

Can't Wait to Retire: Officer Retention amid Turmoil in Policing

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Abstract

Amid the fallout from the 2020 George Floyd murder and the COVID pandemic, reports surfaced that an unexpected and unprecedented wave of police officers exited police employment, contributing to severe staffing shortages. It remains unclear, however, which officers left policing and why they left. In this paper, I explore police officers' decisions to exit policing, examine how these decisions changed from 2012 to 2022, and evaluate the mechanisms that may account for the early 2020s spike in officer exits. After linking statewide administrative employment data to officers' voter registration records, I find that police exits increased by 1.4 percentage points (70 percent) from 2019 to 2022 for retirement-ineligible officers. Police exits differentially increased for white and Republican officers compared to their nonwhite and non-Republican colleagues at the same agencies. I also demonstrate that in stark contrast to police, there is little change in firefighter exits for retirement-ineligible employees during these years. Collectively, the results suggest that shifts in the police climate substantially contributed to the early 2020s police exodus and that there can be tradeoffs between police reform and officer retention.

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1. Introduction

The composition of a jurisdiction's police force impacts key policing outcomes. More experienced police officers deter more crime, use less force, and conduct more productive searches than their less experienced peers (Ba et al., 2022; West, 2019). Moreover, women, nonwhite, and Democrat officers make different enforcement decisions and use less force than their male, white, and Republican colleagues (Ba et al., 2021; Ba et al., 2024; Goncalves and Tuttle, 2024; Hoekstra and Sloan, 2022; Weisburst, 2024). The size of a jurisdiction's police force matters too: larger police forces reduce crime (e.g., Levitt, 1997; Evans and Owens, 2007; Chalfin and McCrary, 2018). Thus, the impact that police have on communities depends on how well jurisdictions retain their officers and which officers they retain.

In the early 2020s, there were consistent reports that an unexpected and unprecedented wave of police officers exited police employment (e.g., MacFarquhar, 2021; Maher, 2022; PERF, 2021), resulting in a smaller and less experienced police labor force. Several years later, there is only a limited understanding of how police retention changed, and even less insight into why the exodus occurred. Police leaders and media often anecdotally attribute the wave of exits in part to the contentious police climate that emerged following the 2020 George Floyd murder. But other forces could also be at play – most notably, the COVID pandemic and the labor market boom that eventually followed.

In this paper, I explore police officers' decisions to exit policing, examine how these decisions changed from 2012 to 2022, and evaluate the mechanisms that may account for the early 2020s spike in police exits. More specifically, I first explore the relationship between officers' probability of exiting policing ("police exits") and their defined benefit (DB) pensions, demographics, and agencies. I devote special attention to DB pensions because they critically shape police exits, and they are policymakers' preeminent but costly tool for retaining experienced officers.¹ I then examine how police exits changed from 2012 to 2022 and investigate differences by retirement eligibility status. Finally, I take two approaches to evaluate

¹ Governments expect to spend nearly twice as much on police pensions as they do for other government employees as a percentage of payroll (Aubry and Wandrei, 2020). Police pension spending crowds out spending on other vital public services (Nation, 2018; Ludwig, 2024).

how the shifting police climate impacts police exits in the early 2020s. First, informed by evidence that opposition to police reform and the Black Lives Matter (BLM) movement differs by demographic identity, I test for heterogeneity in officer retention across gender, ethnicity, and party affiliation within agencies. Second, leveraging differences in employee exposure to the police climate, I test for heterogeneity in police and firefighter retention within jurisdictions.

For my primary analysis of police retention, I create a statewide panel dataset of California police employment using administrative records from the California Commission on Peace Officer Standards and Training (POST). I link municipal police and county sheriff's department officers from these employment data to their voter registration records. With the linked dataset, I infer an officer's retirement eligibility status and their pension-driven financial incentives, both of which critically shape exit probability. Moreover, the linked data include gender, ethnicity, and party affiliation for officers at nearly 400 agencies, providing sufficient power to examine heterogeneity in officers' exit decisions across time.

Throughout the paper, I analyze police retention for officers hired before 2013 with five or more years of experience. There are several advantages of studying this population of officers. First, studying officers hired before 2013 helps separate changes in officers' exit decisions from potential shifts in entry into policing careers in later years.² Second, focusing on this group of "career" police provides a sample where all officers face a high opportunity cost of exiting policing.³ Because these officers are vested in California's lucrative police pension plans that were standard before later pension reforms, changes in their retention speak to the strength of non-pecuniary factors in police exit decisions. Also, California police receive the highest statewide median police wages in the US (Hernandez, 2024), which further raises their opportunity cost of exiting policing.

