Retirement, Retention, Recruitment: Evidence from a Federal Pension Policy[*]

Brock M. Wilson[†]

June 05, 2025

Abstract

I exploit a policy change for U.S. federal workers' pension benefits to estimate the effect of pension generosity on worker retirement, retention and recruitment. The policy increased pensions by 16-25%. I find there is a 30.3% decrease in job quits for permanent workers. However, there is little evidence that pension generosity has an effect on new hires. This suggests salience may play a role in how workers value pensions. Additionally, I find a large heterogeneous labor supply response to pension generosity. Altogether, this shows that pension generosity is effective in retaining workers and may have important implications for workforce planning.

JEL Codes: H55, H75, H32

Keywords: pension, public, labor

1 Introduction

In October of 2009, the "Non-Foreign Area Retirement Equity Assurance Act" (NFAREAA) was enacted. Under this policy, pension benefits increased by approximately 16 percent to 25 percent for federal workers in non-foreign areas (such as Alaska or Hawaii).[1] The goal of this policy was threefold: to increase worker retention, attract higher quality workers, and provide equitable benefits for retiring workers in higher cost locations. This policy provides valuable perspective given current concerns about public pension funding. In 2009, state pensions were estimated to be underfunded by three trillion dollars collectively (Novy-Marx and Rauh, 2009). This has worsened as the bottom third of public pension plans will likely be insolvent without major change (Aubry et al., 2018). Some states have already legislated to reduce pension annuities due to budgetary concerns (Munnell et al., 2016). Policymakers will need to balance the maintenance of a public workforce with funding challenges. This suggests that variation in pension generosity stemming from the roll out of NFAREAA can provide needed insight on the role of pensions in the public labor market.

In this paper, I study the impact of NFAREAA on public worker labor outcomes using an event study. The policy led to an average pension increase of 94,000 dollars for workers. I find that increased pension generosity has little impact on the average service years of a worker. This aligns with previous literature and may be due to age constraints imposed by various policy. However, for older workers and low wage workers I find heterogeneous responses. Workers above the age of 65 decrease their labor supply by approximately 2.9 years while low wage workers increase their labor supply by 2.35 years. The elasticities of lifetime of labor supply with respect to total retirement benefits for these workers are -0.44 and 0.48, respectively. Previous literature find estimates to be close to zero for the average worker—less is known about the distribution of responses. The elasticities I find in this paper provide insights for effective workforce planning. Moreover, I provide evidence that increased pension generosity decreases the quit rate of permanent workers by 30.3 percent. This suggests that pension policy is an effective tool for retaining workers with the highest amount of human capital. Last, I find no evidence that more generous pensions attract workers. This suggests that policy providing more generous pensions will have small effects on recruitment. These last two findings suggest that there may be an asymmetry in how workers value pensions. This may be that workers outside of the federal government are not salient of pension quality while workers within are. Given this, agencies may need to consider alternative forms of compensation if their goal is to recruit more effectively. As a whole, these findings contribute to the literature by understanding the role of pensions on

---

[1]Note: non-foreign areas are a part of the United States, but outside of the contiguous United States

the public workforce.

Previous literature suggests that a more generous benefit package induces a wealth effect which, in turn, causes an earlier retirement (Blundell et al., 2016). While theory informs the negative relationship between labor and pension generosity, measuring the magnitude of this effect has been difficult. Previous research has used structural models to estimate the relationship.[2] Recent research has turned to use natural experiments to estimate this elasticity. Krueger and Pischke (1992) and Snyder and Evans (2006) both study a "notched" set of workers who received lower Social Security benefits. These two papers find differing effects: Krueger and Pischke (1992) finds no evidence of disemployment with higher benefit generosity whereas Snyder and Evans (2006) finds large disemployment effects. More recently, Brown (2013) uses a policy change that affected retirement benefits for school teachers in the state of California. Brown (2013) finds the policy had small effects with an elasticity of about 0.04, which implies that workers will adjust their retirement date by less than two months for an increase of 10 percent in compensation. Another paper with similar results is Manoli and Weber (2016). Manoli and Weber (2016) finds that almost no worker would delay retirement by 1.25 years for an increase of 25 percent in total retirement benefits. In this paper, I provide evidence by using a direct exogenous shock to pension benefits for all federal workers. Workers receive between 16 to 25 percent higher pension benefits conditional on working for three or more consecutive years. I contribute to this literature by reaffirming previous research in a diverse setting, showing there is a small elasticity of labor supply with respect to wealth shocks. However, I find a larger range of responses that have not been captured in previous literature highlighting that effective policy will need to account for heterogeneity when workforce planning.

There is a mixed literature of the effect of pension generosity on worker retention. Lazear (1990) suggests that defined benefits pension programs are a form of strategic compensation to increase labor retention. Structural models have estimated this relationship and found modest effects.[3] Recently, natural experiments have been used to estimate this relationship. Quinby and Wettstein (2021) studies a large pension cut that reduces total present value for Rhode Island public workers by 43 percent. Quinby and Wettstein (2021) finds that there is a 2.4 percent, or 12 percent increase from baseline, in separations as a result of the pension cut. Quinby and Wettstein (2021) suggests the low elasticity could be due several reasons: workers may not highly value pensions; workers have intrinsic motivation for public service; and/or workers are imperfect substitutes within the labor market. Koedel

---

[2] For early structural work see Rust (1989), Stock and Wise (1990), Gustman and Steinmeier (1986). More recently, French (2005) and French and Jones (2011)

[3] See Gustman and Steinmeier (1993); Dale-Olsen (2006); Frazis and Loewenstein (2013); Rabe (2007); Mitchell (1982).

and Xiang (2017) studies an increase in pension generosity for teachers in St. Louis. Koedel and Xiang (2017) finds no effect of pension generosity on retention. These recent papers call into question the strategic compensation theory proposed in Lazear (1990). If pension generosity is not effective in retaining workers, then there may be alternative compensation arrangements which could better retain workers. I contribute by showing that pensions have large implications on workers with the highest levels of human capital—permanent workers—while there is little effect on temporary workers. Without this distinction, I find a null effect on the overall workforce. This finding is contrary to recent literature and suggests that pension policy is effective for maintaining a public workforce.

The literature of pension generosity on worker recruitment has mixed findings. Broadly, Gustman et al. (1994) suggests firm may use pensions to attract a targeted set of workers. Empirical evidence from Krueger (1988) finds that changes in fringe benefits, such as pension generosity, do not increase job applications for federal positions. However other empirical evidence from Cole and Taska (2023) finds that more generous defined contribution pension plans are effective for recruiting in the private sector, particularly for higher-age and high-income occupations. In this paper, I do not find evidence that more generous defined benefit pensions changing recruitment outcomes for federal workers. While this paper and Krueger (1988) have similar findings, Cole and Taska (2023) finds that increasing pension generosity improves recruiting outcomes for private firms. While there are many potential explanations for these differing results, I discuss a few below. One potential reason is that private-sector workers, on average, have less generous pensions compared to public-sector workers. Due to this, the marginal benefit of increasing pension generosity on recruitment may be larger for private-sector workers, compared to public-sector workers. Another explanation is it may be that the form of pension matters. Anecdotally, jobs with defined contribution pension plans advertise the generosity through stating how much the employer will match and/or contribute to a retirement account (i.e. "401(k) with 4 percent employer matching and special 2 percent company contributions"). Thus increases in generosity, in this context, may be more effective for recruitment due to salience. In contrast, an increase in a defined benefit pension generosity may not be as visible to an external hire. Typically, a defined benefit pension is a function of worker's earnings, service years and some benefit multiplier. Information on the functional form of the pension benefit and the multiplier may not be as visible for workers when applying for public-sector jobs. Future research would benefit from understanding the mechanisms for why pensions have a differential role in recruiting for public-sector and private-sector jobs.

Last, there is a large literature discussing the importance of recruiting and retaining public workers in geographically challenging locations. Bo et al. (2013) investigates the

rollout of the Regional Development Program in Mexico. Bo et al. (2013) finds that higher wages increase recruitment in areas that are more distant, have more drug-related violence and score lower on the human development index. This is consistent with Antwi and Phillips (2013) which finds that increasing wages reduced public health worker turnover in Ghana, where physician migration was 12th highest in the world in 2004. Further, Leaver et al. (2021) studies whether pay-for-performance or fixed wage contracts are more effective for recruiting and retaining teachers in Rwanda where a quarter of turnover from turnovers remains unfilled in the following academic school year. Leaver et al. (2021) does not find differential effects of pay-for-performance or fixed wage contracts on retention of teachers or recruitment of teacher quality. For governments to maintain a public workforce, providing labor contracts that are effective for recruiting and retaining is critical. I find in this paper that pension generosity is not effective for recruiting workers into high cost of living areas, however I do find that it is effective for retaining workers already employed in high cost areas.

The paper proceeds as follows. The second section of the paper provides background to the policy reform and introduces the data. The third section develops an econometric framework to understand how the policy impacted labor outcomes. The fourth section provides results on retention, retirement and recruitment. The fifth section concludes with policy implications and future areas of research.

2   Background

The Federal Employee Retirement System (FERS) and Civil Service Retirement System (CSRS) are, collectively, one of the largest pension systems in the U.S. and, more generally, in the world. These systems cover most federal workers and have 2 trillion dollars in actuarial liabilities.[4] [5] Workers entering the workforce prior to January 1, 1987 were automatically enrolled into CSRS. Individuals entering the workforce after that cutoff date were automatically enrolled into FERS. FERS has three major components: a FERS annuity (a defined benefit plan), Social Security, and a Thrift Savings Plan (an optional defined contribution plan with matched contributions). CSRS has only two major components: a CSRS annuity and a Thrift Savings Plan (an optional defined contribution plan with matched contributions). CSRS and FERS are financed by contributions from active workers to retired workers, with unfunded liabilities covered by the federal government. In general, the pension annuity

---

[4]Please see the following: link

[5]Most federal workers are covered by FERS with exceptions for specific agencies such as the Central Intelligence Agency, the Foreign Service, and all branches of the U.S. military.

is calculated using the participant's age, salary and service years.

Previous to NFAREAA, pension benefits for federal workers in non-foreign areas such as Alaska, Hawaii, or Guam was significantly lower than workers in the contiguous United States. This is because NFA workers received a COLA to compensate for higher prices. However COLAs are non-taxable income and are not considered when calculating pension benefits. This meant, previous to the policy, workers in NFAs received similar wages to workers in the contiguous United States, but received disproportionately lower pension benefits. NFAREAA transitioned COLAs to locality pay for each non-foreign area over a three year period. Locality pay is taxable income and is considered when calculating pension benefits. As a result, pension benefits significantly increased as shown in Figure 1c. Further, I provide an example of the transition from COLA to locality pay in Figure 1a.

The formula used by the Office of Personnel Management (OPM) to calculate pensions for FERS is as follows:

$$
\text{Pension} =
\begin{cases}
1.1\% \times \text{High-3 Average Salary} \times \text{SY}, & \text{if age} > 62 \text{ and SY} > 20 \\
1\% \times \text{High-3 Average Salary} \times \text{SY}, & \text{otherwise}
\end{cases}
\tag{1}
$$

where

$$
\text{High 3 Average Salary} = \max_j \frac{\sum_{t=j-2}^{j} \text{Salary}_t}{3}
\tag{2}
$$

and

$$
\text{Salary} = \text{Base Pay} \times \text{Locality Pay Multiplier}
\tag{3}
$$

The formula used by the Office of Personnel Management (OPM) to calculate pensions for workers under CSRS is similar.[6] SY is service years which is the time spent working for the federal government. High-three average salary is the average of the highest three continuous years of taxable salary while working for the federal government. Since COLAs are non-taxable, they do not effect a worker's high-three average salary. This implies switching COLAs to locality pay directly increased pension benefits by increasing a worker's taxable

---

[6]The pension accrual rate for workers under the CSRS system is as follows: 1.5 percent of the high-three average salary for the first five years of service, 1.75 percent for the second five years, and 2 percent for all remaining years of service.

salary. This is shown in Figure 1b. However, it is important to note that workers received a reduced COLA which offset the increase in locality pay, resulting in workers having the same after-tax take-home pay.[7] In addition, Appendix A displays each NFA alongside the changes in full locality pay, payable locality pay, and COLA from 2009 to 2015.[8]

To be eligible for these benefits, workers must be above a certain age and/or above a specified number of service years. Federal workers can voluntarily retire under any one of the three conditions:[9]

1. if the worker is above the age of 62 and they have 5 years of service

2. if the worker is above the age of 60 and they have 20 years of service

3. if the worker is above a minimum retirement age and they have 30 years of service.[10]

To illustrate the change in pension benefits, consider workers in Alaska or Hawaii. Workers retiring post 2013 would have, on average, a 20 percent increase in pension benefits compared to workers prior to 2010 as shown in Figure 1c. For workers in Alaska and Hawaii, this increased pension annuities for the average worker by 6,000 dollars. However, it is important to note that for a worker to receive the full benefit, they would need to delay retirement for four years to receive the full benefit.[11] This is because the increase in pension generosity is passed through the high-three average salary. Due to this, workers needed to delay retirement until their three years of previous salaries fully adjusted to the increase in locality pay to receive the full benefit. Thus workers retiring between 2010 and 2012 only received a partial increase in their annuity. To simplify, this policy induced approximately a 4 to 6 percent increase in a worker's annuity for each year they continued to work until the maximum is hit which is the locality rate for that respective NFA. After year four, all workers experienced a 16 to 25 percent higher annuity. All together, this demonstrates the

---

[7]Workers feared losing wages due to the policy so the adjustments to COLA offset increases in locality pay to avoid this situation. Please see the following: link.

