# Gender Equity in the US Civil Service: Evidence from the Classification Act of 1923

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**Abstract**

Pay standardization schemes are commonly implemented in organizations to address pay gaps based on gender, race, or ethnicity. These schemes limit managerial discretion to determine wages, thereby limiting gender inequality within job titles. However, this may shift inequality to other margins such as position quality or promotions. This study examines the effects of the Classification Act of 1923, which standardized pay grades and position categories and required "equal pay for equal work" in the US Civil Service, on women's earnings relative to men's. Using a differential difference-in-differences approach, we exploit the fact that the policy applied to civil servants working in Washington, D.C., but not to those working in federal field offices. We find that the law did not improve women's relative pay within job titles. Further, the law lowered women's relative compensation without controlling for job titles, suggesting changes in women's positions. We indeed find large negative effects on the position margin. In response to the law, departments downgraded women to lower-quality positions. These negative consequences predominantly affected newly hired women. Our findings underscore the importance of unintended margins of adjustment for policies related to gender equity.

*Job market paper

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# 1 Introduction

There is substantial wage dispersion in the labor market, even within the same firm and position (Cullen 2024). While pay dispersion may reflect true differences in marginal products, it can also result from "unjustified" differences such as discrimination based on gender, race, or ethnicity. Despite significant progress over the past forty years, the gender pay gap remains a persistent issue (Goldin 2006; Blau and Kahn 2017). Organizations have instituted different policies to address gender inequities, including pay standardization, which ties positions to set salary ranges. Pay standardization is particularly prevalent in the public sector, where profit motives do not drive personnel policies, work involves multi-tasking and hard-to-measure output, and there is often a desire to shield employees from political influence (Salvatore, Tomasso, and Mukherjee 2000; Finan, Olken, and Pande 2017). By limiting managerial discretion to set wages, standardization should reduce gender pay inequality within positions. However, the goals of pay standardization could be undermined if managers shift gender inequality to other margins, such as employing fewer women, downgrading women to lower-level positions, or promoting women less frequently.

In this paper, we study the consequences of pay standardization for gender equity in the context of the Classification Act of 1923, a law that created standardized position categories and pay grades in the US Civil Service. We specifically look at how the Classification Act affected women's earnings relative to men's and whether it shifted gender inequality from pay to other margins like employment, position types, and promotions. Prior to the law, department heads and bureau chiefs had a large amount of discretion to set compensation for civil servants. There were increasing complaints about pay inequities among similarly qualified individuals performing the same job leading up to the Classification Act (Betters 1931). In addition, women joined the federal workforce in large numbers around World War I (WWI) (Aneja, Farina, and Xu 2024), but were paid less than men for the same jobs. The law created five services, or high-level position groups, and pay grades within each service. It also required that federal departments place employees in services and grades based on the qualifications and responsibilities of their positions (Congress 1923). Although the Classification Act had multiple motivations, our analysis focuses on gender disparities due to it being an important period for women in the federal workforce, explicit equal pay language in the law, and features of our data that allow us to track the careers of both men and women in the federal government.[1]

[1] Although pay gaps based on race and ethnicity were also important, we focus on gender as we can identify

Our setting has two key empirical advantages for studying the consequences of pay standardization and equal pay requirements within an organization. First, our analysis uses rich personnel data that allows us to track compensation by gender over time and study potential margins of adjustment such as employment, position types, and promotions. Our data consists of newly digitized US federal government personnel records for 1917-1929 from *The Official Register of the United States* (referred to as the Register). These records include information on civil servants' names (from which we infer gender), place of employment, job title, and annual compensation. We focus our analysis on employees at an administrative or supervisory level as these employees are consistently included in the Registers throughout this period.

Second, the Classification Act applied to civil servants working in the departmental service in Washington, D.C., but not to civil servants working in field offices of the federal government outside of Washington. This provides us with spatial variation in the application of the law. We estimate the effects of the Classification Act on women's relative earnings using a difference-in-differences (DD) strategy. We compare annual compensation between DC and the field service pre- and post-Classification Act. We allow for differential compensation effects by gender. For the law to improve relative earnings, compensation for women should grow faster in DC versus the field, compared to men in DC versus the field. We additionally estimate a difference-in-differences model within DC, comparing compensation between men and women in the departmental service pre- and post-Classification Act. Since the law only addressed pay, departments could, in theory, shift gender inequalities to other areas without violating the law. Therefore, we examine the effects on other margins, including female employment, starting salaries, job quality, and promotions.

The law aimed to standardize compensation within job titles, and since women were previously paid less than men for the same roles, we expect to find a positive impact on women's relative compensation within job title. Our findings show a small and statistically insignificant negative impact of 3.7 log points (3.6%) on women's relative compensation with job title fixed effects. The lack of an effect within job titles is surprising, however, the pay grades set up by the law had ranges with minimum and maximum salaries. We present suggestive evidence that women were more likely to receive a minimum salary and that the gender gap within job titles was

individuals' gender based on names and we see a large gender pay gap in our data.

similar to the average range of a pay grade. Without controlling for job title, there is a much larger negative effect on women's relative compensation of 33.3 log points (28.3%), suggesting that departments may have adjusted job assignments in response to the law. This large negative effect persists despite the overall increase in compensation in DC compared to field offices. We also analyze the impact on relative compensation just for incumbent employees, those employed before the law's enactment. Notably, without controlling for job title, incumbent women's compensation increased by 7.2 log points (7.5%) faster than that of incumbent men. This indicates that the law primarily benefited incumbent women, while the negative effects were driven by new hires.

We then estimate effects on potential margins of adjustment including employment, starting salaries, job quality, and promotions. These are areas where departments could maintain inequalities, potentially explaining the wage effect differences with and without controlling for job title. If the law acted as a price floor for female labor, we might expect reduced female employment. We do not find significant effects on the share of women employed, but there is a significant pre-trend in this outcome. However, we would expect female employment to increase based on the trend and we find that it remains fairly constant. As departments could no longer pay women less within job titles, they may have responded by placing women in lower-level positions with lower salaries and worse job quality. Looking at starting salaries, we find that the law reduced women's starting salaries by 33.8 log points (28.7%) relative to men's.

To study job quality, we construct different measures of how well-paid a given position was prior to the Classification Act. If departments downgraded women's positions, we would expect women to be assigned to roles that had lower pay prior to the Act. Across the different measures of job quality, effects are consistently negative and large, though not always statistically significant. We see a positive but not significant differential effect of the law on promotions, measured by the rate of change in job titles. This suggests that the compensation effects were driven primarily by the position margin. Additionally, we find suggestive evidence that having a female unit head and working in a unit with an above-median share of women counteracted the negative effects of the law, although these effects are imprecisely estimated. Taken together, the results provide a cautionary tale about how a law designed to promote wage fairness can shift inequality to other areas. Although women's groups had championed the Classification Act for its potential to address pay inequities (National Women's Trade Union

League of America 1924), it ultimately resulted in women being placed in lower-level positions.

Our paper contributes to three strands of the literature. We first contribute to the literature on anti-discrimination regulations and pay transparency policies. These policies share some features with pay standardization, but pay standardization is relatively understudied in economics. Equal pay regulations, such as the Equal Pay Acts of 1963 in the US and 1970 in the UK require equal pay for equal work and allow legal recourse for violations. Bailey, Helgerman, and Stuart (2024) find that the Equal Pay Act of 1963 and Title VII of the Civil Rights Act of 1964 increased women's wages, particularly in industries with larger preexisting gaps, consistent with narrowing the gender pay gap. Nevertheless, the authors present evidence that female employment grew more slowly in jobs more affected by the law, suggesting employer adjustment on the employment margin. Neumark and Stock (2006) study equal pay laws in US states and find that they negatively affect female employment. Additionally, they find an initial drop in female-to-male relative wages which recover over time. These studies use repeated cross-sectional data, providing nationally representative estimates of the effects of equal pay regulations. In contrast, our rich personnel data enable us to delve deeper, examining how equal pay regulations influence potential adjustment margins such as employment, position types, and promotions.

Similar to anti-discrimination regulations, pay transparency policies intend to close the gender pay gap. Cullen (2024) summarizes the literature on pay transparency policies such as making salaries public or publishing information on relative earnings by gender. The majority of studies found that transparency lowered the gender pay gap but also lowered overall wages (Cullen 2024). Cullen, Li, and Perez-Truglia (2022) show that providing information to firms on the aggregate distribution of pay for a position, a practice called "benchmarking," leads to decreased pay dispersion but the authors do not find heterogeneous effects by gender. Although benchmarking provides salary information that can be used in wage-setting, it does not go as far as standardization which places rigid bounds on salaries for a given position. We add to these studies by highlighting the unintended consequences of a policy that aimed to make wage-setting more transparent.

Second, we contribute to the literature on the personnel economics of the state. The state's ability to provide public services is an important driver in the development process (Besley

and Persson 2010). There is a large literature on how personnel practices such as pay increases and merit-based selection affect the qualifications of civil servants and the efficiency of public service delivery (Ferraz and Finan 2011; Dal Bó, Finan, and Rossi 2013; De Ree et al. 2018; Aneja and Xu 2023; Moreira and Pérez 2024). Additionally, there is a growing literature on diversity in the public sector (Dal Bó et al. 2017; Aneja and Xu 2022; Moreira and Pérez 2022; Li 2023; Aneja, Farina, and Xu 2024). While civil servant selection and overall pay are widely studied, there is little evidence on the consequences of pay standardization, despite it being a common practice.

Third, we shed further light on the experience of working women at an important time in the evolution of women in the workforce and in the development of the US economy. The early twentieth century was a period of considerable political, economic, and social change for American women with the suffrage and labor movements. Women's suffrage groups such as the National American Woman Suffrage Association also advocated for improvements in female working conditions, including equal pay (Dumenil 2017). Goldin (1990) shows that the female-to-male earnings ratio increased from 1890-1930 but slowed from 1930-1970. In particular, the earnings ratio in clerical and professional jobs, which make up most positions in our data, rose from 0.487 to 0.706 and from 0.263 to 0.385, respectively, between 1890 and 1930 (Goldin 1990). We further add to our understanding of the dynamics of female earnings within a large employer at a time when there is little data available. The US Census did not collect earnings information until 1940 and most studies of this period use occupational earning scores which do not differentiate between men and women.

We proceed first by providing historical background on women in the civil service and the Classification Act of 1923 in Section 2. We then describe the data used in our analysis and descriptive statistics about the gender pay gap in Section 3. We lay out our empirical strategy in Section 4 and present our main relative pay results in Section 5. We provide evidence on mechanisms for our main results in Section 6 and robustness checks in Section 7. We conclude in Section 8.

# 2 Historical Background

## 2.1 Early Classification Efforts

Calls for pay standardization in the civil service go back to the 1830s with concerns that pay for clerks should keep up with the cost of living, reflect the nature of duties, and be competitive with similar positions in the private sector. In 1853, Congress passed a law designating four pay grades for federal government clerks (Betters 1931). A major shortcoming of the law was that it did not require that pay be tied to job responsibilities or performance. Therefore, clerks performing the same duties could be paid different salaries. Although changes to these pay grades were made in subsequent years, there were no additional job classifications made until the Classification Act of 1923.[2] Position classification came to the forefront again with the Pendleton Act of 1883, which changed selection for many federal positions from a patronage system, where civil servants were selected by the president's political party, to a merit-based system, where civil servants were selected via competitive examinations. However, the Pendelton Act only addressed the hiring stage, and grouping positions based on duties performed was seen as necessary for implementing a functioning merit system past employee selection (Betters 1931).

Prior to the Classification Act, individual compensation was determined in one of two ways. Wages were set directly by Congress for some positions through a process called "statutory roll." For other positions, Congress appropriated lump sums of money for departments. Bureau Chiefs, in charge of units of employees within departments, could determine how many people to hire at what pay, based on the lump sum amount. According to the 1920 Congressional Joint Commission on the Reclassification of Salaries, there were 2,066 job titles submitted for the 1920-1921 budget, 583 appropriated through statutory roll and 1,483 through lump sums (Jones et al. 1920).