In my initial analysis of California police retention, I demonstrate that DB pensions are *the* central influence on officers' exit probability each year. When officers reach retirement eligibility at age 50 – when they typically can begin to receive their pensions – officers' exit

² Police hired in later years may differ from police hired before 2013. First, a major pension reform law took effect in 2013 that placed new hires in less generous pension plans (CalPERS, "PEPRA"). Second, as I document in Section 2, there was a large shift in the police climate in the mid 2010s that may change entry into policing careers.

³ Police typically vest in their DB pensions at five years of service (CalPERS, "Benefit Factor Charts;" SFERS, "Membership"), which substantially alters their financial incentives and exit decisions.

probability spikes by 11.5 percentage points, representing a five-fold increase compared to officers in their late 40s. I also find a strong relationship between years of experience and exits among retirement-eligible officers, for whom a one standard deviation increase in experience leads to an 8.1 percentage point increase in exit probability. This relationship is consistent with retirement-eligible officers responding to their pension formulas' financial incentives that reward additional service with higher pension incomes. Looking beyond pensions, I document that there are large differences in exit probability across demographic identity. Female officers are more likely to exit than observably similar male officers. Meanwhile, Latino and Asian officers are less likely to exit than similar white officers.

With this understanding of the “fundamentals” of police retention in California, I next analyze how police retention changed from 2012 to 2022. I find that exit probabilities increased substantially in the early 2020s for retirement-ineligible officers. By 2022, these officers were 1.4 percentage points (70 percent) more likely to exit than similar officers in 2019. In comparison, exits increased less dramatically for retirement-eligible officers. In 2022, retirement-eligible officers' exit probabilities increased by 2.8 percentage points (18 percent) compared to 2019, continuing a pre-existing upward trend. Thus, the key change to police retention is the rise in exits for retirement-ineligible officers, who face a high opportunity cost of exiting policing and previously have a low exit probability.

Despite the police exodus' severity, the mechanisms driving it remain poorly understood. The primary empirical challenge is that in 2020, there are two shocks to the environment in short succession that are difficult to disentangle. On March 13, 2020, the US declared COVID-19 a national emergency, marking the start of a years-long pandemic. The pandemic disrupted police work and eventually contributed to a “Great Resignation” in the general labor market. A little more than two months later, on May 25, 2020, George Floyd's murder set off what are perhaps the largest protests in US history (Buchanan et al., 2020). This event marked a sharp, negative shock to the police climate and substantially strengthened the police reform movement. Both events – the COVID pandemic and George Floyd murder – could have profound impacts on the police labor market.

I employ two strategies to unpack how these mechanisms influence police retention. First, I test for heterogeneous changes in police exits within agencies across officer gender, ethnicity, and party affiliation. Drawing on evidence that male, white and Republican individuals are more likely to oppose police reform (Morin and Stepler, 2016; Brown, 2017; Morin et al., 2017; Pew, 2020), and that officers from these demographic groups exhibit differentially vigorous enforcement behavior (Ba et al., 2021; Ba et al., 2024; Goncalves and Tuttle, 2024; Hoekstra and Sloan, 2022; Weisburst, 2024), I hypothesize that male, white and Republican officers are differentially likely to exit policing following negative shocks to the police climate. Consistent with this expectation, in the early 2020s, I find larger increases in exit probabilities for white and Republican officers relative to their nonwhite and non-Republican peers at the same agencies. Among retirement-ineligible police, white and Republican officers' exit probabilities differentially increase by 1.1 and 0.6 percentage points (56 and 33 percent) from 2019 to 2022, respectively. Similarly, among retirement-eligible police, I find a differential increase in exit probabilities for white officers in 2021 and Republican officers in 2020.

Second, I test for heterogeneity in police and firefighter retention within municipalities in the 2010s and early 2020s. For this analysis, I use a separate administrative employment dataset from the California Public Employees' Retirement System (CalPERS) that includes both police and firefighters.⁴ Firefighters are an informative comparison group for police because both work in hazardous public safety industries, participate in the same DB pension systems, and experience the COVID pandemic. However, changes in the police climate likely overwhelmingly affect police officers with at most small spillovers on firefighters. Therefore, I hypothesize that negative shocks to the police climate cause a differential increase in police exits relative to firefighter exits in the early 2020s. Consistent with this hypothesis, for retirement-ineligible employees, I find that annual exit probabilities increase by 2.0 percentage points (74 percent) for police in fiscal year (FY) 2021-22 relative to FY 2019-20 compared to an increase of just 0.3 percentage points (25 percent) for firefighters over the same period. For

⁴ The jurisdictions included in the CalPERS sample represent 22% of police employment in the POST sample. Similar to the POST data, I match employees to their voter registration records.

retirement-eligible employees, in contrast, exit probabilities increase for both police and firefighters in the early 2020s, and there is no evidence of a differential increase for police.