[8]Full locality pay is used for retirement calculations while payable locality pay is used for salary calculations. To ensure that wages did not change significantly, workers received a COLA and a payable locality pay for their wages. However the full locality pay was used to calculate a worker's pension annuity.

[9]For some occupations such as an air traffic controller, law enforcement, firefighter or military reserve technician or if the worker's federal agency has undergone a major change in function, workers can retire earlier than the age of 55.

[10]The minimum retirement age is dependent on the worker's year of birth, but is approximately 55 years old. Workers who retire prior to these thresholds are considered early retirees and receive diminished benefits. To be eligible for an early retirement, workers must be approximately 55 years old and have 10 years of service.

[11]In 2009, the federal government set the locality rate to 14.16 percent for all NFAs, then increased it further to the respective locality rates for each NFA. For a worker to get the full benefit for their locality, they would need to delay an additional year due to the first year being only 14.16 percent.

quasi-experimental variation induced by the pension policy. The policy induced higher pension benefits for all workers residing in NFAs while all other states had no change in pension benefits. This provides an ideal setting to identify the impact of pension benefits on several labor outcomes.

3   Data

The data used in this analysis comes from the Office of Personnel Management (OPM) which collects data on federal workers for administration purposes. The data contains information on the federal civilian workforce and military. The data are at the worker-year level from 2005 to 2018 and provides detailed information on salary, education level, occupation, agency, age level, years of service and other variables. The data is repeated cross-sections for each year with no worker identifiers. Altogether, there are three datasets: the first provides a cross-section of all workers employed by the federal government; the second provides a cross-section of accessions into the federal government; and the last one provides a cross-section of separations out of the federal government.

The federal workforce is an ideal setting to explore the impact on labor outcomes for several reasons. The federal data is rich, which provides opportunity to leverage heterogeneity such as the distinction between permanent and temporary workers. Further, the federal workforce is large, which affords the opportunity for precise estimates. In a given year, there are over 640,000 workers with approximately 40,000 separations and 30,000 accessions. Last, the policy impacted two states—Alaska and Hawaii—which provides an opportunity to find a common treatment effect.

In these results, I focus on non-military, permanent, full-time workers. This leaves 14,109,209 employments, 547,957 separations, and 433,151 accessions across time. I separate out the military because the policy did not impact military personnel. Further, due to a separate policy affecting the Department of Veterans Affairs in 2016, I remove them from the analysis.[12] Last, I remove the Department of Homeland Security due to large restructuring in the agency and significant workforce size changes between 2004 and 2012.

I provide summary statistics in Figure 2 across all states. Prior to the policy, Alaska and Hawaii had 7.9 and 5.5 percent of their workforce turnover each year, respectively. Across all states, Alaska had the second highest turnover whereas Hawaii was the 31st highest turnover. When considering quits, Alaska had a relatively high percentage of permanent workers quitting each year with quit rates of 2.2 percent which was the seventh highest

---

[12]A policy in 2016 allowed individuals to take a phased retirement which induced workers to begin their retirement earlier. Please see VA Directive 5009/11.

turnover by state. Similarly, Hawaii had a quit rate of 1.7 percent and the 14th highest rate. These states also had high hiring rates due to higher rates of turnover. Alaska and Hawaii had, on average, 6.8 and 4.1 percent of their workforce hired in a given year. Similarly across all states, Alaska had the fourth highest new hire rate whereas Hawaii was the 31st highest new hire rate. In Appendix B, I provide summary statistics for each NFA.

4   Econometric Framework

To identify the impact of the pension increase, I use a standard event-study framework.[13] Specifically the model used is:

$$Y_{s,t} = \sum_{t \neq 2008}^{2018} \beta_t \times Year_t \times NFA_s + \mu_s + \lambda_t + \epsilon_{s,t} \qquad (4)$$

for state s at time t where μ_s and λ_t are state and time fixed effects, $Y_{s,t}$ is the outcome of interest, and $\epsilon_{s,t}$ is an unobserved error term. NFA_s is a binary variable for whether a state is a non-foreign area, which are the treated states. The coefficients of interest are β_t which represent the differences in the dependent variable between the non-foreign area states relative to the control states. The policy was enacted in October 2009. Due to this, I use 2008 as the reference year. I cluster standard errors at the state level as in Cameron and Miller (2015). For the control group, I use all other states besides Alaska and Hawaii. For robustness, I include additional placebo tests in the Appendix C. I use a similar framework for long term effects:

$$Y_{s,t} = \beta \times Post_t \times NFA_s + \mu_s + \lambda_t + \epsilon_{s,t} \qquad (5)$$

The coefficient of interest is β which identifies the impact of treatment in the long run. In this setting, the long run will be denoted as all years post 2013. I include years 2005 to 2008 as the relevant pre-treatment time period. The preferred specification for the outcome variable is logged retirements. An alternative measure is the percentage of workforce retiring. This specification introduces variation due to workforce hiring and exits, which will lead to a noisier outcome variable.[14] For regressions with logged outcome variables, when there are

---

[13]For reference on event study models, please see Clarke and Tapia-Schythe (2021).

[14]Consider a large increase in the percent of the workforce retiring. This could be due to a high amount of retirees or a low number of workers in the workforce which can be problematic for inference.

intervals with zero counts I use the following instead: $log(x+1)$. I include all regression outputs for event studies in Appendix D and regression outputs for heterogeneity figures in Appendix E.

5 Results

5.1 Net Wealth

I use a back-of-the-envelope calculation to measure the effect on an individual's net wealth. I utilize the CDC United States Life Tables (Arias et al., 2023) to infer an individual's life expectancy. To calculate the change in net wealth that individuals would receive if they had delayed their retirement, I compute the following:

$$\text{Total Pension Growth} = \sum_{t=R}^{T} \left(\frac{1}{1+r}\right)^t \times \text{Pension Received} \times \text{Generosity Multiplier} \quad (6)$$

where r is the discount factor, R is age at retirement, and T is an individual's life expectancy. For the discount factor, r, I use 0.03 as is done in Brown (2013). The average retirement age is between 59 and 64.[15] As stated earlier, the average increase is 6,000 dollars. This is shown in Table 1. This means the average worker could expect an increase of 94,000 dollars if they had delayed their retirement. To show the distribution of effects, I calculate the total pension growth using the set of Alaska and Hawaii workers that retired in 2008 (prior to the policy). There is large variation in the shock that ranges from 8,000 dollars to 350,000 dollars. This is shown in Figure 1f.

5.2 Net Wages

As mentioned previously, COLAs decrease and locality pay increases. As a result, taxable income increases. However, what is less certain is the change in post-tax income. The policy was specifically aimed to not change take home wages.[16] For robustness, I use TAXSIM35 from NBER to estimate the change in a worker's after tax pay. For pension contributions, I input the rates provided by OPM which is 0.8 percent of a worker's salary prior to 2013,

---

[15]Note: the dataset does not provide numerical ages, it provides age bins. This means I impute what an individual's age is if they are above 65. From the Federal Reserve's Survey of Household Economics and Decisionmaking, 96 percent of workers are retired by age 70. I impute the upper bound to be 70 for workers above the age of 65. Link for the dataset.

[16]Here is a link that shows the Congressional Budget Office's cost estimates. Note: "As a result, salaries would increase to maintain the take-home pay of affected employees."

3.3 percent from 2013 to 2014, and 4.1 percent after 2014.[17] Combined this allows me to estimate the tax liability for workers before and after the policy. I find that the average worker's post tax income decreased by \$231, as shown in Table 1. Further, I provide an event study in Figure 1d. This shows that Alaska and Hawaii had no differential wages due to the policy as intended by policymakers and highlights that wages are not the main driver of behavior.

While take-home salary did not change, total compensation including pension benefits did. To understand the impact on benefits, I follow Brown (2013) to estimate the increase in pension generosity on net wages. In Appendix F, I include the mathematical formulation of net wages. I calculate the change in net wages by using the following formula for workers:

$$\frac{\Delta w^{net}}{w^{net}} = \frac{\Delta pa}{w^{net}} \tag{7}$$

where w is wages and pa is pension accrual. Since the change in wages is approximately 0 percent, then I focus on the change in pension accrual in relation to net wages. On average, this increase in pension generosity is approximately a 1.84 percent increase in net wages.

5.3   Retirement

Regarding workforce exits, a large majority of workers leaving are due to retirement, quitting or transferring. Approximately 6 percent of the workforce separates each year. The composition is approximately 25 percent are quits, 50 percent are retirements, 15 percent are transfers within the federal government, and 10 percent being in other categories. This can be seen in Figure 2f. While transferring is not necessarily costly, retirement and job quits can be costly to an agency.

In Figure 3a, there is a decrease in retirements in 2009, 2010, 2011 and 2013 with a large increase in retirements in 2012. In considering these declines, it is also important to note that the generosity increase was gradual rather than a sudden increase as shown by the red line. Thus for a worker to receive the full increase in pension generosity, they would need to continue working until 2013. This highlights that in anticipation of the full increase, workers delayed their retirement to receive these higher benefits. This can be observed in the decline in retirements for 2009, 2010 and 2011. Further, there is a large decline in retirements in 2013. Since the large mass of retirements is in 2012, this suggests that the increase in total pension wealth induced some workers to retire early, while for other workers they delayed

---

[17]For marriage status, I assume that all workers are single filers since marriage status is not available in the dataset.

their retirement to receive the full increase from the policy. Also note that in Figure 3b, that service years of those retiring fall during 2009 and 2010. This suggests that the missing mass of workers, who were not retiring, during those years had higher service years. This is due to the fact that workers with more service years had greater incentives to delay retirement. For example, consider the following: a worker with ten years of service with an annuity of 10,000 dollars could expect a 2,000 dollar increase for delaying retirement, while a worker with twenty years of service and a 50,000 dollar annuity could expect a 10,000 dollar increase for delaying retirement. This means workers with more service years had stronger incentives to delay their retirement. In the long run, I find no significant change in the number of retirements yearly which can be found in Table 1. Additionally, there is no significant effect on total service years at retirement. This can be seen in Figure 3b.

I separate the effect by age brackets and find that pension generosity had little effect on labor supply for 55-59 and 60-64 year olds.[18] This is shown in Figure 4a. However for workers above the age of 65, there is a 10 percent decrease in total service years. This represents a decrease in labor supply of approximately 2.9 years. For workers below the age of 64, it may be that age constraints on Social Security or constraints from the federal government bind workers from retiring early. Additionally, I find that workers in the lowest quartile of wages increased their labor supply by approximately 10 percent which is approximately 2.35 years. This can be seen in Figure 4b. These findings suggest that there are heterogeneous responses to pension generosity increases.