In the years following the Pendleton Act, the president and Congress organized several committees and investigations on the classification of federal positions. Central findings of these investigations included low pay for highly skilled positions and pay disparities for individuals

[2] A 1921 executive order by President Harding tasked the Bureau of Efficiency with classifying civil servants to implement an efficiency rating system, although the reach of this policy was limited. According to Betters (1931), "It was not possible to use the classification generally because of statutory limitations upon salary rates in particular offices. It was obvious that legislation was necessary for a proper classification and adjustment of compensation in the federal service." Additionally, the classifications were done after our 1921 data was collected, so the policy should not bias our treatment effects.

doing the same job. The Joint Commission on Reclassification of Salaries found that, "Salary and wage rates involving like duties and responsibilities and calling for the same qualifications (that is, for positions of the same class) show wide variations and marked inequalities" (Jones et al. 1920). Civil servant salaries also did not grow as fast as those in the private sector and did not keep up with inflation in the period following the Pendleton Act (Johnson and Libecap 2007). Johnson and Libecap (2007) hypothesize that the Pendleton Act took away the incentive for Congress to increase appropriations for civil servant pay because civil servants were no longer politically connected and could not be required to make campaign contributions.

The expansion of the federal government with World War I helped provide the final push for the Classification Act. Several new federal agencies which paid higher salaries were established during the war. Many civil servants working in older offices wanted to transfer to the new ones and Congress had to pass regulations limiting transfers between departments (Betters 1931). The Classification Act aimed to correct this by creating a uniform process for assigning compensation throughout the departmental service in DC.

## 2.2 Classification and Women in the Civil Service

With a few exceptions, the US federal government did not hire women until the 1860s. Men and women were integrated in many positions, however, women were paid lower salaries than men for the same work (Ziparo 2017). Female civil servants advocated for equal pay and Congress even debated the issue in the late nineteenth century (Ziparo 2017). An 1870 law allowed women to be appointed at the same salaries as men but did not go as far as requiring equal pay. Calls for position classification spurred by World War I came at the same time as a drastic increase in the number of women working in the federal government. The share of women in the federal government more than doubled between 1917 and 1919 and remained high even after the war (Aneja, Farina, and Xu 2024). Although women joined the civil service in increasing numbers at this time, they faced unequal treatment on many margins. Before November 1919, women could be barred from taking position examinations at the discretion of departments (Nienburg 1920). A 1919 report by the Women's Bureau shows that the majority of men were appointed at higher salaries than women for a number of positions such as clerk, expert clerk, typist, and bookkeeper (Nienburg 1920).

Although the main motivation for the Classification Act was to address general pay inequality, gender played a large role as well. This is likely due in part to the efforts of the Women's Bureau and female labor organizations. World War I accelerated efforts by the suffrage and labor movements that were already well underway at the beginning of the twentieth century to improve the status of women in society (Dumenil 2017). An important step toward representing the interests of women in the federal government was the creation of the Women's Bureau.[3] It was created as part of the Department of Labor to improve conditions for working women and advance employment opportunities for women (Women's Bureau 2021). The first heads of the Women's Bureau, Mary van Kleeck and Mary Anderson, were active in the labor movement and advocated for equal pay (Dumenil 2017). The Women's Joint Congressional Committee, a legislative advocacy group made up of women's organizations such as the National Women's Trade Union League (WTUL), actively campaigned for the Classification Act. Upon passage of the law, a 1924 report from the WTUL states, "In some instances new and better standards are to be hoped for because of the opportunity for an actual scientific appraisement of the skill required for much of the work done by women which has thus far been undervalued. In other instances the Classification law will afford opportunity for correction of inequalities in the civil service between the ratings of similar jobs when done by women and men" (National Women's Trade Union League of America 1924). These groups supported the Classification Act, hoping it would close the gender pay gap and create better job opportunities for women.

## 2.3 Classification Act of 1923

The Classification Act of 1923 had the goals of aligning pay with responsibilities, implementing equal pay for equal work both within and across federal departments, and basing changes in pay on merit. The law established five services within the departmental service in DC: professional and scientific; subprofessional; clerical, administrative, and fiscal; custodial; and clerical-mechanical. The law included a description of the work and qualifications of employees in each service. Each service included grades with a description of duties and qualifications, as well as annual salaries that could be paid in each grade. The law also established the Personnel Classification Board to oversee the implementation of the law. Department heads were required to classify all positions into services, grades, and salaries. However, classifications were

[3]It was originally founded as the Women in Industry Service in 1918 and became the Women's Bureau in 1920.

reviewed and could be revised by the Classification Board, which had final approval (Congress 1923). Additionally, employees who were unhappy with their classification could appeal to the Classification Board.

The Classification Act prescribed a process for making salary adjustments. If an employee's pay was currently below her grade then it would be increased. If pay was above her grade, then it would be decreased unless the employee was a Civil War veteran. If pay was within range of the grade but not at one of the fixed steps then it would be upgraded to the next step. New appointments would be made at the minimum rate. Additionally, the law required that decisions about pay raises and dismissals be made on the basis of efficiency ratings. Lastly, the law applied to civil servants working in the departmental services in Washington, D.C. but not to civil servants based in the field services outside of Washington. The Personnel Classification Board was charged with submitting a study and classification recommendations for the field service during the next congress (Congress 1923).

The Classification Board published class specifications in 1924 which included more detailed descriptions of job titles, duties, and qualifications for each pay grade (Personnel Classification Board 1924). The classification of positions in DC was completed in July 1924. From then onward, the Board was responsible for hearing appeals of classifications and performing audits. The Welch Act of 1928 updated the pay grades from the Classification Act, giving general pay raises to civil servants in DC (Congress 1928). Congress also appropriated funds for departments to raise field service salaries to better align with salaries in Washington, D.C., but left the allocation at the discretion of the department heads (Betters 1931). The field service was not officially under the wage schedule of the Classification Act until the Mead-Ramspeck Act of 1941 (Schinagl 1966). The Classification Act of 1923 was later repealed by the Classification Act of 1949, which established the "General Schedule" classification system that is still used in the federal government today (Congress 1949).

Although the Classification Act was the first step toward fixing position classification problems in the federal government, there were issues with its implementation. Members of the Personnel Classification Board often disagreed on the right approach to implementing the law, especially regarding how detailed class specifications should be (Van Riper 1976). Additionally, there was limited review of departments' position allocations, although the Personnel Classification

Board had the authority to do so. Lastly, employees did not get as broad of salary increases as expected. However, this was partially remedied with the Welch Act of 1928 which gave general pay raises and created new grades (Van Riper 1976).

# 3 Data

## 3.1 Personnel Records

Our personnel data for the federal government come from the *Official Register of the United States* (referred to as the Register). This publication was issued from 1816 to 1959 and contains detailed information about the federal workforce (Deeben 2004). We digitized information from 8 registers: 1917, 1919, 1921, 1925, 1926, 1927, 1928, and 1929. Our pre-period consists of data from 1917 to 1921 and post consists of 1925 to 1929. The Register was published biennially through 1921 and annually from 1925 onward. There was no register printed in 1923. Additionally, the Register only included employees with administrative or supervisory roles from 1925 onward. However, registers in the pre-period have tables of employees at an administrative or supervisory level at the beginning and a directory of all employees in a list format at the back.

We only digitize the beginning tables and not the full directory in the pre-period. The format of these tables stays consistent throughout the study years. Therefore, our estimates are representative of upper-level positions, but not necessarily of the entire federal government. To alleviate concerns about changes in the Register format, we also restrict our sample to a panel of units that appear in both the pre- and post-period. Units and sub-units are teams of employees within government departments. Our analysis includes the main government departments: Agriculture, Commerce, Interior, Justice, Labor, Navy, Post Office (non-Postal Service), State (non-diplomatic), Treasury, and War. We also include independent government establishments subject to the Classification Act as per Nienburg (1926): the Bureau of Efficiency, Civil Service Commission, Employee's Compensation Commission, Federal Board for Vocational Education, Federal Trade Commission, Tariff Commission, and Veterans' Bureau.[4]

The registers include the name, job title, annual compensation, department, unit, sub-unit

[4]The Classification Act applied to all government establishments except for the Postal Service, certain units with the DC Municipal government, the US Park Police, the Public Health Service, Coast Guard, and the Coast and Geodetic Survey according to the text of the law (Congress 1923). However, Betters (1931) points out additional independent government establishments that were not subject to the law. We therefore only include independent government establishments for which we are confident whether or not the law applied.

(when applicable), and place of employment for employees in the executive branch of the US government. The 1925-1929 registers additionally include employees' legal residence which corresponds to the state and district from which the employee was appointed to the civil service. We infer gender based on first names using the method of Fryer and Levitt (2004). We take the one percent US Census samples from IPUMS for 1900, 1910, and 1920 and restrict the sample to individuals born between 1855 and 1900, who would be of working age during our study period (Ruggles et al. 2024). We then calculate an index given by Equation (1) below for each first name in the sample. The female index is equal to the proportion of the female population with a given name divided by the proportion of the male population with that name plus the proportion of women with that name. We classify all names with an index of 0.6 or higher as female, all names with an index of 0.4 or lower as male, and do not classify the gender of names with an index between 0.4 and 0.6 as many of these are ambiguous such as "Marion" or "Shirley." We are able to classify the gender for 88.6% of individuals in our data.

$$FemaleIndex_{name} = \frac{\frac{\#female_{name}}{total\#female}}{\frac{\#female_{name}}{total\#female} + \frac{\#male_{name}}{total\#male}} \tag{1}$$

The index is meant to capture the distinctiveness of a name and is purposefully invariant to the population proportion of men and women (although the proportions in the Census are close to 50-50). For robustness, we estimate our main results with gender classified by an alternative index. The alternative index is the same as equation (1), however, we also include the unconditional probabilities of being male and being female following Baye's rule. Although the population was close to 50% male and 50% female, the civil service was not. We obtain the share of women in the civil service from the 1923 Annual Report of the Civil Service Commission, which reports counts of all civil service employees by gender and by whether they are in DC or the field. In that year, 41.4% of the DC workforce was female, and 11.2% of the field workforce was female. We create an index for DC employees using the DC shares and an index for field employees using the field shares. Robustness of our results to the alternative index is shown in the appendix.

We construct a panel data set by matching civil servant names across registers using the

method of Abramitzky et al. (2021). We match on first and last name (and middle initial when available) using a Jaro-Winkler distance threshold of 0.1. For example, we see "Karl F. Kellerman" in both 1917 and 1919 and assume he is the same person. We drop all non-unique names for each pair of years and do not match on department or unit as civil servants may move within the government. Additionally, some observations only report the first initial of the first name. For example, we observe "E. P. Costigan" in 1919 and we observe "Edward P. Costigan" in 1921. We match on first initial and last name when the last name is within the distance threshold and there is no closer first name match. We also infer gender based on the observations within an individual that include a full first name. For "E. P. Costigan" and "Edward P. Costigan," we infer this individual is male based on "Edward."

### 3.2 Grouping Job Titles by K-Means Clustering

Many of the same positions have slight variations in the job titles included in the Register. For example, two of the titles for chemists in the Department of Agriculture's Bureau of Chemistry are "Chemist in Charge of Concentrated Fertilizer Investigations" and "Chemist in Charge of Potash Investigations." We want to group both titles together since they both describe chemists overseeing lab work. To do this, we make three groupings of job titles. For the first, we group together all job titles within a Levenshtein distance[5] of 0.1. We do this to group together the exact same job titles accounting for typos. This is the finest level of position that we use in our analysis. For the next groupings, we perform k-means clustering on the job titles. We do this twice, once with 50 clusters and once with 100 clusters, to group together similar titles.

To implement the k-means clustering, we first employ a large language model[6] (LLM) to map the job tiles in vector space. The LLM has been trained to infer semantic similarity, meaning that job titles with similar meanings are represented by vectors that are closer together in this space. For example, the words "Physician" and "Doctor" have similar semantic meanings, even though they are not close in terms of string distance. The LLM assigns vector representations to these job titles that reflect their semantic similarity. We then apply the k-means algorithm, which initially generates random centroids for the specified number of clusters and iteratively groups the job titles into clusters. The algorithm assigns each title to the cluster whose centroid is closest in terms of vector distance, with the goal of minimizing the overall

[5] Levenshtein distance is a measure of the minimum number of single-character edits needed to make one string identical to another. It is normalized by the length of the shorter string.