Collectively, the results from the within-policing analysis and police-firefighter analysis suggest that shifts in the police climate substantially contributed to the early 2020s police exodus. These findings imply that there can be tradeoffs between police reform and officer retention.

I contribute to literature examining the police retention “crisis” of the early 2020s. A police group’s surveys of its member agencies provided key early evidence of the crisis, but its survey data are limited to member agencies that respond (PERF, 2021; 2022; 2023). There is also a small academic literature that uses administrative data to study changes in police retention in the 2020s (Adams et al., 2023; Grunwald, 2024). These studies use aggregated approaches that compare exit counts following the George Floyd murder to exit counts from previous years. Building on these earlier studies, I employ an individual-level approach that analyzes the probability of individual police officers exiting across time while accounting for officers’ retirement incentives, demographic characteristics, and agencies. This new approach allows me to rigorously study differences in officers’ exit decisions across gender, ethnicity, and party affiliation and consider their impact on the demographic composition of the police labor force. Moreover, to my knowledge, I am also the first to compare individual police officer and firefighter exit decisions to gain further insights into the mechanisms driving elevated police exits in the early 2020s.

Second, I contribute to literature studying how public employees respond to changes in their work environment. Among studies of police, the existing literature evaluates how shifts in the police climate influence officers’ enforcement decisions. Research examines officers’ enforcement response to changes in the political environment (Grosjean et al., 2023; Stashko and Garro, 2023), collective bargaining (Dharmapala et al., 2021; Goncalves, 2023; Cunningham and Gillezeau, 2025), high-profile deadly force events (Cheng and Long, 2022; Mikdash and Zaiour, 2022; Premkumar, 2022; Rivera and Ba, 2023), and killings of police officers (Cho et al.,

2023).⁵ I add to this literature by examining how changes in the police climate influence officers' exit decisions. My study also complements research analyzing how shocks to other public employees' work environments influence employee retention, including teachers. This literature finds that teacher retention declines following shocks like the COVID pandemic (e.g., Bacher-Hicks et al., 2023; Camp et al., 2023; Rogers et al., 2025) and school shootings (Cabral et al., 2024).

Third, I contribute to a literature that examines how DB pensions influence public employees' retirement decisions (e.g., Asch et al., 2005; Brown, 2013; Coile and Stewart, 2021; Chalmers et al., 2014; Costrell and McGee, 2010; Papke, 2019).⁶ While this literature often pools various groups of public employees or focuses exclusively on teachers, I bring a new focus on police officers. Police officers' retirement response to DB pensions may differ from other public employees due to differences in employee demographics (police are overwhelmingly male) and the nature of police work (policing is hazardous and physically demanding). Moreover, police officers' retirement response may differ due to differences in pension design, as police pensions often allow for retirement at younger ages and with larger pension incomes.

The rest of this paper proceeds as follows. In Section 2, I provide background on California police pensions and key changes in the environment. In Section 3, I develop a conceptual framework for police exit decisions and consider the anticipated effects of key changes in the environment. In Section 4, I explore the fundamentals of police exit decisions and examine how police exits changed from 2012 to 2022. In Section 5, I evaluate how police exits changed relative to firefighter exits. In Section 6, I discuss policy implications.

2. Background

2.1 Police pensions in California

DB pensions are a ubiquitous feature of police compensation in California. Because benefits depend on when an officer exits policing and they contribute substantially to officers'

⁵ While evaluating the mechanisms that drive their main results, Cho et al. (2023) briefly examines whether killings of police officers impact agency-level police retention and find little evidence of change.

⁶ A related literature studies how public employees value their pensions (e.g., Fitzpatrick, 2015; Biasi, 2024).

finances in retirement, pensions play a critical role in officers' exit decisions. Like other DB pensions, California police receive a guaranteed retirement annuity if they work at least a minimum number of years (often five), at which point they "vest" in their pension. There is usually a minimum retirement age (often 50). A formula sets the officer's annual pension benefit equal to the product of a scalar "benefit factor," their years of service (YOS), and their highest average annual earnings over a period of years.⁷

For example, police officers who participate in the CalPERS "3% at 50" plan are eligible to retire at age 50. Their annual benefit follows the formula:

$$\text{Annual benefit} = 3.0\% \times (\text{Years of service}) \times (\text{Highest annual earnings})$$

In this plan, the scalar benefit factor is 3.0%,⁸ and earnings are calculated using a single year. The plan has a maximum replacement rate (pension income expressed as a percentage of pre-retirement earnings) of 90% (CalPERS, "Benefit Factor Charts").