In the long run, this policy has little effect on the average labor supply of a worker. This is consistent with previous literature. However, there is evidence to show a large heterogenous response to this policy. For the oldest workers, I estimate the elasticity of lifetime of labor supply with respect to total retirement benefits to be approximately -0.44. Further, workers in the lowest quartile of wages significantly increased their labor supply by approximately 2.35 years. This leads to an elasticity of approximately 0.48.[19] In this paper, I find a larger range of elasticities suggesting that pension generosity has a small effect on the average worker, but the distribution of responses is larger than previously found. Given these heterogeneous responses, policymakers will need to take workforce demographics into account when considering pension generosity as it has significant effects on different populations.

Last, I estimate if this policy had effects on the count of annuitants, or retirees, residing in the treated states. In Appendix G, I plot an event study estimating the effect of the policy on the logged count of annuitants in the treated states. I find that, while pension generosity

---

[18]Note: the data is binned into age groups so individual ages are not readily available.

[19]For elasticities with respect to net wages, these are 3.93 for low wage workers and -18.02 for workers above 65.

increased significantly, there was no effect on the logged count of annuitants. While I am limited in observations, the null effect persists even through 2022, approximately 14 years post policy implementation. While the policy was aimed to address disparities for retirees in high cost areas, I do not find evidence that increasing pension generosity led to more annuitants in the treated states.

5.4 Retention

I first test to see if there is a change in quits, which can be seen in Figure 3c. For permanent workers, I find a decrease of 30.3 percent in the count of quits post policy.[20] This represents a decrease of 38 quits yearly in Alaska and 13 quits yearly in Hawaii. This shows that pension benefits are effective at retaining workers. For temporary workers, I do not find a significant change in separations which can be seen in Appendix H in Figure 8c and Figure 8d. This shows that job quits depends on the type of employment: permanent workers are less likely to separate after the policy while temporary workers are not. This suggests that permanent workers are aware of their pension and consider it when deciding to leave their job. This result differs from recent literature, which finds a small effect of pensions on retention. This may be due to separating out the effect on permanent versus temporary workers. Without separating out the effect on permanent and temporary workers, I find a smaller non-significant decrease in job quits of approximately 11.9 percent.

I estimate an elasticity of the change in turnover with respect to the increase in pension generosity. I find that for an increase in net wages of approximately 1.84 percent, there is a decrease in turnover of 30.3 percent for permanent workers. This is a large response which suggests that agencies use pension benefits as strategic compensation to increase retention for workers with the highest capital accumulation (Lazear, 1990). [21] While the marginal worker considering quitting the agency responds to pension generosity, it does not seem that the marginal worker considering transferring responds to pension generosity. This is shown in Figure 3d. It may be that there is a decrease in workers transferring out of Alaska or Hawaii, however the data cannot distinguish transfers across states from within state. It may be that most transfers are happening with in Alaska and Hawaii and may explain the null result.

Further when separating out by service years, I find that the effect of pension generosity on job quits scales with service years as shown in Figure 4c. This is consistent with Lazear (1990), as defined benefit plans are backloaded compared to defined contribution plans. More

---

[20]I include placebo tests in Appendix C and I find that the effect is significant at the 5 percent level.

[21]Other research from Dale-Olsen (2006) uses observational evidence and finds that a 1 percent increase in fringe benefits leads to a 0.5 percent decrease in turnover.

specifically, the effect of the policy reduced quits by approximately 22.9 percent for workers with 0 to 4 service years, 39.4 percent for workers with 5 to 9 years, approximately 37 percent for workers with 10 to 14 years, 26.3 percent for workers with 15 to 19 years, and 5.6 percent for workers with 20 or more years. It is important to note that workers are eligible to retire after 20 years so this may explain why there is a null effect for workers with 20 or more service years.

I calculate that this policy led to a 32 percent decrease in total service years lost from job quits each year in Alaska and Hawaii. This is shown in Table 1. To put into perspective, I aggregate the effect across Hawaii and Alaska. This led to a decrease of 51 quits each year. Those workers collectively had a total of 480 service years and 1,169,000 dollars in wages. This shows that pension generosity is an important form of compensation to retain workers with the highest human capital which aligns with Becker's theory of general and specific training (Caire and Becker, 1967).

5.5 Recruitment

For workforce entries, there are two main types of accessions into the workforce: transfers and new hires. Summary statistics are shown in Figure 2. Transfers are individuals moving within the federal workforce across agencies or states. Approximately 80 percent of the individuals joining the federal government are new hires. Given that net compensation increased for workers, I test to see if there is a change to accession quality or quantity in Alaska and Hawaii. I rely on education level and previous service years within the federal government as an observable measure of quality.[22] I find in Figure 3g that the average education level of a hire did not change. However, I do find some evidence that workers being hired had lower experience, which is in Figure 3f. I further separate out hires by experience levels in Figure 4e and find a significant decrease of 31 percent in the 5 to 9 service years and 30 percent in the 10 to 14 service years. This is most likely due to better retention of workers, as shown in the previous section.

Last, I do not find any evidence that older or younger workers are more likely to be hired. In this case, there is no change in hires by age, as shown in Figure 4f. This finding is consistent with earlier evidence by Krueger (1988) which shows that changes in pension generosity do not lead to more applications for federal jobs. This may be due to several reasons. It may be a salience issue since individuals searching for jobs may not have available information about a job's pension plan. I include in Appendix J a sample job listing. This job listing contains no information about benefits, suggesting that changes in pension generosity could

---

[22]I utilize the education level provided by OPM to quantify this. For more information on education levels please see Appendix I.

potentially not be salient. Alternatively, it may be that the form of pension matters when workers are searching for jobs. For jobs with a defined benefit plan, providing accessible information on how generous the pension is may not be easily communicated through job ads. Recent work from Cole and Taska (2023) finds that increasing generosity for jobs with defined contribution plans has large impacts on hiring outcomes. This disparate outcome suggests there may be different mechanisms between the two types of plans for how workers consider them when searching for jobs. Future research should explore possible mechanisms. Overall, there is little evidence that increased pension generosity led to higher observable quality workers or changes in the composition of workers. This suggests that policies aimed at recruiting workers through more generous pensions may have little impact when the primary retirement benefit form is a defined benefit plan.

6   Conclusion

In this paper, I study the impact of an approximate 20 percent increase in pension generosity on labor outcomes. This policy represents an average estimated 1.84 increase in net wages or a total pension wealth increase of approximately 94,000 dollars for the average worker. I examine a range of labor outcomes specifically related to retirements, retention and recruitment for the federal workforce.

The evidence presented suggests that the average worker, in the long run, does not change their labor supply significantly with respect to pension generosity. Previous literature has shown similar results with an elasticity close to zero. However, there is a large range of responses with older workers decreasing their labor supply and lower-wage workers increasing their labor supply. Given these findings, future policies will need to carefully consider the heterogeneous impacts of policy across workers.

Recent literature suggests that pensions have little effect on worker separations. I find a large significant negative effect on job quits for permanent workers while little effect on temporary workers. Further, this effect is increasing in service years which shows that pensions are effective tools in retaining workers with the highest levels of human capital. It is important for future policies to carefully consider the influence of pensions on the labor force given the substantial effects observed.

Last, I find no evidence that more generous pension benefits leads to better recruitment. This result is less clear since workers within the federal government respond to the policy by quitting less. Workers outside of the federal government may not be aware of the pension generosity. Krueger (1988) also suggests that fringe benefits may not be salient to workers when searching for jobs. Future research should explore possible mechanisms for why this is.

If individuals are not aware of fringe benefits in their job search, this may mean policymakers will need to reconsider what forms of compensation are effective at attracting workers.

All together, I provide evidence of the effect of pension on several labor outcomes. The evidence shown suggests that pension benefits have large impacts on labor retention while smaller effects on recruitment. Given the current state of public pension funding issues, I provide evidence that decreases in pension generosity may lead to higher levels of employee turnover. Additionally, there is evidence of large heterogeneity in retirement behavior with respect to pension generosity. For effective workforce planning, policymakers will need to consider these factors when making budgetary decisions related to pensions for the public sector.

7 Figures

Figure 1: Impact of policy changes on compensation and pension benefits for workers

(a) Payable locality rate and COLA

(b) Eligible locality rate

(c) Growth in pension benefits

(d) Change in post tax income

(e) Income breakdown by type

(f) Lower bound of pension growth
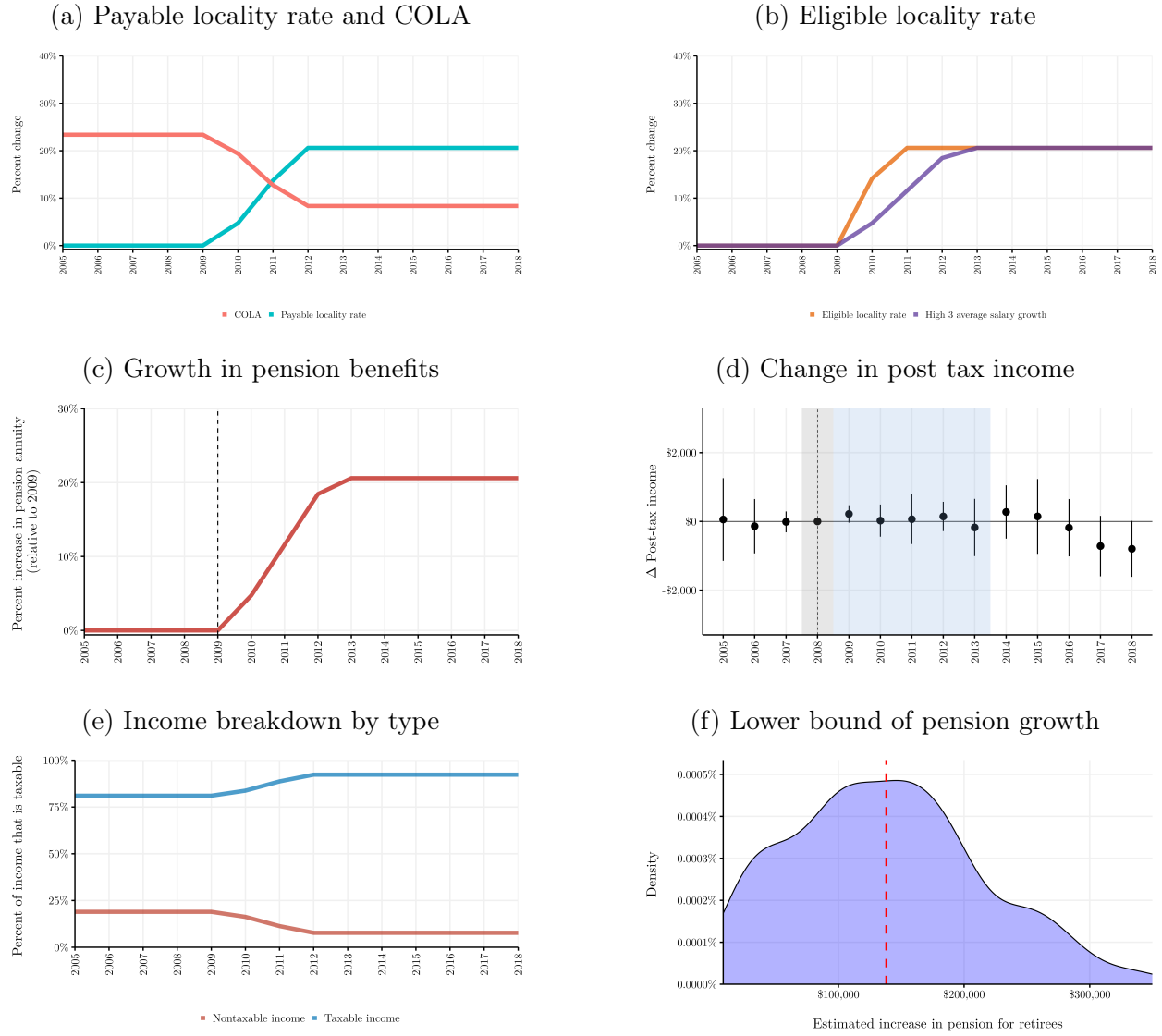
Notes: This figure highlights the effects of the policy for an example worker in a NFA. In Figure (a), there is an increase in locality pay and a decrease in COLAs. As a result, in Figure (b) the average high-three salary increases. This increase translates to a higher pension benefit pay out shown in Figure (c). Figure (d) shows the event study comparing the NFA states to all other states for post-tax incomes which highlights the policy did not change post-tax incomes significantly, as intended. These estimates were imputed using TAXSIM 35 from the National Bureau of Economic Research. Due to data limitations, there is no information on marriage status. For this reason, I assume that individuals are single filers. Figure (e) shows the change in proportion of income that is taxable for the median worker in a NFA across time. Figure (f) imputes the total pension growth for all 2007 NFA retirees. This is the distribution of the lower bound estimate of the wealth shock because it does not factor in inflation and since it uses the upper bound within a given age brackets. For example: If someone is in the 60-64 bin, I impute their age to be 64. The red dotted line is the average increase in pension benefits.