[6] "all-MiniLM-L6-v2"

distance between job title vectors and their assigned centroids. K-means clustering requires specifying the number of clusters. We chose 50 and 100 clusters to ensure that position groups were larger enough while also capturing meaningful differences in the types of work done under the different titles. We use both 50 and 100 cluster groupings in our analysis to test if our results are robust to how fine we make the groups.

### 3.3 Pre-Period Descriptive Statistics

We document a large gender pay gap in our pre-period. In Table 1, we regress log annual compensation on an indicator for being female, an indicator for being based in DC, and year fixed effects using the data from 1917-1921. We include fixed effects for the 50 position clusters in column (2), 100 position clusters in column (3), and job titles in column (4). On average, women make 28.8 log points (25 %) less than men in the pre-period and we see that although the gap decreases when adding fixed effects, it remains even within job titles.

For our main analysis, we compare differential changes in compensation by gender between DC and the field offices. Figure 1 plots the average log compensation for men and women in DC and the field service over time. The lines look fairly parallel in the pre-period, although the average compensation of women grows faster from 1917-1919 in the field than in DC, but grows at about the same rate from 1919-1921. It is important to note that in the post-period, women's average compensation appears to catch up to men's in the field service but not in DC. However, the figure displays averages, and masks changes within occupations.

Table 2 reports descriptive statistics for 1917-1921 by gender and location. We see that men in DC tend to have higher retention, higher earnings, are employed in higher-paid positions, and have less foreign-sounding surnames compared to the field. Although we see significant differences in levels, our identification relies on the assumption that outcomes would have changed at the same rate between DC and the field in the absence of treatment. We will test for differences in pre-period trends in our event study analyses. The female sample looks fairly balanced, but it is important to note that there are very few women in the field service. To account for this, we estimate a difference-in-differences (DD) model comparing women and men within DC in addition to differential difference-in-differences between DC and the field services.

# 4 Empirical Strategy

## 4.1 Differential Difference-in-Differences

Our main analysis focuses on the law's effect on the gender wage gap. However, we first estimate the first-stage effects of the law on overall employee compensation and the two-year retention rate, not differentiated by gender. We do this to verify that the law was binding and led to overall changes in salaries. We also estimate the law's effect on the overall share of women. Since departments could no longer pay women less than men in the same position, the law may have led to overall lower female employment. We estimate the following difference-in-differences model, comparing outcomes between the departmental service in DC and the field offices pre- and post-Classification Act.

$$y_{ijt} = \beta_0 + \beta_1 DC_j \times POST_t + \beta_2 DC_j + \delta_t + \varepsilon_{ijt} \tag{2}$$

where $y_{ijt}$ is outcome $y$ for civil servant $i$ in location $j$ and year $t$. $DC_j$ is an indicator for whether the civil servant is employed in DC, and $POST_t$ is an indicator for being after the Classification Act. $\delta_t$ are year fixed effects. We include the indicator, $DC_j$, rather than state fixed effects to keep the DD and differential DD specifications consistent as the sample size of women outside of DC is small and there are some states with only one woman. Standard errors are clustered at the unit level. We cluster at this level as unit heads had some discretion in determining wages and compensation is likely to be correlated within a unit. We also estimate an event study specification given below, where we sum over the interaction of $DC_j$ with event time, fixing 1921 as the reference year (the last year that we have data before the policy).

$$y_{ijt} = \beta_0 + \sum_{t=1917, t\neq 1921}^{1929} \beta_t DC_j \times \delta_t + \alpha DC_j + \delta_t + \varepsilon_{ijt} \tag{3}$$

As shown in the previous section, women were underpaid before the law, even within job title. If the law closes the gender gap, we expect compensation for women in DC to grow faster compared to women in the field service than it does for men. To test this, we allow for heterogeneity by gender in equation (4) below, estimating the difference-in-differences model

with differential effects.

$$y_{ijt} = \beta_0 + \beta_1 DC_j \times POST_t \times FEMALE_{it} + \beta_2 DC_j \times POST_t + \beta_3 DC_j \times FEMALE_i + \beta_4 POST_t \times FEMALE_i + \beta_5 FEMALE_i + \beta_6 DC_j + \delta_t + \varepsilon_{ijt} \tag{4}$$

where all variables and subscripts are the same as above and $FEMALE_i$ is an indicator for being female (i.e. having a female index of 0.6 or higher). As stated above, we include an indicator for being employed in DC, $DC_j$, rather than state fixed effects as there are some states with very few women. The coefficient $\beta_1$ gives the additional effect of the law for women, relative to men. If the law closes the gender gap, then $\beta_1$ should be positive. We additionally estimate an event study model given below, analogous to equation (4), where we interact $FEMALE_i$, $DC_j$, and indicators for event time. Lastly, we estimate Equation (2) separately for men and women which shows the total effect of the law for men and women, respectively.

$$y_{ijt} = \beta_0 + \sum_{t=1917, t\neq 1921}^{1929} \beta_t Female_i \times DC_j \times \delta_t + \alpha_1 DC_j \times POST_t + \alpha_2 DC_j \times FEMALE_i + \alpha_3 POST_t \times FEMALE_i + \alpha_4 FEMALE_i + \alpha_5 DC_j + \delta_t + \varepsilon_{ijt} \tag{5}$$

## 4.2 Difference-in-Differences within DC

There are very few women in the field service per year in our data. Therefore, we also estimate a difference-in-differences model within DC to strengthen our differential treatment effect results. We compare outcomes between men and women pre- and post-Classification Act just within DC, leaving out the field service. The DD model is given by equation (6) and the event study by equation (7).

$$y_{it} = \beta_0 + \beta_1 FEMALE_i \times POST_t + \beta_2 Female_i + \delta_t + \varepsilon_{it} \tag{6}$$

$$y_{ijt} = \beta_0 + \sum_{t=1917, t\neq 1921}^{1929} \beta_t Female_i \times \delta_t + \alpha Female_i + \delta_t + \varepsilon_{ijt} \tag{7}$$

where all variables and subscripts are the same as above. Our coefficient of interest is $\beta_1$ in equation (6). As both men and women in DC are treated, we test for a differential effect by

gender and assume that compensation for men and women would have evolved at the same rate in the absence of the law. In other words, the gender gap would remain constant without the law. This is true if there are no additional shocks occurring around the same time as the Classification Act that affect the compensation of men and women differently. Based on Figure 2, this assumption seems reasonable as men's and women's compensation in DC moves together and the gap stays fairly constant over the pre-period.

# 5 Results

## 5.1 Overall Effects

We first present results for overall compensation and retention, not differentiated by gender. Table 3 presents results from our difference-in-differences estimation for the outcomes of employee compensation, the two-year retention rate, and the four-year retention rate. We find that the law increased employee compensation by \$823 or 17.2 log points (18.8%) in DC relative to the field service. Columns (3) and (4) present results for two- and four-year retention. We define retention as an indicator equal to 1 if a civil servant is listed in the register at year $t$ and appears again in year $t+2$, for 2-year retention, and $t+4$ for four-year retention. We find that the law had little to no impact on employee retention rates. Figure 2 and Figure 3 plot the event study coefficients for the overall effects on log compensation and two-year retention. For log compensation, the pre-period coefficients are small and statistically indistinguishable from zero although the direction of the estimates suggests a slight pre-trend. If the trend were to continue, we would expect compensation to decrease in DC in the post-period. We find the opposite effect in our results, effects on log compensation are positive and large.

We also estimate the effects of the law on the share of women. If the law makes hiring women in DC more expensive, this could lead to decreased employment of women. We display event study coefficients for the share of women in Figure 4. There is a significant pre-trend with the share of women rising faster in the pre-period in DC relative to the field, although we see a break in trend with small and null coefficients in the post-period. We additionally plot the share of women in DC and the field over time in Figure 5. We see that the share of women in DC rises rapidly from 1917-1921, decreases between 1921 and 1925, and then starts to recover. The share of women in the field service remains fairly constant over our study period. We

present regression results for effects on the share of women in Table 4. We do not include any position fixed effects in column (1). We add fixed effects for the 50 position clusters in column (2), 100 position clusters in column (3), and job titles in column (4). All coefficients are indistinguishable from zero. Although we cannot fully identify effects on the share of women given the pre-trends, these results suggest that the law did not increase the share of women in DC.

## 5.2 Differential Gender Effects

Our main analysis estimates the differential effect of the law on men's and women's compensation in DC relative to the field service. If the law improved relative pay, then we expect an additional positive effect on compensation for women relative to men. We plot event study coefficients from equation (5), which correspond to the interaction between $DC$, $FEMALE$, and event time, in Figure 6. When looking within job title, we see a small but statistically insignificant negative effect on women's relative pay. If we do not control for job title, we find a much larger negative effect on the relative wage. We report differential DD estimates in Table 5. Again, we do not include any position fixed effects in column (1). We add fixed effects for the 50 position clusters in column (2), 100 position clusters in column (3), and job titles in column (4). Within job titles (column (4)), we find a negative effect on women's relative wage of 3.7 log points (3.6%). Without controlling for job title (column (1)), we find a negative effect of 33.2 log points (28.3%). For the unconditional specification, adding the coefficients on $DCXPOSTXFEMALE$ and $DCXPOST$ implies an overall negative effect of the law for women of 13.4 log points (12.5%). Additionally, we estimate event study effects for equation (3) separately by gender in Figure A1. Across our specifications, pre-period coefficients are indistinguishable from zero, suggesting that the parallel trends assumption holds. We also present effects on relative compensation using the alternative female index to classify gender in Figure A2 and Table A1. Estimates are in the same direction and of a similar magnitude as our main results.

The lack of an effect within job titles is surprising as the law should equalize men's and women's compensation for a given title, closing the gender gap. One potential reason we do not see an effect is that the pay grades created by the law have a minimum and maximum salary. If women were disproportionately paid at the minimum and men at the maximum, this could

preserve the gender gap within job titles. We cannot perfectly identify which pay grade a given job title should be in. Additionally, the ranges of the pay grades overlap, i.e. the maximum of one pay grade is the minimum of the next pay grade. However, Figure 7 shows that women in DC were more likely to be paid at one of the minimum salaries in the wage schedule than men in DC. Additionally, the pay grades set up by the law for the professional, subprofessional, and clerical services had an average range of $540. The average gap within job title in DC for the post-period is $524.

As our differential gender results are based on a small sample of women in the field service, we also estimate DD effects on women's compensation within DC, equations (6) and (7). We compare the change in compensation pre- and post-Classification Act between men and women, limiting our sample to employees based in DC. DD estimates are reported in Table 6, again including 50 position cluster fixed effects in column (2), 100 position cluster fixed effects in column (3), and job title fixed effects in Column (4). Event study coefficients are displayed in Figure 8. If the law narrowed the gender pay gap, then we expect the coefficient on $FEMALEXPOST$ to be positive. Within job title, we find an effect of 3.3 log points (3.4 %) on women's relative wage, although it is not statistically significant. Without controlling for job title, we find a decrease in women's relative wage of 1.7 log points (1.7%), but it is again not statistically significant. Although the unconditional effect (without controlling for job title) is negative, it is much smaller than the estimate in our differential difference-in-differences strategy. It is important to note that the differential DD strategy and the within-DC identification strategy have different counterfactuals. The differential DD assumes that the gender gap in DC would have followed the same trend as the field service, where we see the gender gap narrowing in the post-period. The within Washington, DC strategy assumes that gender gap would have remained constant if not for the policy. Despite seeing slightly different results with the two different counterfactuals, they both allow us to conclude that overall women's relative wage did not improve as a result of the Classification Act.