Figure 1 displays the replacement rate for a representative police officer who was first hired at age 25 and participates in the CalPERS "3% at 50" plan. After vesting in his pension with five YOS at age 30, his replacement rate increases by 3% each year until he reaches the plan's maximum replacement rate of 90% at age 55. The figure also shows his pension income at three hypothetical exit ages: 45, 50, and 55. If he exits at age 45, his replacement rate is 60% (3% x 20 YOS) but he does not begin to receive his annual benefit until his 50th birthday.⁹ If he instead exits at age 50, his replacement rate is 75% (3% x 25 YOS) and he receives his annual benefit immediately upon retirement. Finally, if he exits at age 55, he receives the maximum replacement rate of 90% (3% x 30 YOS) and receipt starts at age 55.

For long-serving "career" police officers, DB pension income and wealth are substantial. The median CalPERS municipal police retiree in 2019 retired after 24.3 YOS with an annual pension of \$93,100 (author's calculation of CalPERS retiree data). For a typical 51-year-old male

⁷ While details vary across union contracts, there is usually a cost-of-living adjustment (COLA) that at least partially buffers pension benefits against inflation. For the earnings calculation, base salary is always included and overtime is usually excluded. The inclusion of additional compensation varies.

⁸ While the "3% at 50" plan's benefit factor is constant, in other plans benefit factors can vary by retirement age.

⁹ The officer receives an implicit penalty if he exits before age 50 because nominal earnings usually increase over time and he will not receive a COLA until he reaches retirement eligibility.

retiree, the approximate present discounted value of this pension is \$1,410,000.¹⁰ DB pensions therefore provide a crucial source of officers' retirement income.

While most California law enforcement agencies participate in CalPERS, five large city police departments (PDs) and 20 county sheriff's departments (SDs) participate in separate city or county pension systems.¹¹ Each system has various police pension plans with different parameters, but they usually share this formulaic structure where benefits are a function of maximum earnings, years of service, and (sometimes) retirement age.

Following the Great Recession, soaring pension debts led to a major pension reform law that reduced pension generosity for new hires (CalPERS, "PEPRA").¹² I focus on police hired before 2013 to avoid shifts in entry into policing careers from this major reform.

2.2 Changes in the Police Climate from 2012 to 2022

National context

In the 2010s and early 2020s, high profile police killings of Black Americans led to the national rise of the BLM movement, mass protests, and widespread calls for police reform. Outrage over excessive force reached its peak with the 2020 George Floyd murder, which sparked what are likely the largest protests in US history (Buchanan et al., 2020).¹³ Amid the uproar, some activists called on politicians to "defund the police," held signs with the acronym ACAB for "All Cops Are Bastards" (Woodyard, 2020), and even directed violence against police officers (Hutchinson, 2020).

In addition to igniting mass protests and historically tense police-community relations, the George Floyd murder and its aftermath contributed to political change. The event led to greater public awareness of BLM's agenda (Dunivin et al., 2022) and it inspired a large,

¹⁰ This calculation assumes a 29-year life expectancy based on 2019 Social Security Administration Actuarial Life Table and 5% discount rate.

¹¹ Los Angeles, San Francisco, San Diego, San Jose, and Fresno PDs participate in city pension systems (CAPRS, "Members"). The 20 county SDs that participate in separate pension systems tend to be in more populous counties than the SDs that participate in CalPERS (SACRS, "Systems").

¹² Some local governments – both in CalPERS and with independent pension systems – provided new police hires with less generous pension plans in advance of the law (LAFPP, "Members;" SFERS, "Membership").

¹³ Moreover, the murder and protests generated the most media coverage of any event in the last 50 years (Heaney, 2020).

sustained increase in liberal attitudes on racial issues (Gethin and Pons, 2024). In more progressive states like California, policymakers responded to calls for police reform with vigor.