Figure 2: Summary statistics
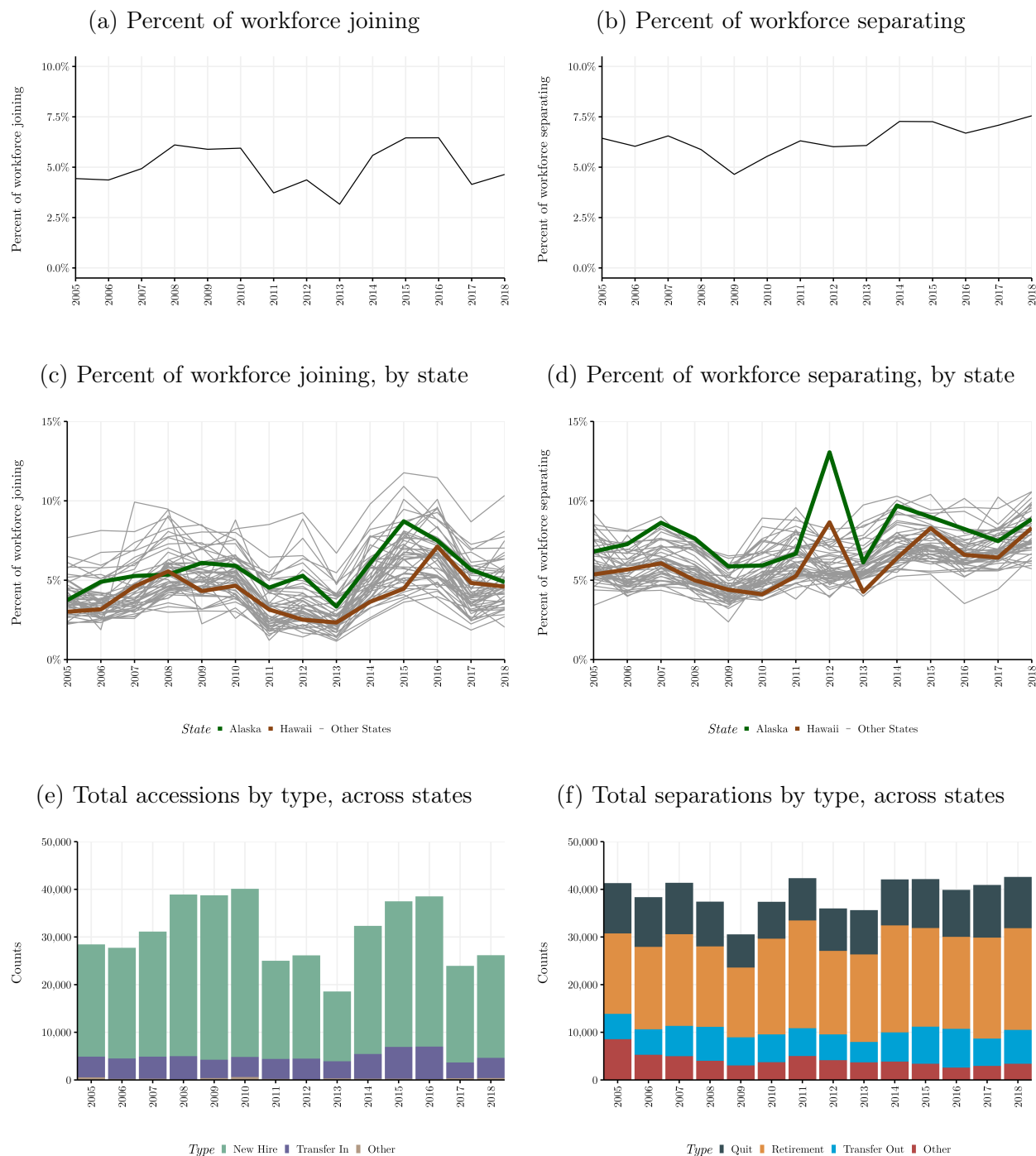
(a) Percent of workforce joining

(b) Percent of workforce separating

(c) Percent of workforce joining, by state

State ■ Alaska ■ Hawaii – Other States

(d) Percent of workforce separating, by state

State ■ Alaska ■ Hawaii – Other States

(e) Total accessions by type, across states

Type ■ New Hire ■ Transfer In ■ Other

(f) Total separations by type, across states

Type ■ Quit ■ Retirement ■ Transfer Out ■ Other

Notes: These are summary statistics for non-military, full time workers for the federal workforce from 2005 to 2018. Transfer out is when a worker transfers to another agency or another state. Other encompasses a variety of other separations and accessions. For separations these include: reduction in force, termination, death, early retirement, retirement with a disability. For accessions these include: mass transfers and senior executive appointments.

Figure 3: Effect of pension generosity on labor outcomes

(a) Effect on log(retirements)

Retirement

(b) Effect on log(service years)

(c) Effect on log(quits)

Retention

(d) Effect on log(transfers)

(e) Effect on log(hires)

Recruitment

(f) Effect on avg service years

(g) Effect on average education

Recruitment

(h) Effect on average age
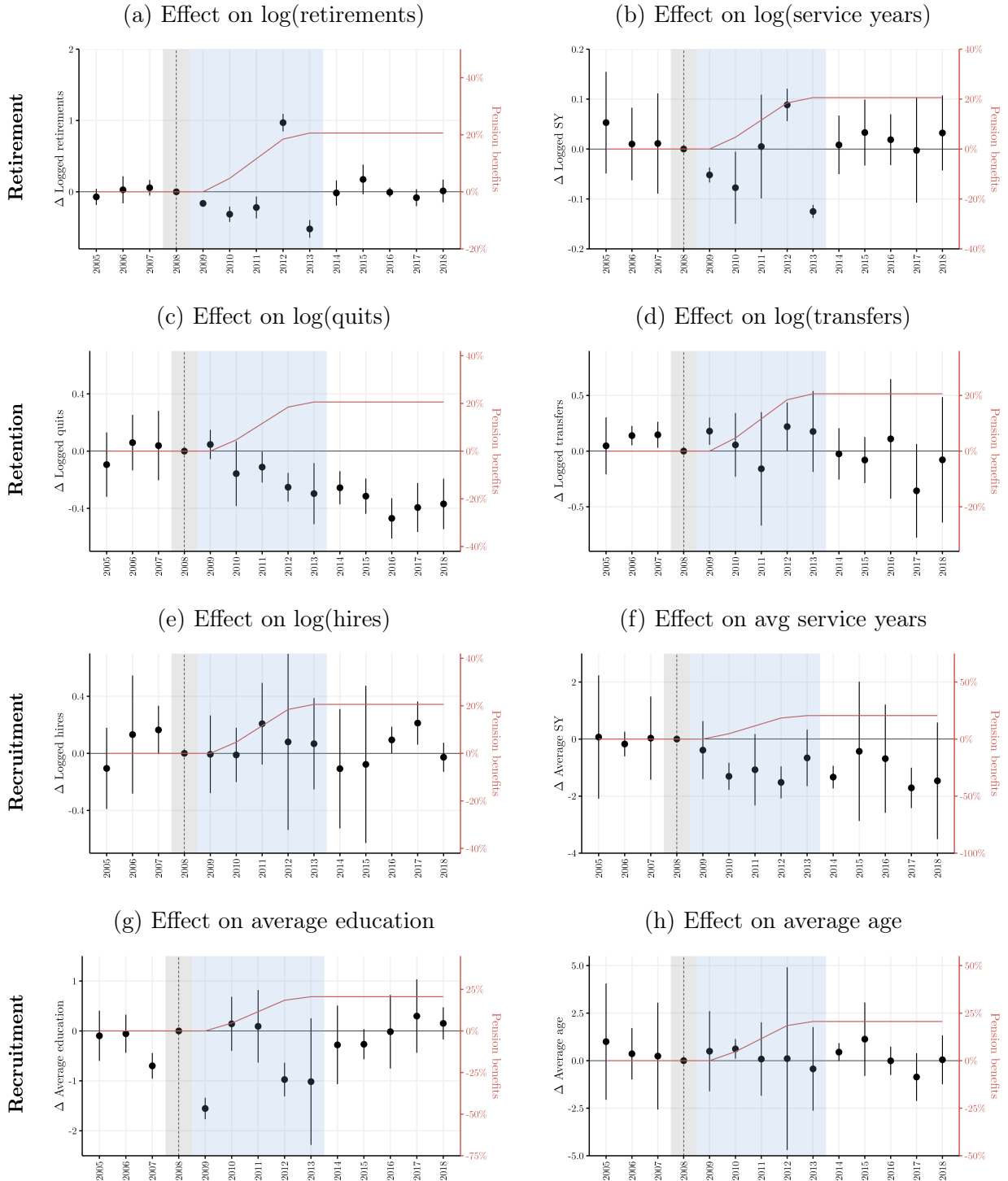
Notes: All figures are an event study following the methodology in the Econometric Framework section. The gray shaded area represents the year prior to the policy being enacted. The blue shaded area represents when pension generosity increased. The red line represents the increase in pension benefit generosity due to the policy.

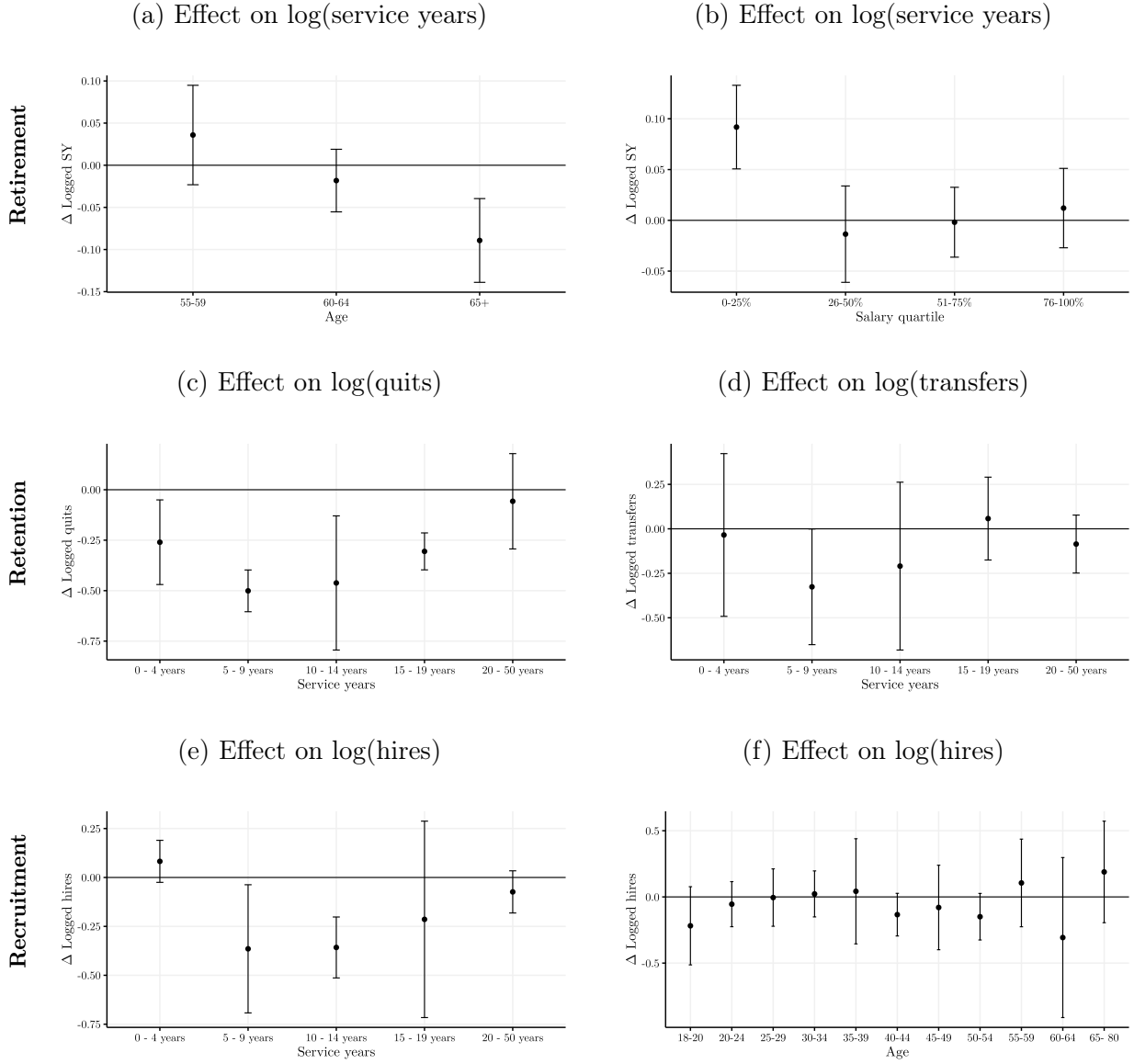Table 1: Long run effect of pension generosity on labor outcomes