Additionally, we estimate effects on relative compensation restricting the sample to civil servants who first appear in our data before the Classification Act, which we refer to as the "incumbent sample,". We refer to civil servants who first appear in the registers in 1925 or later as "new hires." The new hire sample consists both of civil servants who are new to the federal government as well as civil servants promoted from lower levels positions that do not

appear in the Registers. We present our estimates for the incumbent sample using the differential DD specification and the within DC specification in Table 7 and Table 8, respectively. Similar to our previous results, column (1) does not include position fixed effects, column (2) includes 50 position cluster fixed effects, column (3) includes 100 position cluster fixed effects, column (4) includes job title fixed effects. For the differential DD, we find a smaller negative coefficient of 1.7 log points (1.7%) within job title but a positive effect of 7.2 log points (8%) without controlling for job title. Although indistinguishable from zero, the unconditional effect is large and the opposite sign of the effect in the full sample. For the within DC specification, we find a positive and significant effect on women's compensation of 5.9 log points (6.1%) within job title and 20 log points (22.1%) unconditionally. We plot event study coefficients for incumbent compensation effects in Figure 9 and Figure 10. The unconditional results for the incumbent are quite large and in the opposite direction compared to those in the full sample. This suggests that the negative effects were driven by new hires and that the law actually improved relative compensation for incumbent women.

# 6 Mechanisms

## 6.1 Job Quality

We next investigate what is driving the differences in effects on relative compensation with and without controlling for job title. The difference within and across job titles suggests there were changes in the positions women in DC were placed in after the law. To explore this, we estimate the effect of the law on starting salaries and job quality. To measure job quality, we calculate the pre-law average compensation for each position cluster and job title. We then assign every observation the average pre-compensation of its corresponding cluster and job title. For example, someone who is an engineer will be assigned the average compensation of an engineer from 1917-1921. This allows us to see whether women were placed in a particular cluster or title that was lower-paid prior to the reform. We also look at an indicator for whether an individual was in the top 25% of the earnings distribution of a given year. If women were placed in lower-level positions, then they may be less likely to be in the top earnings quartile.

We present DD coefficients for starting salary and job quality outcomes in Figure 11. Although not all coefficients are not statistically distinguishable from zero, they are large and negative.

Effects on starting salaries are shown in Table 9. In our specification without job title fixed effects, we find a negative effect on women's relative starting salary of 33.8 log points (28.7 %). Effects on job quality are presented in Table 10. We find that as a result of the law, relative to men, women held job titles that had been 25.4 log points (22.4%) lower-paid before the Classification Act and were 25.8 percentage points less likely to be in the top quartile of a given year's earnings distribution. We also include results for our within DC specification in Figure A3 and Table A2 and Table A3, finding similar effects. Together, these findings suggest that women were downgraded into worse positions in response to the Classification Act.

## 6.2 Promotions

Additionally, we test whether the law led to women being promoted less frequently relative to men. To capture the promotion margin, we estimate effects on a dummy variable for whether one's job title changes between year $t$ and year $t+2$. We also estimate effects on a dummy variable for whether words associated with upper-level positions including "SENIOR," "CHIEF," "HEAD," "DIRECTOR," "SUPERVISOR," or "IN CHARGE" are added to an individual's job title between year $t$ and $t+2$. We plot difference-in-differences coefficients for these outcomes in Figure 12 and present estimates for the full specification in Table 11. We see that differential effects are positive but small and not statistically significant. Promotion effects for the within DC specification are shown in Figure A4 and Table A4, again showing similar results. Based on the limited effects we find on the employment and promotion margins, we conclude that the decrease in unconditional relative compensation was driven by position downgrading.

## 6.3 Unit Heterogeneity

Our results indicate that departments placed newly hired women in lower-quality positions to maintain gender inequality. We hypothesize that the negative impact on relative wages might be lessened in units with more female-friendly characteristics. To test this, we examine differential effects on log compensation within DC, focusing on whether the unit head was a woman (Table 12) and whether the pre-Classification Act share of women in the unit was above the median (Table 13). Although the estimates lack precision, we find large positive coefficients for the triple interaction between being female, the post-Act period, and having a

female unit head, which offsets the overall negative effect on women's relative compensation in DC. Similarly, units with a pre-Act female share above the median also show a mitigated negative impact on relative compensation. Despite some noise in these results, they suggest that unit heads had the ability to preserve or improve gender equality within their teams.

# 7 Robustness

As a robustness check, we additionally estimate our differential DD and within DC specifications with a sample of men and women matched on observable characteristics. We do this to create similar samples of men and women and ensure that our main results are not driven by any other shocks correlated with characteristics where men and women differ. Additionally, the matching helps us better narrow our analysis to jobs with a higher representation of women. We create two matched samples of men and women. We first take the sample of women hired before the Classification Act and match them to men in our data based on rank of job title, last name foreignness index, and department using nearest neighbor propensity score matching. We do not match on salary as our data show that women were underpaid within positions. This is analogous to the "incumbent sample" in our main results. Table A5 presents means for observable characteristics in the matched sample. Characteristics are largely balanced between men and women except for annual compensation. We present event study coefficients for relative log compensation using both the differential specification and within DC specification in Figure A5. The matching results are consistent with those for the non-matched sample. We see that the Classification Act increased the relative compensation of incumbent women.

We additionally match men and women separately pre- and post-Classification Act to test the robustness of results for new hires. We take the sample of women who first appear in our data between 1917 and 1921 and match them to comparable men, again using nearest-neighbor propensity score matching. We keep all of the matched individuals' pre-Classification Act observations. This allows us to look at how compensation progressed for newly hired women before the passage of the Act. We then do the same for women who first appear in our data between 1925 and 1929 and keep all of the matched post-Classification Act observations. This allows us to look at how compensation progressed for newly hired women after the passage of the Act. We track civil servants who started before the Act through 1921 and those who

started after through 1929. Means for observable characteristics are presented in Table A6, characteristics are balanced except for compensation and a marginally significant difference in job title rank. We present event study coefficients for differential effects on log compensation in Figure A6. Similar to our main analysis, we see lower relative compensation for new hires in the differential DD specification and little impact on relative compensation in the within DC specification.

# 8 Conclusion

In this paper, we study how the Classification Act of 1923, which standardized pay and required "equal pay for equal work" in the US Civil Service, affected women's relative pay. The law fundamentally changed the way pay was determined in the US government and was the basis for the General Schedule system currently used by the US federal government. It also came at an important period for women in the federal government. There was a large increase in the representation of women in the civil service with WWI and increased attention to the conditions of women in the workforce. The Classification Act was widely supported by women's organizations with the hope that it would lead to equal pay.

We find that the reform raised overall compensation, leading to a small but not significant decrease in women's relative compensation within job titles and a large decrease in women's relative compensation without controlling for job title. The lack of an effect within job titles is potentially due to the large range in the pay grades created by the Classification Act. We also see large differences between incumbent and newly hired civil servants. Relative compensation improved for employees working in the federal government before the Classification Act, but newly hired women were placed in lower-level jobs. These results suggest that departments adjusted to the equal pay regulation by downgrading positions, at least for new hires. Our analysis adds to the literatures on anti-discrimination and pay transparency policies. We capture responses to an equal pay policy within an employer and our results are in line with Bailey, Helgerman, and Stuart (2024), which finds slower employment growth in positions more exposed to the Equal Pay Act of 1963. We also contribute to a growing literature on diversity in the public sector and see that gender inequality in the civil service persists despite the growing representation of women and efforts to make wage setting more objective. Pay standardization

does little to improve gender equity in our setting due to other margins of adjustment.

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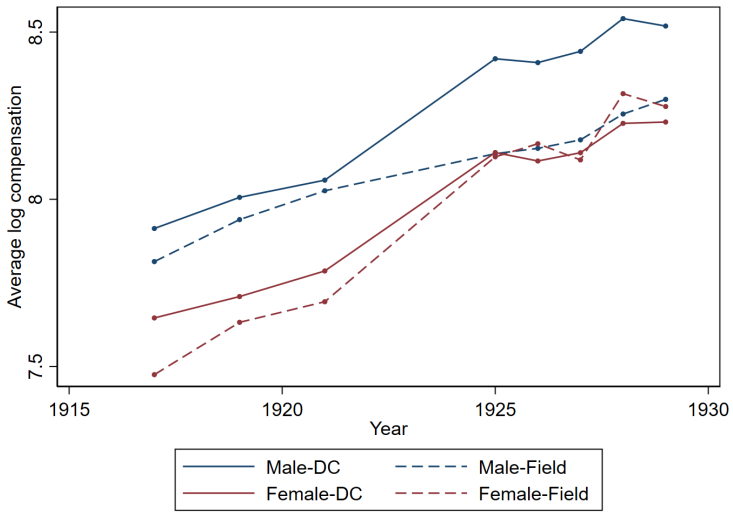
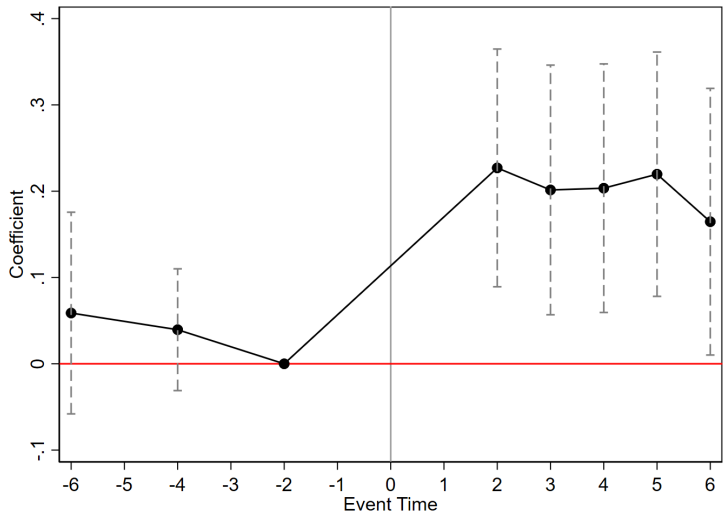
# 9 Figures and Tables

Figure 1: Average Annual Log Compensation by Gender and Location



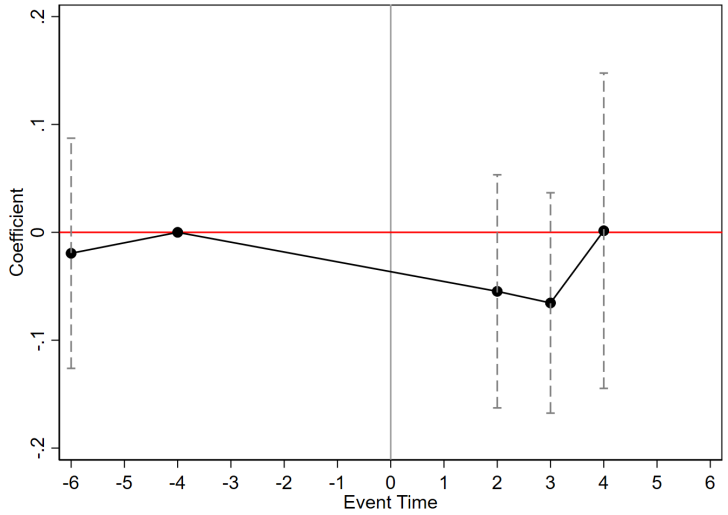

Notes: This figure displays the average log compensation for men in DC, men in the field service, women in DC, and women in the field service from 1917-1929.

Figure 2: Event Study Overall Log Compensation



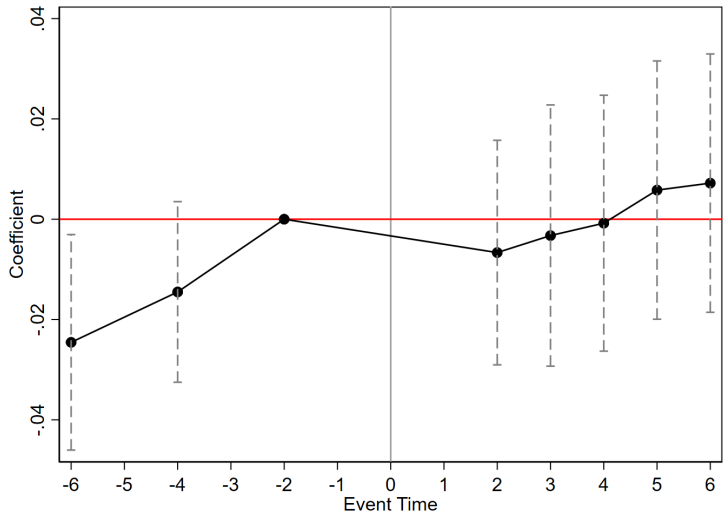

Notes: This figure displays event study coefficients and 95 percent confidence intervals for the effect of the Classification Act on log compensation. The plotted coefficients are on the interaction of an indicator for DC with the event year. The reference year is 1921 and 1923 is represented by year 0.

