit status
- Disability status
- Duty station (50 states, District of Columbia, and other)
- Education level
- Grade level (for GS employees)

- Law enforcement officer status
- Length of service
- Occupational category #1 (PATCO code)
  - PATCO identifies general occupational grouping: Professional (P), Administrative (A), Technical (T), Clerical (C), and Other White Collar (O).
- Occupational category #2 (37 occupational groupings)
  - The 37 occupational categories used are generally the simple combination of a PATCO code and an occupational family (e.g., 08xx-P for Professional employees in the Engineering and Architecture Job Family).
  - An “occupational family” or “job family” is a set of series in the same numbered range. White-collar occupational series range from 0001-2299. Each range of hundreds (e.g., 02xx or 0201-0299) is an occupational family.
- Pay plan
- Race/ethnicity
- Supervisory status
- Veterans status

### 3. Calculation

In comparing female to male salaries, OPM used male salaries as the base for comparison. Thus, in the report, average female salary was expressed as a percentage of the average male salary. For example, in 2012, the average female salary was 87.3 percent of the average male salary.

For more information on OPM’s data sources and analysis process see Section A of the *Detailed Analyses of Governmentwide Data on Gender Pay Differences for White-Collar Employees* available from [pay-leave-policy@opm.gov](mailto:pay-leave-policy@opm.gov).

## III. Types of Data Analysis

OPM conducted the following types of data analysis:

### 1. Workforce snapshot data

- Data was extracted and analyzed by gender to obtain a picture of specific workforce characteristics, including:
  - an overall raw gender pay gap; and
  - a weighted average gender pay gap from each of the factors studied.
- Snapshot data is taken from a Status File representing employee characteristics at a particular point in time.
- See Section B of the *Detailed Analyses of Governmentwide Data on Gender Pay Differences for White-Collar Employees* available from [pay-leave-policy@opm.gov](mailto:pay-leave-policy@opm.gov) for the specific process OPM used for the workforce snapshot data.

## 2. Multivariate regression-decomposition data analysis

- The multivariate regression-decomposition analysis allows the male-female pay gap to be decomposed into an explained portion and an unexplained portion. The explained portion is the portion of the gap that is attributable to the factors included in the analysis (e.g., occupation, education level, age). It measures the effect that female characteristics (i.e., percentage distribution of females across the subpopulations for each factor) have on the pay gap. The remaining portion of the gap is unexplained—that is, not explained by the factors included in the analysis.
- In addition to providing overall measures of the explained and unexplained portions of the pay gap, the decomposition method also measures the extent to which the various factors contribute to the explained portion of the pay gap. Thus, it provides insights regarding possible causes of the pay gap.
- It is recommended that agencies have a minimum of 100 employees in order to perform a regression-decomposition analysis; however those with 400 or more employees are considered ideal. As with most statistical analyses, the larger the population size, the more accurate the results will be.
- See Section C of the *Detailed Analyses of Governmentwide Data on Gender Pay Differences for White-Collar Employees* available from [pay-leave-policy@opm.gov](mailto:pay-leave-policy@opm.gov) for more information on the process OPM used for the regression-decomposition analysis.

## 3. Dynamic data on certain personnel actions

- OPM analyzed the following pay actions by gender:
  - (1) Superior qualifications and special needs pay-setting authority;
  - (2) Promotions;
  - (3) Starting salaries; and
  - (4) Quality step increases.
- Dynamic data represents personnel actions taken over a period of time.
- See Section D of the *Detailed Analyses of Governmentwide Data on Gender Pay Differences for White-Collar Employees* available from [pay-leave-policy@opm.gov](mailto:pay-leave-policy@opm.gov) for more information on the process OPM used for conducting the dynamic data analysis.

## IV. Focus of the Analysis

OPM recommends that agencies conduct targeted analysis that focuses on:

- Large independent pay systems administered by the agency (covering 100 or more employees in a given population);
- Major occupations; and
- Subpopulations with largest gender-based pay disparities.

In some cases, agency data analysis may need to probe deeper than the analysis conducted by OPM in order to fully understand the factors behind a gender pay disparity. For example, an agency may generate data for major occupations that show gender pay gaps by age groupings or length of service groupings within each occupation.

For purposes of this analysis, OPM recommends that agencies analyze data for the most recent calendar year that is available in order to obtain an understanding of the current workforce with respect to gender. Agencies may then decide to analyze past years in order to gain an understanding of workforce trends.

Some questions agencies may look to answer while conducting their gender pay analysis are:

- Are there any gender equality issues in your agency?
- Do the results of regression-decomposition analysis explain any gaps that exist?
- How do your agency's results compare with OPM's Governmentwide results?

This analysis may require a statistician due to its technical nature. Accordingly, agencies are encouraged to assemble a team of employees, including those with necessary skills in data system administration and statistical analysis, and give the team specific tasks to perform.

## **V. Ongoing Data Analysis**

OPM encourages agencies to develop plans for conducting ongoing data analysis related to gender pay equality on a regular and recurring basis to remain focused on addressing this important issue and to measure progress in closing any gender pay gaps.

## **VI. OPM Contact Information**

Agency headquarter-level human resources offices may contact the Pay and Leave office at OPM at [pay-leave-policy@opm.gov](mailto:pay-leave-policy@opm.gov) or (202) 606-2858. Employees should contact their agency human resources office for further information on this guidance.