Outcome Group:	Retirement			Retention		Recruitment		Wages
Dependent Variables:	Pension ($)	log(Retirements)	log(SY)	log(Quits)	log(SHCL)	Mean Ed	Mean SY	Post tax income ($)
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treat × Time = 1	5,796.7***	0.01	-0.0006	-0.36***	-0.38***	0.19	-1.1***	-231.2
	(849.0)	(0.02)	(0.004)	(0.08)	(0.07)	(0.21)	(0.26)	(338.4)
Fixed-effects								
State	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	459	459	459	459	459	459	459	459
R^2	0.87128	0.98769	0.64474	0.97780	0.96932	0.65914	0.67909	0.97795

Clustered (State) standard-errors in parentheses
*Signif. Codes: ***: 0.001, **: 0.01, *: 0.05*

Notes: SHCL = Sum of human capital lossed. This represents the total years of experience that were lost due to quits. SY = Service years. This represents the years that a worker has spent working for the federal government. Ed = Education level. This represents the education level of a new hire.

Figure 4: Heterogeneity analysis

(a) Effect on log(service years)

(b) Effect on log(service years)

(c) Effect on log(quits)

(d) Effect on log(transfers)

(e) Effect on log(hires)

(f) Effect on log(hires)

Notes: This figure uses a pre-post analysis to identify heterogenous effects by age, salary quartile, and service years. To compute salary quantiles, salaries are standardizied within a given state in each year.

8 Bibliography

References

Antwi, James and David C. Phillips (2013) "Wages and health worker retention: Evidence from public sector wage reforms in Ghana," *Journal of Development Economics*, 102, `10.1016/j.jdeveco.2012.10.004`.

Arias, Elizabeth, Jiaquan Xu, and Kenneth Kochanek (2023) *United States Life Tables, 2021*, Vol. 72.

Aubry, Jean-Pierre, Caroline V Crawford, and Kevin Wandrei (2018) "Stability in Overall Pension Plan Funding Masks a Growing Divide," 3, `https://ideas.repec.org/p/crr/slpbrf/ibslp62.html`.

Blundell, Richard, Eric French, and Gemma Tetlow (2016) *Retirement Incentives and Labor Supply*, Elsevier, `https://EconPapers.repec.org/RePEc:eee:hapoch:v1_457`.

Bo, Ernesto Dal, Frederico Finan, and Martín A. Rossi (2013) "Strengthening state capabilities: The role of financial incentives in the call to public service," *Quarterly Journal of Economics*, 128, `10.1093/qje/qjt008`.

Brown, Kristine (2013) "The link between pensions and retirement timing: Lessons from California teachers," *Journal of Public Economics*, 98, 1–14, `https://EconPapers.repec.org/RePEc:eee:pubeco:v:98:y:2013:i:c:p:1-14`.

Caire, Guy and Gary S Becker (1967) "Human Capital, A Theoretical and Empirical Analysis with Special Reference to Education," *Revue économique*, 18, `10.2307/3499575`.

Cameron, A Colin and Douglas L Miller (2015) "A practitioner's guide to cluster- robust inference," *Journal of Human Resources*, 50, `10.3368/jhr.50.2.317`.

Clarke, Damian and Kathya Tapia-Schythe (2021) "Implementing the panel event study," *The Stata Journal*, 21, 853–884, `10.1177/1536867X211063144`.

Cole, Allison and Bledi Taska (2023) "Worker Valuation of Retirement Benefits," *SSRN Electronic Journal*, `10.2139/ssrn.4517829`.

Dale-Olsen, Harald (2006) "Wages, fringe benefits and worker turnover," *Labour Economics*, 13, `10.1016/j.labeco.2004.03.005`.

Frazis, Harley and Mark A Loewenstein (2013) "How responsive are quits to benefits?" *Journal of Human Resources*, 48, `10.3368/jhr.48.4.969`.

French, Eric (2005) "The effects of health, wealth, and wages on labour supply and retirement behaviour," *Review of Economic Studies*, 72, `10.1111/j.1467-937X.2005.00337.x`.

French, Eric and John Bailey Jones (2011) "The Effects of Health Insurance and Self-Insurance on Retirement Behavior," *Econometrica*, 79, `10.3982/ecta7560`.

Gustman, Alan L, Olivia S Mitchell, and Thomas L Steinmeier (1994) "The Role of Pensions in the Labor Market: A Survey of the Literature," *ILR Review*, 47, `10.1177/001979399404700304`.

Gustman, Alan L and Thomas L Steinmeier (1986) "A Structural Retirement Model," *Econometrica*, 54, `10.2307/1911308`.

——— (1993) "Pension portability and labor mobility. Evidence from the survey of income and program participation," *Journal of Public Economics*, 50, `10.1016/0047-2727(93)90089-C`.

Isaacs, Katelin (2023) "Federal Employees' Retirement System: Summary of Recent Trends," technical report, `https://sgp.fas.org/crs/misc/98-972.pdf`.

Koedel, Cory and P Brett Xiang (2017) "Pension enhancements and the retention of public employees," *Industrial and Labor Relations Review*, 70, `10.1177/0019793916650452`.

Krueger, Alan B (1988) "The Determinants of Queues for Federal Jobs," *Industrial and Labor Relations Review*, 41, `10.2307/2523591`.

Krueger, Alan B and Jörn-Steffen Pischke (1992) "The Effect of Social Security on Labor Supply: A Cohort Analysis of the Notch Generation," *Journal of Labor Economics*, 10, 412–437, `10.1086/298294`.

Lazear, Edward P (1990) "Pensions and Deferred Befefits as Strategic Compensation," *Industrial Relations: A Journal of Economy and Society*, 29, `10.1111/j.1468-232X.1990.tb00754.x`.

Leaver, Clare, Owen Ozier, Pieter Serneels, and Andrew Zeitlin (2021) "Recruitment, effort, and retention effects of performance contracts for civil servants: Experimental evidence from rwandan primary schools," *American Economic Review*, 111, `10.1257/aer.20191972`.

Manoli, Day and Andrea Weber (2016) "Nonparametric evidence on the effects of financial incentives on retirement decisions," *American Economic Journal: Economic Policy*, 8, `10.1257/pol.20140209`.

Mitchell, Olivia S (1982) "Fringe Benefits and Labor Mobility," *The Journal of Human Resources*, 17, `10.2307/145474`.

Munnell, Alicia H, Jean Pierre Aubry, and Mark Cafarelli (2016) "COLA cuts in state-local pensions," *Journal of Pension Economics and Finance*, 15, `10.1017/S1474747215000372`.

Novy-Marx, Robert and Joshua D Rauh (2009) "The liabilities and risks of State-Sponsored pension plans," *Journal of Economic Perspectives*, 23, `10.1257/jep.23.4.191`.

Quinby, Laura D and Gal Wettstein (2021) "Do deferred benefit cuts for current employees increase separation?" *Labour Economics*, 73, `10.1016/j.labeco.2021.102081`.

Rabe, Birgitta (2007) "Occupational pensions, wages, and job mobility in Germany," *Scottish Journal of Political Economy*, 54, `10.1111/j.1467-9485.2007.00428.x`.

Rust, John P (1989) *A Dynamic Programming Model of Retirement Behavior*.

Snyder, Stephen E and William Evans (2006) "The Effect of Income on Mortality: Evidence from the Social Security Notch," *The Review of Economics and Statistics*, 88, 482–495, `https://EconPapers.repec.org/RePEc:tpr:restat:v:88:y:2006:i:3:p:482-495`.

Stock, James H and David A Wise (1990) "Pensions, the Option Value of Work, and Retirement," *Econometrica*, 58, `10.2307/2938304`.