Figure 3: Event Study Overall 2-Year Retention



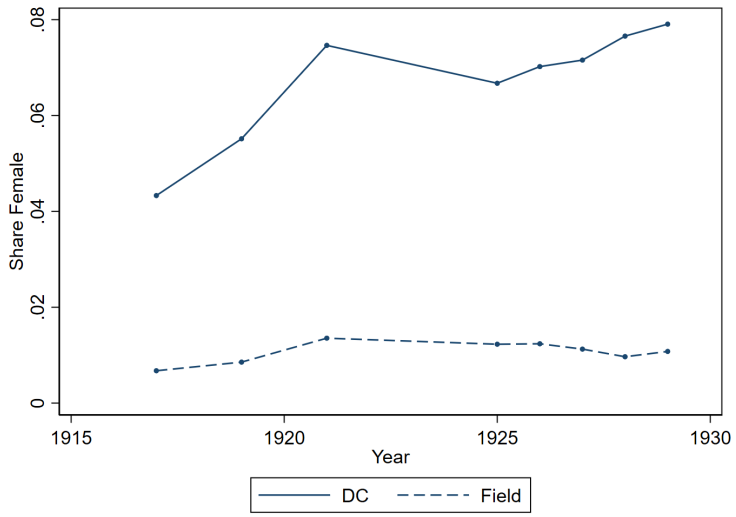

Notes: This figure displays event study coefficients and 95 percent confidence intervals for the effect of the Classification Act on the 2-year retention rate. The 2-year retention rate is an indicator equal to 1 if a civil servant is reported in the Register for year t and then again in year t+2. The retention variable is defined in year t. The plotted coefficients are on the interaction of an indicator for DC with the event year. The reference year is for retention from 1919 to 1921.

Figure 4: Event Study Overall Share Female



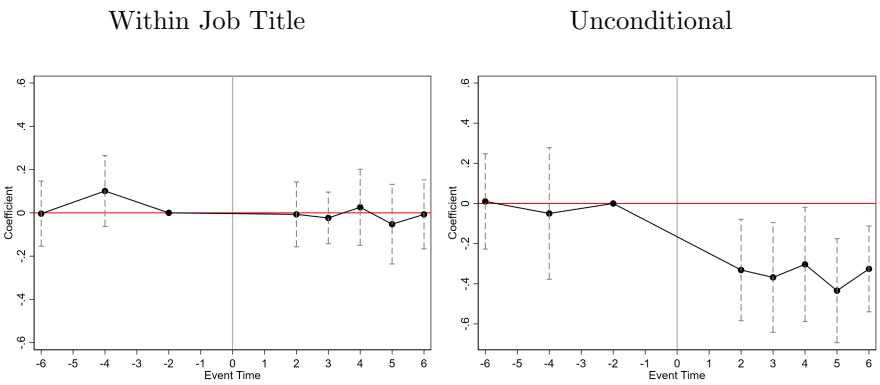

Notes: This figure displays event study coefficients and 95 percent confidence intervals for the effect of the Classification Act on the share of women. The plotted coefficients are on the interaction of an indicator for DC with the event year. The reference year is for retention from 1919 to 1921.

Figure 5: Share of Women by Location



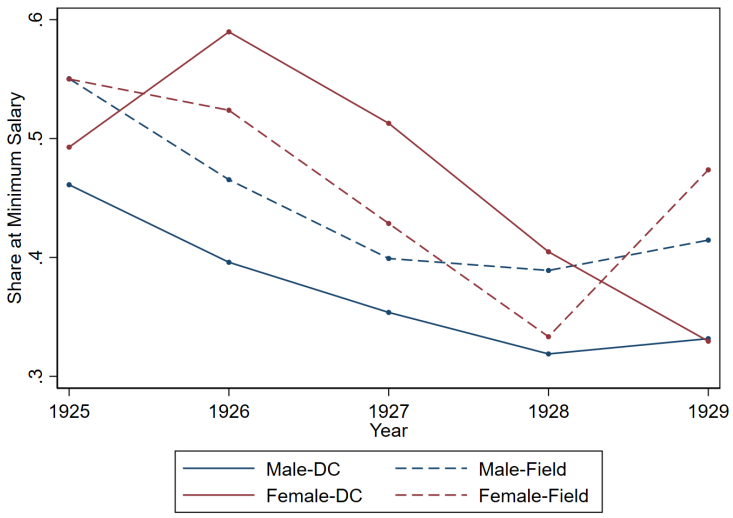

Notes: This figure displays the share of women in DC on the solid line and the share of women in the field service on the dotted line from 1917-1929.

Figure 6: Event Study Differential Gender Effects Log Compensation




Notes: This figure displays event study coefficients and 95 percent confidence intervals for the differential log compensation effect by gender of the Classification Act. The plotted coefficients are on the interaction of an indicator for DC, an indicator for female, and the event year. The specification for the left graph includes job title fixed effects and the right graph does not include job title fixed effects. The reference year is 1921 and 1923 is represented by year 0.

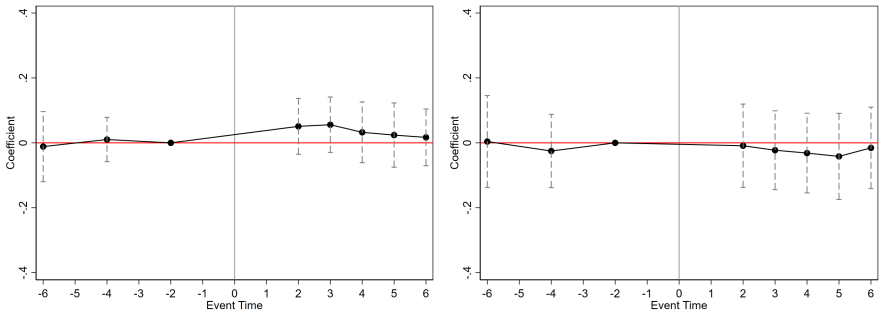
Figure 7: Share Earning Minimum Salary by Gender and Location




Notes: This figure displays the share of civil servants earning a salary at the minimum of any pay grade by gender and location from 1925-1929.

Figure 8: Event Study Log Compensation Within DC

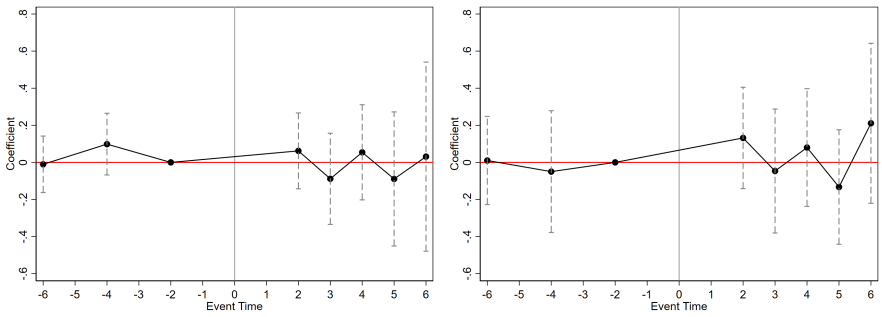
Within Job Title Unconditional




Notes: This figure displays event study coefficients and 95 percent confidence intervals for the differential log compensation effect by gender using the within DC specification. The plotted coefficients are on the interaction of an indicator for female and the event year. We include only observations in Washington, DC. The specification for the left graph includes job title fixed effects and the right graph does not include job title fixed effects. The reference year is 1921 and 1923 is represented by year 0.

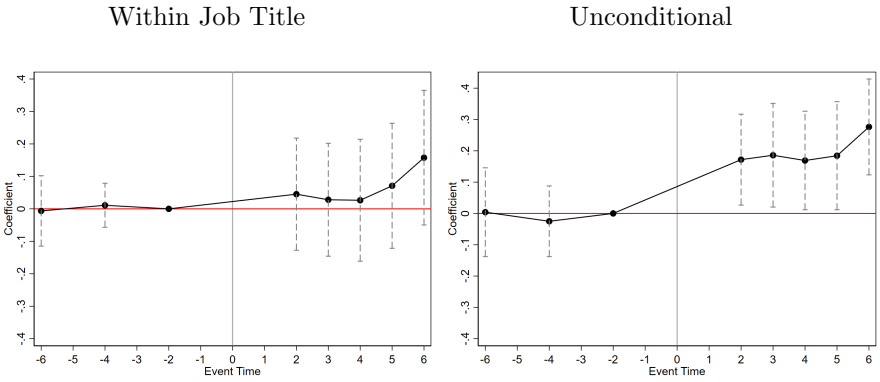
Figure 9: Event Study Incumbent Compensation

Within Job Title Unconditional



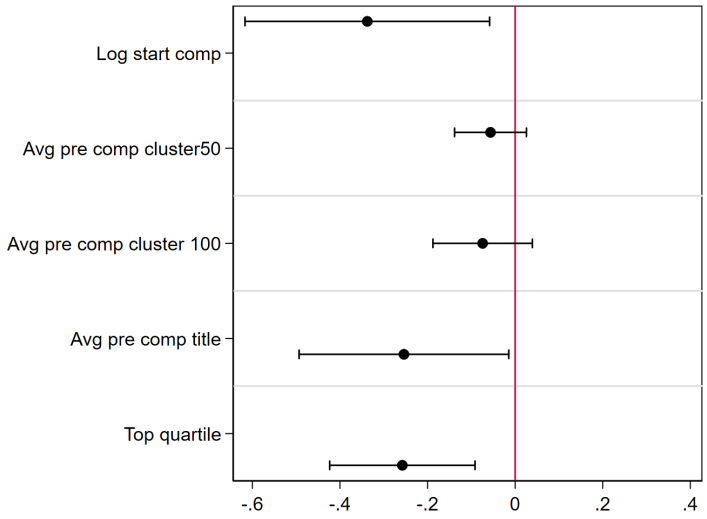

Notes: This figure displays event study coefficients and 95 percent confidence intervals for the differential log compensation effect by gender of the Classification Act for the incumbent sample. The plotted coefficients are on the interaction of an indicator for DC, an indicator for female, and the event year. We only include civil servants working in the federal government before the Classification Act. The specification for the left graph includes job title fixed effects and the right graph does not include job title fixed effects.. The reference year is 1921 and 1923 is represented by year 0.

Figure 10: Event Study Incumbent Compensation Within DC



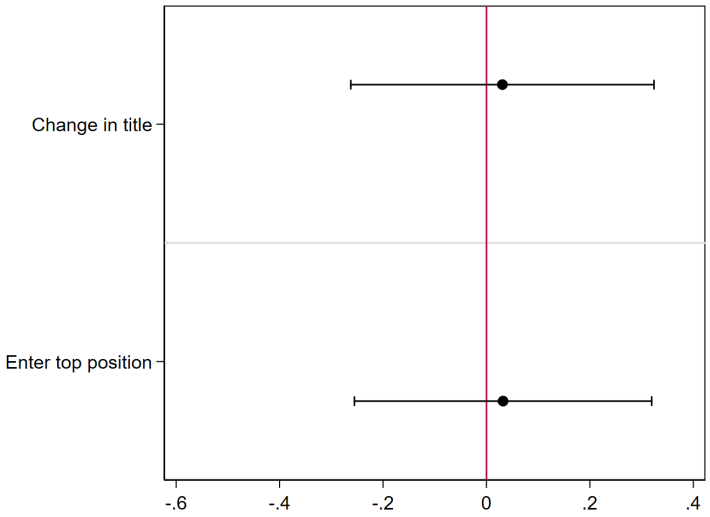

Notes: This figure displays event study coefficients and 95 percent confidence intervals for the differential log compensation effect by gender using the within DC specification and for the incumbent sample. The plotted coefficients are on the interaction of an indicator for female and the event year. We include only individuals in Washington, DC who worked in the federal government before the Classification Act. The specification for the left graph includes job title fixed effects and the right graph does not include job title fixed effects. The reference year is 1921 and 1923 is represented by year 0.