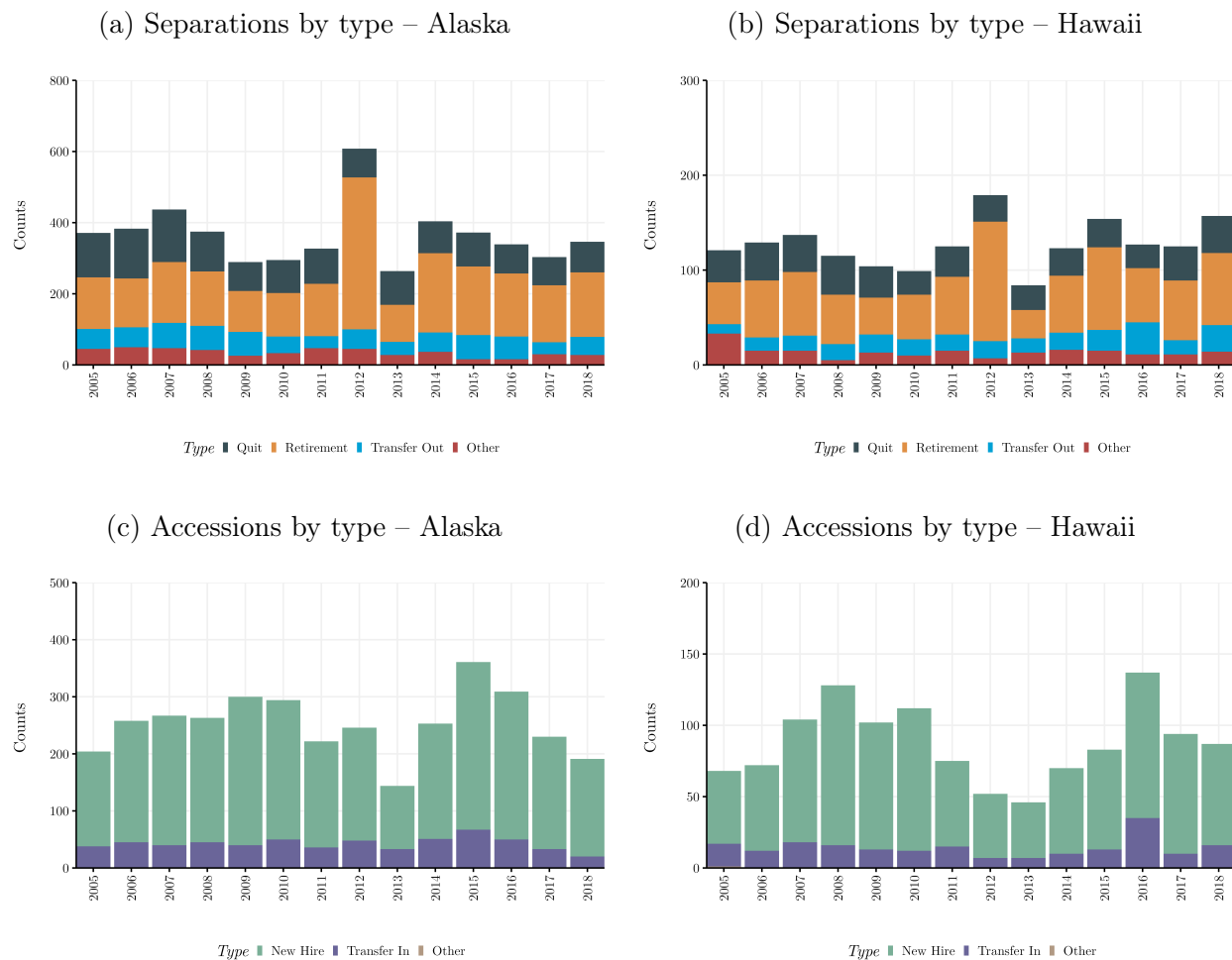# Appendix

A OPM Transition Table

Table 2: OPM Nonforeign Locality and COLA Rates 2009-2015

Region	2009		2010			2011			2012-2015		
	COLA	Locality	COLA	Payable Locality	Full Locality	COLA	Payable Locality	Full Locality	COLA	Payable Locality	Full Locality
Anchorage, Alaska	23	0	19.03	4.72	14.16	10.56	16.46	24.69	5.57	24.69	24.69
Fairbanks, Alaska	23	0	19.03	4.72	14.16	10.56	16.46	24.69	5.57	24.69	24.69
Juneau, Alaska	23	0	19.03	4.72	14.16	10.56	16.46	24.69	5.57	24.69	24.69
Other Alaska	25	0	20.94	4.72	14.16	12.28	16.46	24.69	7.18	24.69	24.69
County of Honolulu, Hawaii	25	0	20.94	4.72	14.16	16.07	11.01	16.51	12.25	16.51	16.51
County of Hawaii, Hawaii	18	0	14.26	4.72	14.16	9.76	11.01	16.51	6.24	16.51	16.51
County of Kauai, Hawaii	25	0	20.94	4.72	14.16	16.07	11.01	16.51	12.25	16.51	16.51
County of Maui, Hawaii	25	0	20.94	4.72	14.16	16.07	11.01	16.51	12.25	16.51	16.51
Puerto Rico	14	0	10.44	4.72	14.16	7.18	9.44	14.16	4.2	14.16	14.16
U.S. Virgin Islands	25	0	20.94	4.72	14.16	17.23	9.44	14.16	13.84	14.16	14.16
Guam Northern Mariana Islands	25	0	20.94	4.72	14.16	17.23	9.44	14.16	13.84	14.16	14.16
Other Possessions	0	0	0	4.72	14.16	0	9.44	14.16	0	14.16	14.16

Notes: Column entries are percentages. This can be found here: link

B   Summary Statistics for NFA

Figure 5: Summary statistics for NFA

(a) Separations by type – Alaska

(b) Separations by type – Hawaii

(c) Accessions by type – Alaska

(d) Accessions by type – Hawaii

Notes: These are summary statistics for non-military, full time workers for the federal workforce from 2005 to 2018 for Alaska and Hawaii. Transfer out is when a worker transfers to another agency or another state. Other encompasses a variety of other separations and accessions. For separations these include: reduction in force, termination, death, early retirement, retirement with a disability. For accessions these include: mass transfers and senior executive appointments.

C   Placebo Tests

Figure 6: Placebo tests

(a) Effect on log(retirements)

(b) Effect on log(service years)

(c) Effect on log(quits)

(d) Effect on log(service years)

(e) Effect on average education of hire

(f) Effect on log(service years)

(g) Effect on log(hires)

(h) Effect on average age of hire
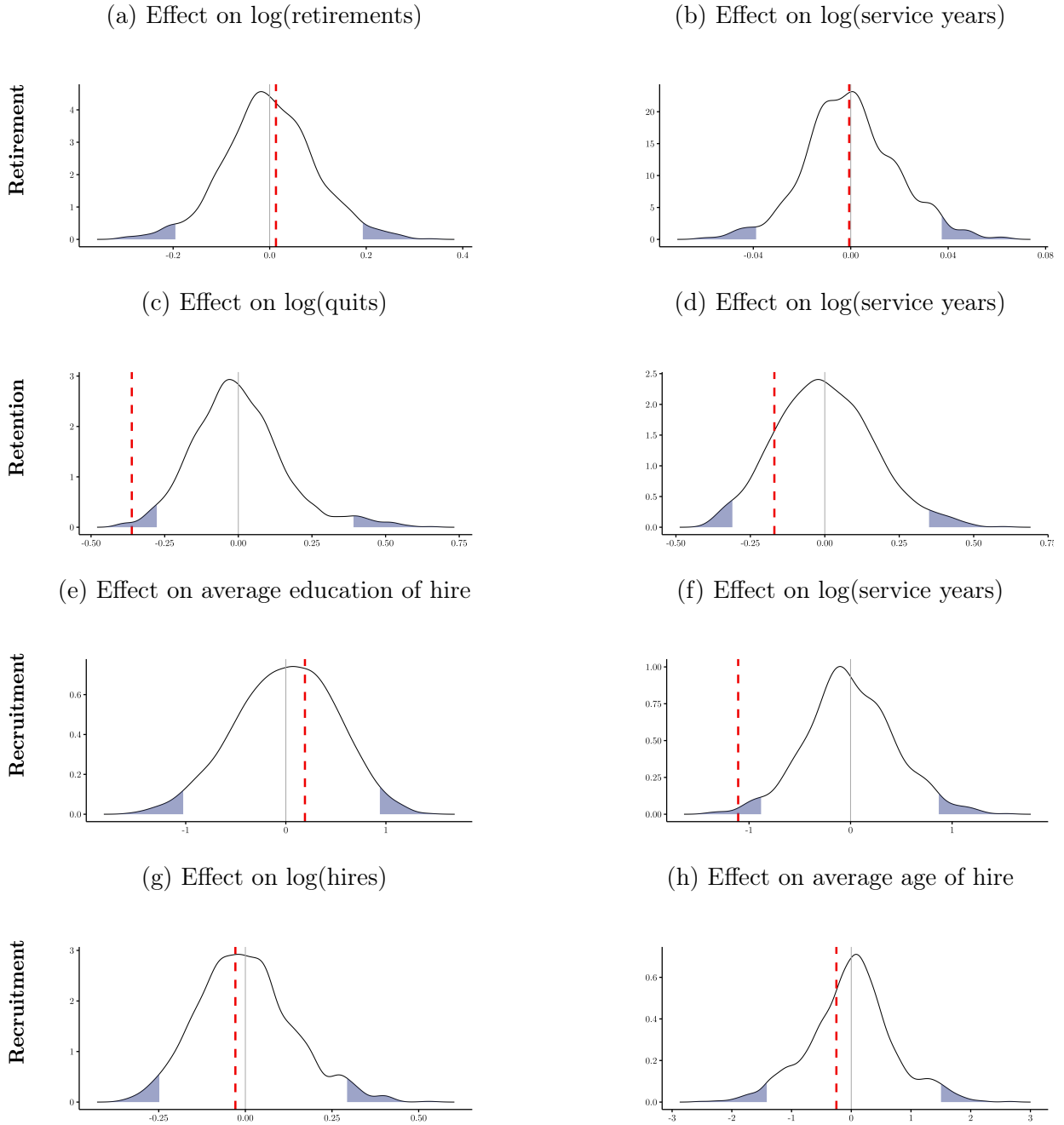
Notes: To compute a placebo test, I use the pre-post model specified in the econometric framework. I then randomly sample by choosing two states to be treated and compare them to the other 48 states. I create a distribution from the results and compute the significance of the effect sizes observed from Alaska and Hawaii.

D Event Study Table

Table 3: Event Study – Alaska and Hawaii

Group:	Retirement		Retention		Recruitment			
Dependent Variables:	log(Retirements)	log(SY)	log(Quits)	log(Transfers)	log(Hires)	Mean SY	Mean Ed	Average age of hire
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables								
Treat × Year = 2005	-0.07 (0.06)	0.05 (0.05)	-0.09 (0.11)	0.05 (0.13)	-0.11 (0.14)	0.07 (1.1)	-0.10 (0.25)	1.0 (1.5)
Treat × Year = 2006	0.03 (0.10)	0.01 (0.04)	0.06 (0.10)	0.14** (0.04)	0.13 (0.21)	-0.17 (0.22)	-0.06 (0.19)	0.36 (0.67)
Treat × Year = 2007	0.06 (0.05)	0.01 (0.05)	0.04 (0.12)	0.15* (0.06)	0.16 (0.08)	0.03 (0.73)	-0.70*** (0.13)	0.24 (1.4)
Treat × Year = 2009	-0.16*** (0.02)	-0.05*** (0.007)	0.05 (0.05)	0.18** (0.06)	-0.007 (0.14)	-0.39 (0.51)	-1.6*** (0.11)	0.50 (1.0)
Treat × Year = 2010	-0.31*** (0.05)	-0.08* (0.04)	-0.16 (0.11)	0.06 (0.14)	-0.01 (0.10)	-1.3*** (0.24)	0.14 (0.27)	0.62* (0.26)
Treat × Year = 2011	-0.22** (0.08)	0.005 (0.05)	-0.11* (0.05)	-0.16 (0.25)	0.21 (0.14)	-1.1 (0.62)	0.09 (0.36)	0.09 (0.96)
Treat × Year = 2012	0.97*** (0.06)	0.09*** (0.02)	-0.25*** (0.05)	0.22* (0.11)	0.08 (0.31)	-1.5*** (0.28)	-0.97*** (0.17)	0.11 (2.4)
Treat × Year = 2013	-0.52*** (0.06)	-0.13*** (0.006)	-0.30** (0.11)	0.18 (0.18)	0.07 (0.16)	-0.66 (0.49)	-1.0 (0.63)	-0.43 (1.1)
Treat × Year = 2014	-0.02 (0.09)	0.008 (0.03)	-0.26*** (0.06)	-0.03 (0.11)	-0.11 (0.21)	-1.3*** (0.20)	-0.28 (0.39)	0.45 (0.24)
Treat × Year = 2015	0.17 (0.10)	0.03 (0.03)	-0.31*** (0.06)	-0.08 (0.10)	-0.08 (0.27)	-0.43 (1.2)	-0.27 (0.15)	1.1 (0.96)
Treat × Year = 2016	-0.007 (0.03)	0.02 (0.03)	-0.47*** (0.07)	0.11 (0.27)	0.09* (0.05)	-0.69 (0.94)	-0.01 (0.37)	-0.009 (0.37)
Treat × Year = 2017	-0.08 (0.06)	-0.003 (0.05)	-0.39*** (0.09)	-0.36 (0.21)	0.21** (0.07)	-1.7*** (0.35)	0.30 (0.37)	-0.86 (0.63)
Treat × Year = 2018	0.01 (0.08)	0.03 (0.04)	-0.37*** (0.09)	-0.08 (0.28)	-0.03 (0.05)	-1.5 (1.0)	0.15 (0.16)	0.05 (0.64)
Fixed-effects								
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics								
Observations	714	714	714	714	714	714	714	714
R^2	0.98788	0.67504	0.97544	0.96610	0.97356	0.68218	0.65883	0.63861
Within R^2	0.20572	0.11262	0.03264	0.01486	0.01085	0.03335	0.02744	0.00712

Clustered (State) standard-errors in parentheses
*Signif. Codes: ***: 0.001, **: 0.01, *: 0.05*

E Heterogeneity Tables

Table 4: Retirements by age

Dependent Variable:		log(Retirements)	
	55-59	60-64	65+
Model:	(1)	(2)	(3)
Variables			
Treat × Time = 1	-0.05	0.02	-0.007
	(0.03)	(0.04)	(0.04)
Fixed-effects			
State	Yes	Yes	Yes
Year	Yes	Yes	Yes
Fit statistics			
Observations	459	459	459
R^2	0.97294	0.97880	0.97156
Within R^2	0.00060	9.23×10^{-5}	1.11×10^{-5}

Clustered (State) standard-errors in parentheses
Signif. Codes: ***: 0.001, **: 0.01, *: 0.05

Table 5: Service years of retirees by age

Dependent Variable:		log(SY)	
	55-59	60-64	65+
Model:	(1)	(2)	(3)
Variables			
Treat × Time = 1	0.04	-0.02	-0.09***
	(0.03)	(0.02)	(0.03)
Fixed-effects			
State	Yes	Yes	Yes
Year	Yes	Yes	Yes
Fit statistics			
Observations	459	459	459
R^2	0.42243	0.47450	0.37920
Within R^2	0.01603	0.00124	0.01132

Clustered (State) standard-errors in parentheses
Signif. Codes: ***: 0.001, **: 0.01, *: 0.05

Table 6: Logged quits by service years

Dependent Variable:			log(Quits)		
	0 - 4 years	5 - 9 years	10 - 14 years	15 - 19 years	20 - 50 years
Model:	(1)	(2)	(3)	(4)	(5)
Variables					
Treat × Time = 1	-0.26*	-0.50***	-0.46**	-0.31***	-0.06
	(0.11)	(0.05)	(0.17)	(0.05)	(0.12)
Fixed-effects					
State	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Fit statistics					
Observations	459	458	459	454	459
R^2	0.95898	0.95418	0.91741	0.88644	0.87971
Within R^2	0.01162	0.03903	0.01970	0.00683	0.00024

Clustered (State) standard-errors in parentheses
*Signif. Codes: ***: 0.001, **: 0.01, *: 0.05*

Table 7: Logged transfers by service years

Dependent Variable:			log(Transfers)		
	0 - 4 years	5 - 9 years	10 - 14 years	15 - 19 years	20 - 50 years
Model:	(1)	(2)	(3)	(4)	(5)
Variables					
Treat × Time = 1	-0.04	-0.33	-0.21	0.06	-0.09
	(0.23)	(0.17)	(0.24)	(0.12)	(0.08)
Fixed-effects					
State	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Fit statistics					
Observations	459	458	459	454	459
R^2	0.92593	0.93194	0.91043	0.90038	0.90860
Within R^2	9.79×10^{-5}	0.00912	0.00325	0.00022	0.00050

Clustered (State) standard-errors in parentheses
*Signif. Codes: ***: 0.001, **: 0.01, *: 0.05*

Table 8: Logged hires by service years

Dependent Variable:	log(Hires)				
	0 - 4 years	5 - 9 years	10 - 14 years	15 - 19 years	20 - 50 years
Model:	(1)	(2)	(3)	(4)	(5)
Variables					
Treat × Time = 1	0.08	-0.36*	-0.36***	-0.21	-0.07
	(0.06)	(0.17)	(0.08)	(0.26)	(0.06)
Fixed-effects					
State	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
Fit statistics					
Observations	459	456	454	442	435
R^2	0.97206	0.95346	0.92538	0.89869	0.89923
Within R^2	0.00172	0.01730	0.01056	0.00272	0.00029

Clustered (State) standard-errors in parentheses
*Signif. Codes: ***: 0.001, **: 0.01, *: 0.05*

Table 9: Logged hires by age

Dependent Variable:						log(Hires)					
	18-20	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65- 80
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Variables											
Treat × Time = 1	-0.22	-0.06	-0.005	0.02	0.04	-0.13	-0.08	-0.15	0.11	-0.31	0.19
	(0.15)	(0.09)	(0.11)	(0.09)	(0.20)	(0.08)	(0.16)	(0.09)	(0.17)	(0.31)	(0.20)
Fixed-effects											
State	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics											
Observations	305	458	459	458	458	459	457	458	448	419	324
R^2	0.58755	0.92351	0.94354	0.95886	0.95200	0.95318	0.94651	0.94683	0.92933	0.85096	0.77624
Within R^2	0.00039	0.00028	2.99×10^{-6}	7.78×10^{-5}	0.00023	0.00252	0.00078	0.00256	0.00111	0.00445	0.00136

Clustered (State) standard-errors in parentheses
*Signif. Codes: ***: 0.001, **: 0.01, *: 0.05*

F   Calculation of Pension Wealth

Pension wealth for an individual i retiring at year t is calculated as follows:

$$PW_{i,t} = \sum_{t=0}^{T} \left(\frac{1}{1+r}\right)^t \times SY \times H3AS \times \delta \tag{8}$$

where T is an individual's life expectancy, r is the real interest rate and is assumed to be 0.03 as is done in Brown (2013), SY is the number of years an individual has worked for the federal government, $H3AS$ is the average of an individual's highest three years of salary, and δ is a multiplier for the number of years a person has worked which is either 1 percent or 1.1 percent in this context. For an individual's life expectancy, T, I utilize the CDC United States Life Tables (Arias et al., 2023).[23] Since I see ages at the 5 year interval, I assume that ages above 60 are eligible for the 1.1 percent annuity multiplier while those below 60 receive 1 percent for the annuity multiplier in Equation 6.

To calculate the annual net wage, it is the sum of salary net pension contributions plus pension wealth accrual. More specifically, it is $w^{net} = (1 - pc) \times w + (PW_{t+1} - PW_t)$ where pc is the pension contribution rate of a worker's salary. Note that pension accrual or, pa, is $pa = PW_{t+1} - PW_t$.

---

[23]These are available here: link
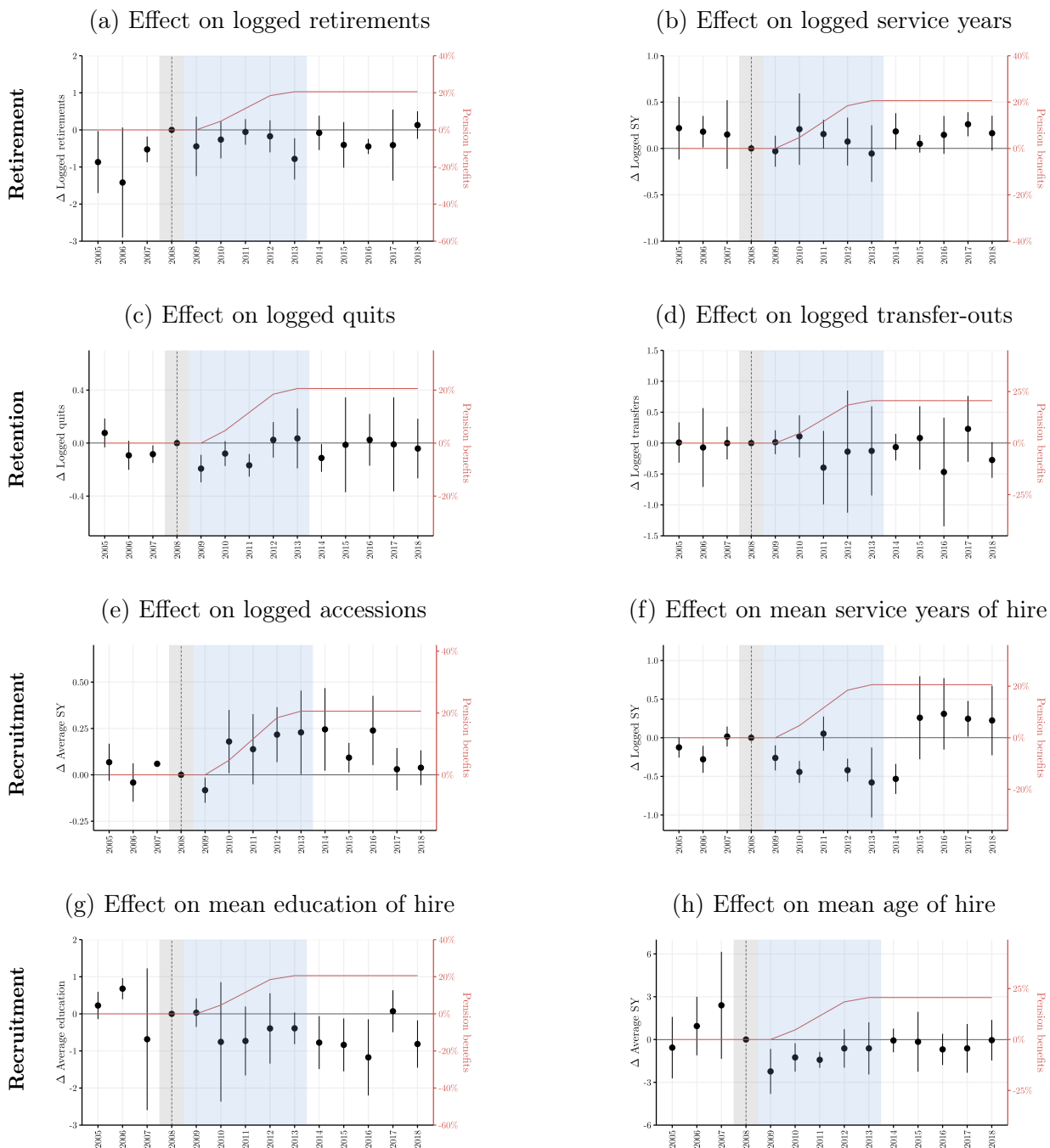
G Effect on Annuitants

Figure 7: Effect of pension generosity on logged annuitants
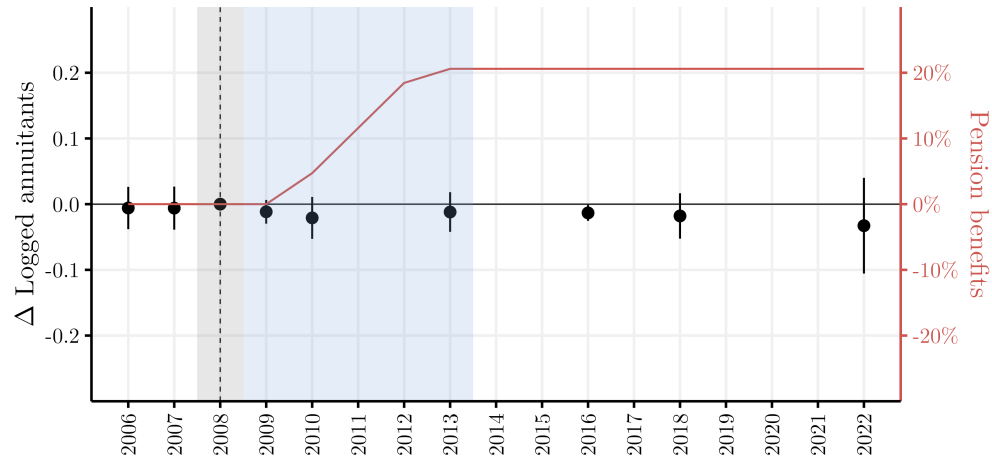
Notes: This figure shows the effect of the increase of pension generosity on logged annuitants in treated states. The gray shaded area represents the year prior to the policy being enacted. The blue shaded area represents when pension generosity increased. The red line represents the increase in pension benefit generosity due to the policy. Data from this comes from the Office of Personnel Management and federal reports on annuitants by state (Isaacs, 2023).

H   Temporary Worker Outcomes

Figure 8: Effect of pension generosity on outcomes - temporary workers

(a) Effect on logged retirements

(b) Effect on logged service years

(c) Effect on logged quits

(d) Effect on logged transfer-outs

(e) Effect on logged accessions

(f) Effect on mean service years of hire

(g) Effect on mean education of hire

(h) Effect on mean age of hire

Notes: The gray shaded area represents the year prior to the policy being enacted. The blue shaded area represents when pension generosity was increasing.

I Education Levels

Table 10: Education levels

Years of Education	Description
01	No formal education or some elementary school - did not complete
02	Elementary school completed - no high school
03	Some high school - did not complete
04	High school graduate or certificate of equivalency
05	Terminal occupational program - did not complete
06	Terminal occupational program - certificate of completion, diploma or equivalent
07	Some college - less than one year
08	One year college
09	Two years college
10	Associate degree
11	Three years college
12	Four years college
13	Bachelor's degree
14	Post-bachelor's
15	First professional
16	Post-first professional
17	Master's degree
18	Post-master's
19	Sixth-year degree
20	Post-sixth year
21	Doctorate degree
22	Post-doctorate
**	**-Unspecified
	No education level reported

J   Job Annoucement

Administrative Support Assistant

DEPARTMENT OF AGRICULTURE
Forest Service

Summary

Positions filled through this announcement provide and/or advise on a variety of administrative management services.

This is an open and continuous announcement. See Additional Information section for more information.

Applications will expire every 90 days. To remain active for consideration, applicants **must** resubmit their application.

Overview

    Accepting applications

Open & closing dates
🕐 05/01/2023 to 09/29/2023

Salary
$20.36 - $22.70 per hour

Pay scale & grade
GS 5 - 6

Locations
Few vacancies in the following locations:

📍 **Anchorage, AK**

📍 **Cordova, AK**

📍 **Craig, AK**

📍 **Girdwood, AK**

📍 **Hoonah, AK**

📍 **Juneau, AK**

📍 **Ketchikan, AK**

📍 **Moose Pass, AK**

📍 **Petersburg, AK**

📍 **Sitka, AK**

📍 **Thorne Bay, AK**

📍 **Wrangell, AK**

📍 **Yakutat, AK**

Remote job
No

Telework eligible
Yes—as determined by the agency policy.