Figure 11: Differential Effects on Starting Salary and Job Quality




Notes: This figure displays difference-in-difference coefficients for differential effects on women's starting compensation, the pre-period average compensation of position clusters and job titles, and an indicator for being in the top 25% of a given year's earnings distribution.

Figure 12: Differential Effects on Promotion




Notes: This figure displays difference-in-difference coefficients for differential effects on an indicator for whether an individual's job title changes between years $t$ and $t+2$ and an indicator for whether words related top positions such as "SENIOR," "CHIEF," "DIRECTOR," "SUPERINTENDENT," or "IN CHARGE" are added to an individual's title between years $t$ and $t+2$.

Table 1: Pre-Period Gender Gap

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Log Compensation | Log Compensation | Log Compensation | Log Compensation |
| female | -0.288*** | -0.278*** | -0.265*** | -0.133*** |
| | (0.0234) | (0.0226) | (0.0214) | (0.0179) |
| DC | 0.0646*** | 0.123*** | 0.160*** | 0.0851*** |
| | (0.00860) | (0.00982) | (0.00965) | (0.0110) |
| $N$ | 7765 | 7765 | 7765 | 7765 |
| R-squared | 0.0600 | 0.158 | 0.279 | 0.690 |
| Mean Log Compensation | 7.960 | 7.960 | 7.960 | 7.960 |
| Year FE | X | X | X | X |
| Cluster50 FE | | X | | |
| Cluster100 FE | | | X | |
| Title FE | | | | X |

Notes: This table presents point estimates from regressions of log compensation on an indicator for being female and an indicator for being employed in DC for 1917-1922. All specifications include year fixed effects. Column (2) also includes fixed effects for the 50 position clusters, (3) includes fixed effects for the 100 position clusters, and (4) for job titles. Standard errors are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table 2: Descriptive Statistics 1917-1921 by Location and Gender

| | (1) | (2) | (3) |
|---|---|---|---|
| Variable | Field | DC | Diff |
| 2-year retnetion | 0.601 | 0.657 | 0.056*** |
| | (0.490) | (0.475) | (0.014) |
| Log compensation | 7.932 | 7.996 | 0.064*** |
| | (0.393) | (0.372) | (0.009) |
| Rank job title | 1,541.345 | 1,453.742 | -87.603*** |
| | (610.183) | (689.062) | (15.044) |
| FB Index | 0.337 | 0.323 | -0.014** |
| | (0.234) | (0.223) | (0.005) |
| Observations | 3,720 | 3,773 | 7,493 |

| | (1) | (2) | (3) |
|---|---|---|---|
| Variable | Field | DC | Diff |
| 2-year retnetion | 0.667 | 0.630 | -0.037 |
| | (0.485) | (0.485) | (0.122) |
| Log compensation | 7.630 | 7.730 | 0.100 |
| | (0.381) | (0.369) | (0.066) |
| Rank job title | 1,779.378 | 1,800.098 | 20.719 |
| | (627.910) | (630.998) | (111.531) |
| FB Index | 0.335 | 0.331 | -0.004 |
| | (0.231) | (0.236) | (0.043) |
| Observations | 37 | 235 | 272 |

Notes: This table displays mean characteristics for employees in the field in column (1) and in DC in column (2) for 1917-1921. The difference in means is presented in column (3). Panel A presents means for men and Panel B for women. Observations are at the person-year level. Standard deviations are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table 3: Overall Compensation and Retention Effects

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Compensation | Log Compensation | 2-Year Retention | 4-Year Retention |
| DC X POST | 823.0*** | 0.172*** | -0.0295 | 0.0122 |
| | (213.0) | (0.0599) | (0.0388) | (0.0621) |
| DC | 203.3 | 0.0642 | 0.0535* | 0.0516 |
| | (179.0) | (0.0574) | (0.0310) | (0.0358) |
| *N* | 24849 | 24849 | 15058 | 9017 |
| Mean Compensation | 3845.8 | | | |
| Mean Log Compensation | | 8.170 | | |
| Mean 2-Year Retention | | | 0.730 | |
| Mean 4_Year Retention | | | | 0.490 |
| R-squared | 0.220 | 0.250 | 0.0500 | 0.0700 |
| Year FE | X | X | X | X |

Notes: This table presents difference-in-difference estimates for the effect of the Classification Act on overall compensation in column (1), log compensation in column (2), 2-year retention in column (3), and 4-year retention in column (4). All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table 4: Overall Effects Share of Women

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Share Female | Share Female | Share Female | Share Female |
| DC X POST | 0.013 | 0.018 | 0.016 | 0.005 |
| | (0.011) | (0.012) | (0.011) | (0.012) |
| DC | 0.049*** | 0.051*** | 0.049*** | 0.019* |
| | (0.010) | (0.013) | (0.010) | (0.011) |
| *N* | 22024 | 22024 | 22024 | 22024 |
| Share Female | 0.030 | 0.030 | 0.030 | 0.030 |
| R-squared | 0.020 | 0.053 | 0.082 | 0.373 |
| Year FE | X | X | X | X |
| Cluster 50 FE | | X | | |
| Cluster 100 FE | | | X | |
| Title FE | | | | X |

Notes: This table presents difference-in-difference estimates for the effect of the Classification Act on the share of women in the civil service. The dependent variable is an indicator for being female. Column (1) does not include position fixed effects, column (2) includes fixed effects for the 50 position clusters, (3) includes fixed effects for the 100 position clusters, and (4) for job titles. All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table 5: Differential Log Compensation Effects by Gender

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Log Compensation | Log Compensation | Log Compensation | Log Compensation |
| DC X POST X FEMALE | -0.332*** | -0.283*** | -0.232*** | -0.037 |
| | (0.103) | (0.099) | (0.075) | (0.059) |
| DC X POST | 0.198*** | 0.181*** | 0.159*** | 0.074* |
| | (0.064) | (0.054) | (0.041) | (0.043) |
| DC X FEMALE | 0.041 | 0.018 | -0.007 | 0.029 |
| | (0.113) | (0.121) | (0.099) | (0.064) |
| POST X FEMALE | 0.318*** | 0.299*** | 0.226*** | 0.073 |
| | (0.095) | (0.088) | (0.062) | (0.048) |
| DC | 0.064 | 0.100* | 0.126*** | 0.093*** |
| | (0.062) | (0.054) | (0.043) | (0.032) |
| FEMALE | -0.322*** | -0.314*** | -0.284*** | -0.168*** |
| | (0.103) | (0.100) | (0.079) | (0.058) |
| *N* | 22024 | 22024 | 22024 | 22024 |
| R-squared | 0.260 | 0.365 | 0.411 | 0.747 |
| Mean Log Compensation | 8.180 | 8.180 | 8.180 | 8.180 |
| Year FE | X | X | X | X |
| Cluster 50 FE | | X | | |
| Cluster 100 FE | | | X | |
| Title FE | | | | X |

Notes: This table presents difference-in-difference estimates for the effect of the Classification Act on log compensation, allowing for differential effects by gender. Column (1) does not include position fixed effects, column (2) includes fixed effects for the 50 position clusters, (3) includes fixed effects for the 100 position clusters, and (4) for job titles. All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table 6: Gender Log Compensation Effects Within DC

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Log Compensation | Log Compensation | Log Compensation | Log Compensation |
| FEMALE X POST | -0.017 | 0.017 | -0.016 | 0.033 |
| | (0.044) | (0.046) | (0.045) | (0.037) |
| FEMALE | -0.279*** | -0.262*** | -0.253*** | -0.147*** |
| | (0.048) | (0.046) | (0.050) | (0.029) |
| *N* | 9453 | 9453 | 9453 | 9453 |
| R-squared | 0.340 | 0.451 | 0.466 | 0.758 |
| Mean Log Compensation | 8.250 | 8.250 | 8.250 | 8.250 |
| Year FE | X | X | X | X |
| Cluster 50 FE | | X | | |
| Cluster 100 FE | | | X | |
| Title FE | | | | X |

Notes: This table presents estimates of the effect of the Classification Act on log compensation for women relative to men using the within DC difference-in-differences specification. All columns only include observations in Washington, DC. Column (1) does not include position fixed effects, column (2) includes fixed effects for the 50 position clusters, (3) includes fixed effects for the 100 position clusters, and (4) for job titles. All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table 7: Differential Log Compensation Effects by Gender for Incumbent Sample

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Log Compensation | Log Compensation | Log Compensation | Log Compensation |
| DC X POST X FEMALE | 0.072 | 0.056 | 0.069 | -0.017 |
| | (0.148) | (0.125) | (0.130) | (0.128) |
| DC X POST | 0.112** | 0.124*** | 0.119*** | 0.081 |
| | (0.050) | (0.044) | (0.038) | (0.051) |
| DC X FEMALE | 0.041 | 0.047 | 0.013 | 0.035 |
| | (0.113) | (0.111) | (0.082) | (0.066) |
| POST X FEMALE | 0.132 | 0.153 | 0.128 | 0.085 |
| | (0.137) | (0.114) | (0.119) | (0.108) |
| DC | 0.064 | 0.107* | 0.149*** | 0.103*** |
| | (0.062) | (0.054) | (0.043) | (0.032) |
| FEMALE | -0.322*** | -0.316*** | -0.276*** | -0.168*** |
| | (0.103) | (0.094) | (0.065) | (0.061) |
| *N* | 12677 | 12677 | 12677 | 12677 |
| R-squared | 0.300 | 0.373 | 0.442 | 0.741 |
| Mean Log Compensation | 8.120 | 8.120 | 8.120 | 8.120 |
| Year FE | X | X | X | X |
| Cluster 50 FE | | X | | |
| Cluster 100 FE | | | X | |
| Title FE | | | | X |

Notes: This table presents difference-in-difference estimates for the effect of the Classification Act on log compensation, allowing for differential effects by gender. Only individuals appearing in the register before the Classification Act are included in all regressions. Column (1) does not include position fixed effects, column (2) includes fixed effects for the 50 position clusters, (3) includes fixed effects for the 100 position clusters, and (4) for job titles. All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $^{*}*p < 0.10, **p < 0.05, ***p < 0.01$

Table 8: Gender Log Compensation Effects Within DC for Incumbent Sample

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Log Compensation | Log Compensation | Log Compensation | Log Compensation |
| FEMALE X POST | 0.200*** | 0.181** | 0.187** | 0.059 |
| | (0.065) | (0.071) | (0.073) | (0.082) |
| FEMALE | -0.279*** | -0.263*** | -0.262*** | -0.139*** |
| | (0.048) | (0.044) | (0.049) | (0.027) |
| *N* | 6686 | 6686 | 6686 | 6686 |
| R-squared | 0.360 | 0.468 | 0.491 | 0.776 |
| Mean Log Compensation | 8.250 | 8.250 | 8.250 | 8.250 |
| Year FE | X | X | X | X |
| Cluster 50 FE | | X | | |
| Cluster 100 FE | | | X | |
| Title FE | | | | X |

Notes: This table presents estimates of the effect of the Classification Act on log compensation for women relative to men using the within DC difference-in-differences specification and for the incumbent sample. All columns only include observations in Washington, DC, and only individuals appearing in the registers before the Classification Act. Column (1) does not include position fixed effects, column (2) includes fixed effects for the 50 position clusters, (3) includes fixed effects for the 100 position clusters, and (4) for job titles. All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table 9: Differential Log Starting Compensation Effects by Gender