Travel Required
Not required

Relocation expenses reimbursed
No

Appointment type
Permanent -

Work schedule
Full-time -

Service
Excepted

Promotion potential
8 - The target grade of positions filled through this announcement may be 06, 07, or 08. Target grade will be determined at the time of the job offer.

Job family (Series)
0303 Miscellaneous Clerk And Assistant
(/Search/Results?j=0303)

Supervisory status
No

Security clearance
Not Required
(/Help/faq/job-announcement/security-clearances/)

Drug test
No

Position sensitivity and risk
Non-sensitive (NS)/Low Risk
(https://www.usajobs.gov/Help/faq/job-announcement/security-clearances/)

Trust determination process
Credentialing
(https://www.usajobs.gov/Help/faq/job-announcement/security-clearances/)
Suitability/Fitness
(https://www.usajobs.gov/Help/faq/job-announcement/security-clearances/)

Announcement number
23-R10OCR-ASA-0303-5-8-AP

Control number
722808800

This job is open to

The public
U.S. Citizens, Nationals or those who owe allegiance to the U.S.

Clarification from the agency

Anyone who has lived or worked in or near the geographic boundaries of the Chugach National Forest or Tongass National Forest and has special knowledge or expertise concerning the cultural and/or resources of the Southcentral or Southeast Alaska area may apply.

Duties

- Duties are described for the minimum performance level, GS-06.

- The position receives visitors and handles calls of a routine nature, such as locations of key personnel, local amenities, subsistence opportunities and regulations, tourism, fishing, hunting and recreation opportunities.

- Provides administrative support in the specialized area or program the unit/staff supports.

- Responsible for the administrative oversight of various business processes, which may include processing financial, procurement, property, personnel, and other administrative instruments for the unit/staff.

- Determines overall file methods, plans and systems, use of files equipment, preservation of records of continuing value and the systematic elimination of all other records.

- From rough drafts, notes, or oral instructions, prepares correspondence, forms, reports and other documents with a wide variety of technical terminology.

- Performs miscellaneous and other clerical services, such as applying postal regulations to out-going mail.

- Performs other duties as assigned.

Requirements

Conditions of Employment

- Must be a U.S. Citizen or National.

- Males born after 12-31-59 must be registered for Selective Service or exempt.

- Subject to satisfactory adjudication of background investigation and/or fingerprint check.

- Successful completion of a 2-year probationary period is required.

- Per Public Law 104-134 all Federal employees are required to have federal payments made by direct deposit to their financial institution.

• Successfully pass the E-Verify employment verification check. To learn more about E-Verify, including your rights and responsibilities, visit E-Verify.

Qualifications

You must meet the ANILCA eligibility requirements to be referred for this position.

Eligibility Requirements: You must have lived and or worked in or near the geographic boundaries of the Chugach National Forest or Tongass National Forest a and have special knowledge or expertise concerning the natural and cultural resources in Southcentral or Southeast area to participate in visitor services and administrative activities.

Your responses to the questions in the assessment for this announcement must clearly show that you meet the eligibility requirements.

Education

These jobs do not have an education qualification requirement.

Additional information

The salary amount will be adjusted to include a Cost of Living Allowance (COLA)
(https://www.opm.gov/policy-data-oversight/pay-leave/pay-systems/nonforeign-areas/#url%3DCOLA-Rates)
. A gradually reducing COLA will continue to be paid after December 31, 2012. COLA will not be eliminated until 65% of the locality pay equals the frozen COLA rate. See the OPM website at:
http://www.opm.gov/oca/cola/index.asp
(http://www.opm.gov/oca/cola/index.asp%20)
for additional information.

Positions may be filled at one or more of the duty locations included in this announcement.

THIS IS AN OPEN CONTINUOUS ANNOUNCEMENT. This type of announcement provides the Forest Service with a readily available source of applicants when vacancies occur. Eligibility and qualifications will be verified when there is a vacancy for the location and grade for which you applied. Information on specific locations where jobs are being filled and the dates when applications are due for these locations can be found on the Forest Service
(http://fsoutreach.gdcii.com/Outreach)
website.

The Forest Service may use certain incentives and hiring flexibilities, currently offered by the Federal government, to attract highly qualified candidates. Additional information is available at
https://www.opm.gov/policy-data-oversight/pay-leave/pay-and-leave-flexibilities-for-recruitment-and-retention/
(https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.opm.gov%2Fpolicy-data-oversight%2Fpay-leave%2Fpay-and-leave-flexibilities-for-recruitment-and-retention%2F&data=04%7C01
%7C%7C0096aa4601984888916d08d915428378%7Ced5b36e701ee4ebc867ee03cfa0d4697%7C0%7C0%7C637564198105039832%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn
%3D%7C1000&sdata=%2BV1RU2IUg%2FCwobYcZze4oDFzXHpx2EEu6fsB5MRuDAI%3D&reserved=0)

These are bargaining unit positions and are represented by NFFE.

Government housing may be available, depending on location.

Federal affiliated daycare facilities may be available, depending on location.

This position may be eligible to telework up to four days per week, based upon the duties of the position. This position may also be eligible for flexible work arrangements as determined by agency policy and any applicable collective bargaining agreements.

If you are selected for a position with further promotion potential, you will be placed under a career development plan, and may be non-competitively promoted if you successfully complete the requirements and if recommended by management. However, promotion is not guaranteed.

ANILCA appointments require a 2 year probationary period. Upon completion of 2 years the incumbent will be non-competitively converted to a career or career-conditional appointment if all of the following are met: successful completion of 2 year probationary period, Office of Personnel Management (OPM) qualification requirements are met for the position the incumbent is converting into, satisfactorily meeting performance requirements, and completion of all prescribed training. If all requirements are not met upon completion of two years in this position, employment will be terminated.

Benefits

A career with the U.S. government provides employees with a comprehensive benefits package. As a federal employee, you and your family will have access to a range of benefits that are designed to make your federal career very rewarding. Learn more about federal benefits
(https://www.usajobs.gov/Help/working-in-government/benefits/)
.

Eligibility for benefits depends on the type of position you hold and whether your position is full-time, part-time or intermittent. Contact the hiring agency for more information on the specific benefits offered.

How You Will Be Evaluated

You will be evaluated for this job based on how well you meet the qualifications above.

You will be evaluated for this job based on your responses to the questions in the assessment to determine whether or not you are eligible for appointment under the ANILCA authority.

Note: Please follow all instructions carefully. Errors or omissions may affect your eligibility. Providing inaccurate information on Federal documents could be grounds for non-selection or disciplinary action up to including removal from the Federal service.

To view the application form, visit: https://apply.usastaffing.gov/ViewQuestionnaire/11950252

Required Documents

The following documents are required for your applicant package to be complete. Our office cannot be responsible for incompatible software, illegible fax transmissions, delays in the mail service, your system failure, etc. Encrypted documents will not be accepted. Failure to submit required, legible documents may result in loss of consideration.

Resume that includes: 1) personal information such as name, address, contact information; 2) education; 3) detailed work experience related to this position as described in the responsibilities section including work schedule, hours worked per week, dates of employment; title, series, grade (if applicable); 4) supervisor's phone number and whether or not the supervisor may be contacted for a reference check; 5) other qualifications.

If claiming veteran's preference, you must submit a DD214, Certificate of Release from Active Duty, which shows dates of service and discharge under honorable conditions. If currently on active duty you must submit a certification of expected discharge or release from active duty service under honorable conditions not later than 120 days after the date the certification is submitted. Veteran's preference must be verified prior to appointment. Without this documentation, you will not receive veteran's preference and your application will be evaluated based on the material(s) submitted.

If claiming 10-point veteran's preference you must provide the DD214 or certification requirements (see above bullet), plus the proof of entitlement of this preference as listed on the SF-15 Application for 10-point Veterans' Preference. The SF-15 should be included but is not required. Failure to submit these documents could result in the determination that there is insufficient documentation to support your claim for 10-point preference. For more information on veterans' preference visit FEDSHIREVETS (https://www.fedshirevets.gov/job-seekers/veterans-preference/#content) .

How to Apply

Please view Tips for Applicants (https://www.fs.usda.gov/working-with-us/jobs/how-to-apply) - a guide to the Forest Service application process.

Read the entire announcement and all instructions before you begin. You must complete this application process and submit all required documents electronically by 11:59p.m. Eastern Time (ET) on the closing date of this announcement.

Applying online is highly encouraged. We are available to assist you during business hours (8:00a.m. - 4:00p.m. (MST), Monday - Friday. If applying online poses a hardship, contact the Agency Contact listed below well before the closing date for an alternate method. All hardship application packages must be returned to Human Resources no later than noon ET on the closing date of the announcement in order for it to be entered into the system prior to the closing date.

This agency provides reasonable accommodation to applicants with disabilities on a case-by-case basis. Contact the Agency Contact to request this.

To begin, in USAJOBS click "Apply" and follow the instructions to attach your resume and required documents, complete the assessment questionnaire, and submit your application.

NOTE: Please verify that documents you are uploading from USAJOBS transfer into the Agency's staffing system as there is a limitation to the number of documents that can be transferred. However, once in the Agency's staffing system, you will have the opportunity to upload additional documents. Uploaded documents must be less than 5MB and in one of the following document formats: GIF, JPG, JPEG, PNG, RTF, PDF, TXT or Word (DOC or DOCX). Do not upload Adobe Portfolio documents because they are not viewable.

Agency contact information

👤 HRM Contact Center

Phone

1-877-372-7248 X2
(tel:1-877-372-7248 X2)

Email

HRM_Contact_Center@usda.gov
(mailto:HRM_Contact_Center@usda.gov)

Learn more about this agency
(#agency-modal-trigger)

Address

USDA Forest Service HRM Contact Center
DO NOT MAIL IN APPLICATIONS, SEE INSTRUCTIONS IN THE ANNOUNCEMENT.
Albuquerque, NM 87109
US

Next steps

Your application will be reviewed to verify that you meet the eligibility and qualification requirements for the position prior to issuing referral lists to the selecting official. If further evaluation or interviews are required, you will be contacted. Log in to your USAJOBS (https://gcc02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.usajobs.gov%2F&data=04%7C01 %7C%7C198596a2ef624eeca92608d95e63056b%7Ced5b36e701ee4ebc867ee03cfa0d4697%7C0%7C0%7C637644601643425378%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0 %3D%7C1000&sdata=XaGpNbQyufnXvLMx%2BPQKv36jMnfDcECQUVHLmjk6Iws%3D&reserved=0) account to check your application status.

You must choose to turn on email notifications in your USAJOBS profile if you want to receive important email notifications that may impact your applicant experience (e.g. If you start an application and do not submit it prior to the closing date, USAJOBS will send an email reminder that the closing date is approaching and your application is in an incomplete status).

Multiple positions may be filled from this announcement.

Fair & Transparent

The Federal hiring process is set up to be fair and transparent. Please read the following guidance.

Equal Employment Opportunity (EEO) Policy
(/Help/equal-employment-opportunity/)

Financial suitability
(/Help/working-in-government/fair-and-transparent/financial-suitability/)

New employee probationary period
(/Help/working-in-government/fair-and-transparent/probationary-period/)

Privacy Act
(/Help/working-in-government/fair-and-transparent/privacy-act/)

Reasonable accommodation policy
(/Help/reasonable-accommodation/)

Selective Service
(/Help/working-in-government/fair-and-transparent/selective-service/)

Signature and false statements
(/Help/working-in-government/fair-and-transparent/signature-false-statements/)

Social security number request
(/Help/working-in-government/fair-and-transparent/social-security-number/)

K Alternative Measure for Retention

Table 11: Effect on logged quits (as a percent of workforce)

Model:	Logged quits (as a percent of workforce) (1)
Variables	
Treat $\times$ Time = 1	-0.2995***
	(0.0620)
Fixed-effects	
State	Yes
Year	Yes
Fit statistics	
Observations	459
R^2	0.78767
Within R^2	0.02619

Clustered (State) standard-errors in parentheses
*Signif. Codes: ***: 0.001, **: 0.01, *: 0.05*