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Log Start Compensation | Log Start Compensation | Log Start Compensation | Log Start Compensation |
| DC X POST X FEMALE | -0.338** | -0.241* | -0.299*** | 0.073 |
| | (0.141) | (0.135) | (0.094) | (0.098) |
| DC X POST | 0.270*** | 0.244*** | 0.232*** | 0.059 |
| | (0.077) | (0.065) | (0.057) | (0.058) |
| DC X FEMALE | -0.007 | -0.030 | 0.037 | -0.017 |
| | (0.149) | (0.150) | (0.120) | (0.096) |
| POST X FEMALE | 0.336*** | 0.278** | 0.268*** | 0.025 |
| | (0.122) | (0.109) | (0.064) | (0.072) |
| DC | 0.015 | 0.045 | 0.063 | 0.078* |
| | (0.065) | (0.059) | (0.057) | (0.042) |
| FEMALE | -0.327** | -0.327*** | -0.355*** | -0.140 |
| | (0.130) | (0.124) | (0.092) | (0.089) |
| *N* | 5091 | 5091 | 5091 | 5091 |
| R-squared | 0.160 | 0.279 | 0.321 | 0.742 |
| Mean Log Compensation | 8.120 | 8.120 | 8.120 | 8.120 |
| Year FE | X | X | X | X |
| Cluster 50 FE | | X | | |
| Cluster 100 FE | | | X | |
| Title FE | | | | X |

Notes: This table presents difference-in-difference estimates for the effect of the Classification Act on the log of starting compensation, allowing for differential effects by gender. We define starting compensation as the compensation received by an individual the first year they appear in the data. Column (1) does not include position fixed effects, column (2) includes fixed effects for the 50 position clusters, (3) includes fixed effects for the 100 position clusters, and (4) for job titles. All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table 10: Differential Job Quality Effects by Gender

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Log Comp Cluster 50 | Log Comp Cluster 100 | Log Comp Title | Top Comp Quartile |
| DC X POST X FEMALE | -0.056 | -0.074 | -0.254** | -0.258*** |
| | (0.041) | (0.057) | (0.121) | (0.084) |
| DC X POST | 0.030 | 0.069* | 0.170*** | 0.258*** |
| | (0.035) | (0.039) | (0.062) | (0.065) |
| DC X FEMALE | -0.002 | 0.020 | -0.030 | -0.046 |
| | (0.032) | (0.032) | (0.121) | (0.075) |
| POST X FEMALE | 0.014 | 0.059 | 0.227** | 0.179** |
| | (0.031) | (0.044) | (0.107) | (0.077) |
| DC | 0.005 | -0.016 | 0.033 | 0.050 |
| | (0.021) | (0.029) | (0.052) | (0.062) |
| FEMALE | 0.008 | -0.012 | -0.175 | -0.179*** |
| | (0.022) | (0.024) | (0.107) | (0.065) |
| *N* | 22024 | 22024 | 22024 | 22024 |
| R-squared | 0.010 | 0.020 | 0.130 | 0.070 |
| Mean Log Pre Comp Cluster50 | 8.240 | | | |
| Mean Log Pre Comp Cluster100 | | 8.240 | | |
| Mean Log Pre Comp Title | | | 8.200 | |
| Mean Top Compensation Quartile | | | | 0.290 |
| Year FE | X | X | X | X |

Notes: This table presents difference-in-difference estimates for the effect of the Classification Act on job quality, allowing for differential effects by gender. The dependent variable in column (1) is the average pre-period log compensation for the individual's cluster in the 50 position groups, column (2) the average pre-period log compensation for the individual's cluster in the 100 position groups, column (3) is the average pre-period log compensation for the individual's job title, and column (4) is an indicator for being in the top 25% of a given year's compensation distribution. All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $^{*}*p < 0.10, **p < 0.05, ***p < 0.01$

Table 11: Differential Promotion Effects by Gender

| | (1) | (2) |
|---|---|---|
| | Change title | Enter top title |
| DC X POST X FEMALE | 0.031 | 0.032 |
| | (0.148) | (0.145) |
| DC X POST | -0.188*** | 0.111 |
| | (0.071) | (0.071) |
| DC X FEMALE | -0.021 | -0.039 |
| | (0.095) | (0.093) |
| POST X FEMALE | -0.056 | 0.004 |
| | (0.131) | (0.099) |
| DC | 0.125*** | 0.248*** |
| | (0.037) | (0.056) |
| FEMALE | -0.021 | -0.048 |
| | (0.082) | (0.057) |
| $N$ | 9894 | 22024 |
| R-squared | 0.030 | 0.110 |
| Mean Title Change | 0.260 | |
| Mean Enter Top Title | | 0.360 |
| Year FE | X | X |

Notes: This table presents difference-in-difference estimates for the effect of the Classification Act on promotions, allowing for differential effects by gender. The dependent variable in column (1) is an indicator for whether an individual's job title changes between years $t$ and $t+2$ and column (2) is an indicator for whether words related top positions such as "SENIOR," "CHIEF," "DIRECTOR," "SUPERINTENDENT," or "IN CHARGE" are added to an individual's title between years $t$ and $t+2$. All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $^{*}*p < 0.10, **p < 0.05, ***p < 0.01$

Table 12: Log Compensation Heterogeneity Female Unit Head

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Log Compensation | Log Compensation | Log Compensation | Log Compensation |
| FEMALE X POST X HEAD | 0.209 | 0.243 | 0.242 | 0.002 |
| | (0.182) | (0.186) | (0.178) | (0.079) |
| FEMALE X POST | -0.045 | -0.002 | -0.046 | 0.030 |
| | (0.043) | (0.047) | (0.043) | (0.042) |
| FEMALE X HEAD | 0.017 | -0.054 | 0.002 | 0.117 |
| | (0.202) | (0.198) | (0.195) | (0.075) |
| POST X HEAD | -0.173 | -0.213 | -0.195 | -0.004 |
| | (0.136) | (0.148) | (0.122) | (0.087) |
| FEMALE | -0.302*** | -0.276*** | -0.273*** | -0.153*** |
| | (0.045) | (0.049) | (0.047) | (0.032) |
| HEAD | 0.094 | 0.111 | 0.089 | -0.094 |
| | (0.148) | (0.159) | (0.125) | (0.062) |
| *N* | 8943 | 8943 | 8943 | 8943 |
| R-squared | | 0.443 | 0.462 | 0.755 |
| Mean Log Compensation | 8.250 | 8.250 | 8.250 | 8.250 |
| Year FE | X | X | X | X |
| Cluster 50 FE | | X | | |
| Cluster 100 FE | | | X | |
| Title FE | | | | X |

Notes: This table presents estimates of the effect of the Classification Act on log compensation for women relative to men using the within DC difference-in-differences specification and allowing for differential effects by gender of the unit head. All columns only include observations in Washington, DC. Column (1) does not include position fixed effects, column (2) includes fixed effects for the 50 position clusters, (3) includes fixed effects for the 100 position clusters, and (4) for job titles. All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

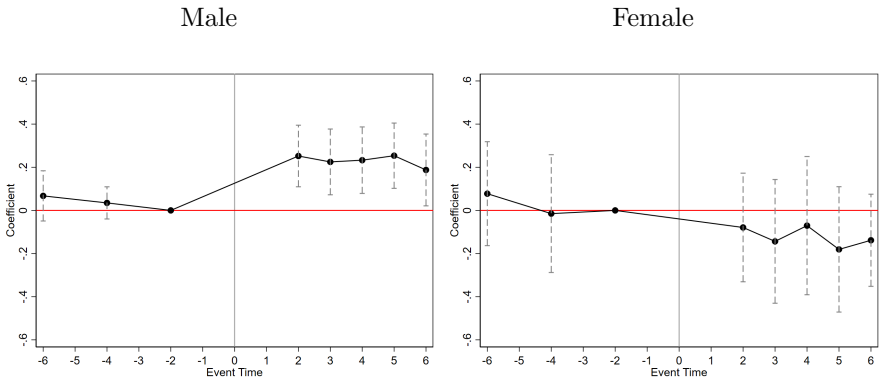
Table 13: Log Compensation Heterogeneity Share Female

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Log Compensation | Log Compensation | Log Compensation | Log Compensation |
| FEMALE X POST X HEAD | 0.209 | 0.243 | 0.242 | 0.002 |
| | (0.182) | (0.186) | (0.178) | (0.079) |
| FEMALE X POST | -0.045 | -0.002 | -0.046 | 0.030 |
| | (0.043) | (0.047) | (0.043) | (0.042) |
| FEMALE X HEAD | 0.017 | -0.054 | 0.002 | 0.117 |
| | (0.202) | (0.198) | (0.195) | (0.075) |
| POST X HEAD | -0.173 | -0.213 | -0.195 | -0.004 |
| | (0.136) | (0.148) | (0.122) | (0.087) |
| FEMALE | -0.302*** | -0.276*** | -0.273*** | -0.153*** |
| | (0.045) | (0.049) | (0.047) | (0.032) |
| HEAD | 0.094 | 0.111 | 0.089 | -0.094 |
| | (0.148) | (0.159) | (0.125) | (0.062) |
| *N* | 8943 | 8943 | 8943 | 8943 |
| R-squared | | 0.443 | 0.462 | 0.755 |
| Mean Log Compensation | 8.250 | 8.250 | 8.250 | 8.250 |
| Year FE | X | X | X | X |
| Cluster 50 FE | | X | | |
| Cluster 100 FE | | | X | |
| Title FE | | | | X |

Notes: This table presents estimates of the effect of the Classification Act on log compensation for women relative to men using the within DC difference-in-differences specification and allowing for differential effects by whether the pre-Act share of women in the unit was above the median. All columns only include observations in Washington, DC. Column (1) does not include position fixed effects, column (2) includes fixed effects for the 50 position clusters, (3) includes fixed effects for the 100 position clusters, and (4) for job titles. All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

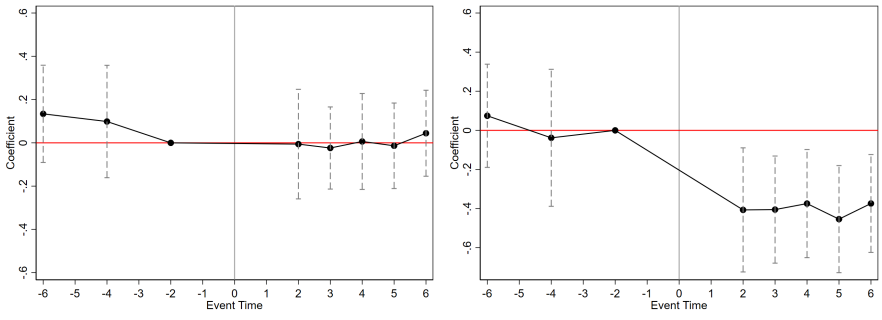
# Supplementary Appendix Figures and Tables

Figure A1: Event Study Log Compensation by Gender



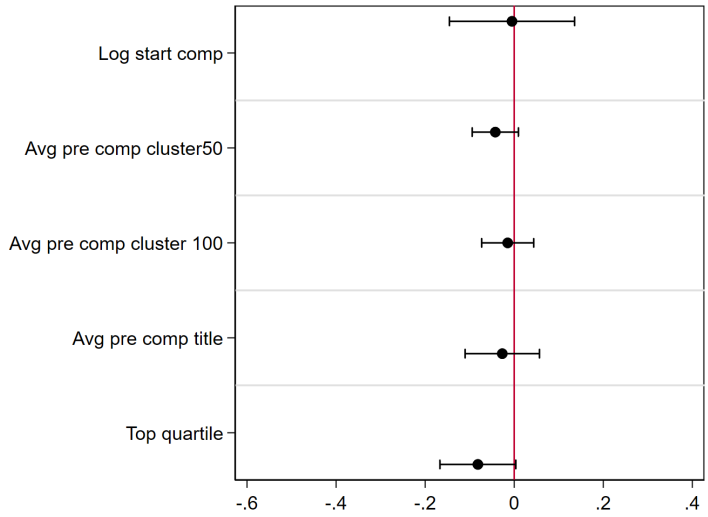

Notes: This figure displays event study coefficients and 95 percent confidence intervals for the effect of the Classification Act on log compensation split by gender. The plotted coefficients are on the interaction of an indicator for DC with the event year. The left graph only includes observations for males and the right graph only includes observations for females. The reference year is 1921 and 1923 is represented by year 0.

Figure A2: Differential Log Compensation Alternative Index



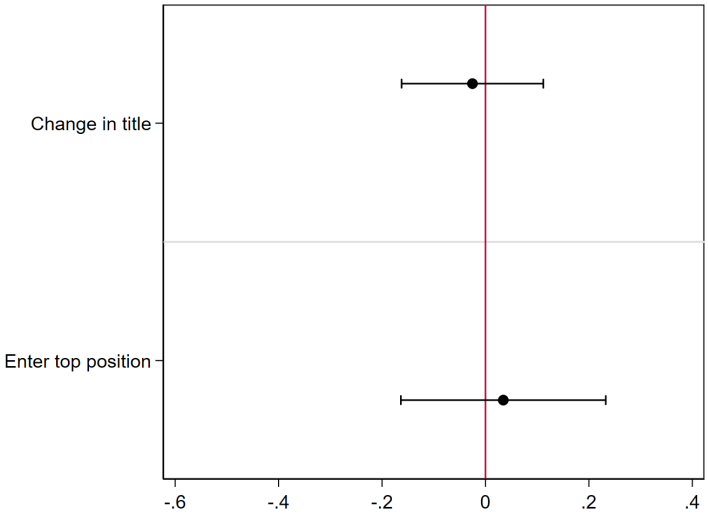

Notes: This figure displays differential difference-in-difference coefficients for effects on log compensation with gender classified using the alternative female index.

Figure A3: Differential Effects on Starting Salary and Job Quality




Notes: This figure displays difference-in-difference coefficients from the within DC specification for effects on women's starting compensation, the pre-period average compensation of position clusters and job titles, and an indicator for being in the top 25% of a given year's earnings distribution.

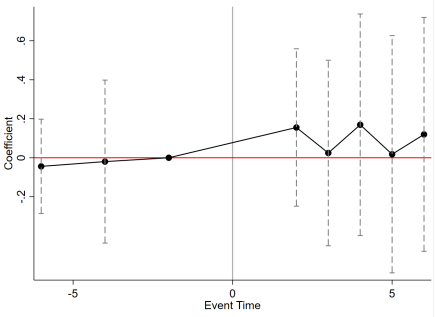
Figure A4: Differential Effects on Promotion



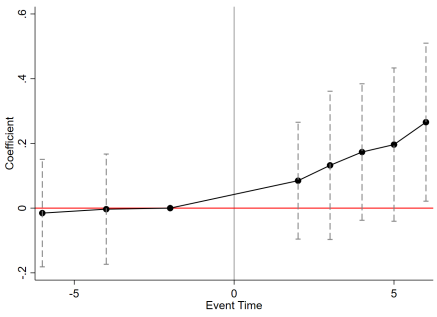

Notes: This figure displays difference-in-difference coefficients from the within DC specification for effects on an indicator for whether an individual's job title changes between years $t$ and $t+2$ and an indicator for whether words related top positions such as "SENIOR," "CHIEF," "DIRECTOR," "SUPERINTENDENT," or "IN CHARGE" are added to an individual's title between years $t$ and $t+2$.

Figure A5: Event Study Log Compensation Effects Matched Incumbents

DC Versus Field



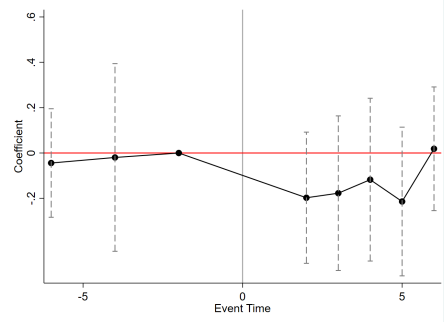

Within DC



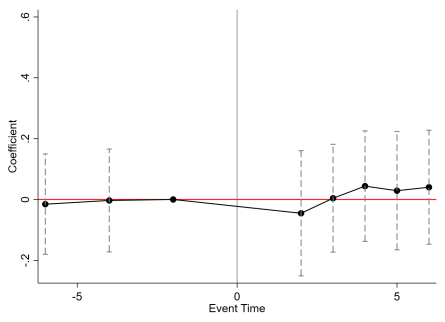

Notes: This figure displays event study coefficients for effects on women's relative compensation in the matched incumbent sample. The left panel shows the effects using the differential DD specification and the right using the within DC specification.

Figure A6: Event Study Log Compensation Effects Matched New Hires

DC Versus Field




Within DC




Notes: This figure displays event study coefficients for effects on women's relative compensation in the matched new hire sample. The left panel shows the effects using the differential DD specification and the right using the within DC specification.

Table A1: Gender Log Compensation Effects Alternative Index

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Log Compensation | Log Compensation | Log Compensation | Log Compensation |
| DC X POST X FEMALE | -0.402*** | -0.355*** | -0.310*** | -0.046 |
| | (0.098) | (0.093) | (0.080) | (0.088) |
| DC X POST | 0.198*** | 0.182*** | 0.160*** | 0.075* |
| | (0.064) | (0.054) | (0.042) | (0.043) |
| DC X FEMALE | 0.124 | 0.120 | 0.118* | 0.091 |
| | (0.079) | (0.082) | (0.060) | (0.089) |
| POST X FEMALE | 0.396*** | 0.380*** | 0.311*** | 0.084 |
| | (0.092) | (0.083) | (0.072) | (0.077) |
| DC | 0.064 | 0.100* | 0.125*** | 0.092*** |
| | (0.062) | (0.054) | (0.043) | (0.033) |
| FEMALE | -0.417*** | -0.428*** | -0.420*** | -0.235*** |
| | (0.066) | (0.059) | (0.039) | (0.082) |
| *N* | 22116 | 22116 | 22116 | 22116 |
| R-squared | 0.260 | 0.365 | 0.411 | 0.747 |
| Mean Log Compensation | 8.180 | 8.180 | 8.180 | 8.180 |
| Year FE | X | X | X | X |
| Cluster 50 FE | | X | | |
| Cluster 100 FE | | | X | |
| Title FE | | | | X |

Notes: This table presents estimates of the effect of the Classification Act on log compensation for women relative to men with gender classified based on the alternative female index. Column (1) does not include position fixed effects, column (2) includes fixed effects for the 50 position clusters, (3) includes fixed effects for the 100 position clusters, and (4) for job titles. All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table A2: Gender Log Starting Compensation Effects Within DC

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Log Start Compensation | Log Start Compensation | Log Start Compensation | Log Start Compensation |
| FEMALE X POST | -0.005 | 0.034 | -0.028 | 0.099 |
| | (0.071) | (0.065) | (0.069) | (0.077) |
| FEMALE | -0.332*** | -0.300*** | -0.281*** | -0.149*** |
| | (0.063) | (0.055) | (0.059) | (0.040) |
| *N* | 2013 | 2013 | 2013 | 2013 |
| R-squared | 0.260 | 0.388 | 0.415 | 0.741 |
| Mean Start Log Compensation | 8.180 | 8.180 | 8.180 | 8.180 |
| Year FE | X | X | X | X |
| Cluster 50 FE | | X | | |
| Cluster 100 FE | | | X | |
| Title FE | | | | X |

Notes: This table presents estimates of the effect of the Classification Act on log starting compensation for women relative to men using t within DC difference-in-differences specification. All columns only include observations in Washington, DC. We define starting compensation the compensation received by an individual the first year they appear in the data. Column (1) does not include position fixed effects, column ( includes fixed effects for the 50 position clusters, (3) includes fixed effects for the 100 position clusters, and (4) for job titles. All specificatio include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table A3: Gender Job Quality Effects Within DC

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Log Comp Cluster 50 | Log Comp Cluster 100 | Log Comp Title | Top Comp Quartile |
| FEMALE X POST | -0.042 | -0.015 | -0.027 | -0.082* |
| | (0.026) | (0.029) | (0.042) | (0.043) |
| FEMALE | 0.006 | 0.008 | -0.204*** | -0.221*** |
| | (0.022) | (0.019) | (0.041) | (0.038) |
| *N* | 9453 | 9453 | 9453 | 9453 |
| R-squared | 0.010 | 0.020 | 0.180 | 0.040 |
| Mean Log Pre Comp Cluster50 | 8.260 | | | |
| Mean Log Pre Comp Cluster100 | | 8.260 | | |
| Mean Log Pre Comp Title | | | 8.260 | |
| Mean Top Compensation Quartile | | | | 0.400 |
| Year FE | X | X | X | X |

Notes: This table presents estimates of the effect of the Classification Act on job quality for women relative to men using the within DC difference-in-differences specification. All specifications only include individuals in DC. The dependent variable in column (1) is the average pre-period log compensation for the individual's cluster in the 50 position groups, column (2) the average pre-period log compensation for the individual's cluster in the 100 position groups, column (3) is the average pre-period log compensation for the individual's job titles, and column (4) is an indicator for being in the top 25% of a given year's compensation distribution. All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table A4: Gender Job Quality Effects Within DC

| | (1) | (2) |
|---|---|---|
| | Change Title | Enter Top Title |
| FEMALE X POST | -0.03 | 0.03 |
| | (0.07) | (0.10) |
| FEMALE | -0.04 | -0.09 |
| | (0.05) | (0.07) |
| *N* | 4345 | 9453 |
| R-squared | 0.02 | 0.02 |
| Mean Title Change | 0.26 | |
| Mean Enter Top Title | | 0.53 |
| Year FE | X | X |

Notes: This table presents estimates of the effect of the Classification Act on promotions for women relative to men using the within DC difference-in-differences specification. All specifications only include individuals in DC. The dependent variable in column (1) is an indicator for whether an individual's job title changes between years $t$ and $t+2$ and column (2) is an indicator for whether words related top positions such as "SENIOR," "CHIEF," "DIRECTOR," "SUPERINTENDENT," or "IN CHARGE" are added to an individual's title between years $t$ and $t+2$. All specifications include year fixed effects. Standard errors are clustered at the unit level and reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$

Table A5: Descriptive Statistics for Matched Incumbent Sample 1917-1921

| | (1) | (2) | (3) |
|---|---|---|---|
| Variable | Male | Female | Diff |
| retention | 0.712 | 0.688 | -0.024 |
| | (0.454) | (0.466) | (0.056) |
| log_compensation | 7.800 | 7.701 | -0.100*** |
| | (0.337) | (0.365) | (0.031) |
| rank_log_title | 1,826.277 | 1,811.479 | -14.799 |
| | (586.948) | (607.325) | (52.016) |
| FBindexlast | 0.336 | 0.346 | 0.010 |
| | (0.244) | (0.237) | (0.021) |
| Observations | 339 | 188 | 527 |

Notes: This table displays mean characteristics for men in column (1) and women in column (2) for the matched sample of individuals. Women and men in the pre-period were matched on position cluster, job title rank, foreignness index, and department. The difference in means is presented in column (3). Observations are at the person-year level. Standard deviations are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table A6: Descriptive Statistics for Matched New Hire Sample Sample

| | (1) | (2) | (3) |
|---|---|---|---|
| Variable | Male | Female | Diff |
| retention | 0.775 | 0.782 | 0.007 |
| | (0.418) | (0.414) | (0.030) |
| log_compensation | 8.042 | 7.989 | -0.054** |
| | (0.372) | (0.398) | (0.021) |
| rank_log_title | 1,590.827 | 1,529.596 | -61.231* |
| | (636.576) | (672.320) | (35.743) |
| FBindexlast | 0.321 | 0.331 | 0.010 |
| | (0.235) | (0.235) | (0.013) |
| Observations | 803 | 544 | 1,347 |

Notes: This table displays mean characteristics for men in column (1) and women in column (2) for the matched sample of new hires. Women and men were matched separately in the pre- and post-periods based on position cluster, job title rank, foreignness index, and department. The difference in means is presented in column (3). Observations are at the person-year level. Standard deviations are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$