State context

As the public grew increasingly concerned over racial disparities in the criminal justice system and distrustful of police, California voters and policymakers enacted a series of reforms. Figure 2 provides a timeline of major protest events and key California state-level reforms from 2012 to 2022. As part of a broader shift towards criminal justice reform, voters approved ballot initiatives in 2014 and 2016 that recategorized certain nonviolent felonies as misdemeanors and sped up prison release timelines.¹⁴ Moreover, state policymakers passed new laws in 2015 and 2018 that increased police transparency through requiring agencies to publish demographic information from every stop and release additional use of force and misconduct records.¹⁵

Most crucially, in direct response to high-profile deadly force events at both the state and national levels, state lawmakers later shifted their legislative efforts towards increasing police accountability, especially with regard to the use of deadly force. State lawmakers passed three major laws that imposed steep penalties for officers judged to have overstepped their legal authority. First, 2019's AB 392 raised the legal standard for police use of deadly force. Second, 2020's AB 1506 required the state Attorney General's office to investigate all fatal officer-involved shootings of unarmed civilians. Third, 2021's SB 2 (i) empowered a state agency to decertify police officers, and (ii) ended certain qualified immunity provisions shielding police from civil lawsuits. Collectively, these reforms made it more likely that police would face criminal, professional, and civil sanctions for using force.¹⁶

¹⁴ Specifically, 2014 Proposition 47 recategorized certain nonviolent felonies as misdemeanors for common offenses like theft and drug possession (Ballotpedia, "California Proposition 47"). Moreover, 2016 Proposition 57 reduced the amount of time certain nonviolent offenders spent in prison by increasing parole opportunities and rewarding good behavior and education with opportunities for earlier release (Ballotpedia, "California Proposition 57").

¹⁵ Passed in 2015, AB 953 requires agencies to collect demographic data on stops and created a state oversight board to combat racial and identity profiling (California DOJ, "AB 953"). In 2018, SB 1421 required agencies to release additional records related to use of force and misconduct (California Legislature, 2018).

¹⁶ While these are among the most important police reforms passed during these years, there were additional significant reforms. For instance, when Governor Newsom signed SB 2 in 2021, he signed seven other police reform measures. These include laws that require officers to intervene and report when colleagues use excessive force (AB

The passing of these reforms reflected a major shift in political power in the state Capitol.¹⁷ When reforms were proposed in earlier years, observers noted that the police lobby could “kill legislation in the state Capitol” (Atkinson et al., 2019; Chabria, 2019). However, by the early 2020s, it was clear that California police could no longer expect allies in the state legislature to block reforms that they perceived as threatening.

Local context

Looking beyond state policy in Sacramento, the shifting police climate inspired change at the local level in California as well. As part of a broader shift towards criminal justice reform, voters in several counties elected progressive prosecutors who brought a new, less punitive approach to criminal prosecution (Pfaff, 2023).¹⁸ Other local changes were specific to policing, such as city-level reforms to formerly routine police practices and responsibilities. For instance, cities like Los Angeles and Berkeley imposed new restrictions on pretextual traffic stops (Beland et al., 2025; Cowan, 2021). Similarly, cities including San Francisco launched new initiatives that shifted mental health crisis response from police to other specially trained units (Westervelt, 2020). Several large cities even temporarily reduced police department funding in response to the 2020 defund the police movement, although these cuts were largely symbolic and short-lived (Manthey et al., 2022).¹⁹ Collectively, these local level reforms further contributed to the shifting police climate.

490), prohibit certain arrest techniques (AB 26), and further expand public access to police records (SB 16) (McGreevy, 2021; Lewis, 2021).

¹⁷ Political support for police reform split along partisan lines. Major accountability reforms like AB 392, AB 1506, and SB 2 were exclusively sponsored by Democrats (Legiscan, “CA AB 392,” “CA AB 1506,” “CA SB 2”). Democratic lawmakers overwhelmingly voted in support of these bills, while Republican lawmakers largely opposed these bills. Because Democrats dominate California’s state politics, the reforms passed.

¹⁸ In contrast to traditional prosecutors, progressive prosecutors may decline to prosecute certain nonviolent misdemeanor offenses, increase the use treatment programs instead of punishment, and limit the use of cash bail (Agan et al., 2022).

¹⁹ In these cities, police officers did not face layoffs due to budget cuts.

2.3 COVID Pandemic and Labor Market Turmoil in the early 2020s

COVID Pandemic

In the early 2020s, the COVID pandemic disrupted work, family and social routines across the country. The pandemic also had a profound impact on law enforcement. In California, police-community interactions initially fell precipitously as Californians stayed home, by government mandate or by choice, to avoid infection (Premkumar et al., 2023). The pandemic changed public safety priorities as well. California police agencies minimized unnecessary contact with the public to avoid spreading and contracting the disease. Moreover, state and local leaders changed bail and release procedures for many low-level offenses to minimize disease spread in jails (Premkumar et al., 2023; Premkumar et al., 2025).

Like other employers where remote work was infeasible, police agencies altered work routines to minimize disease spread among officers. Leaders instructed officers to practice social distancing and to wear masks, and some agencies held roll call meetings outside (PERF, 2020). Still, many officers fell ill. When agencies lost many officers to illness simultaneously such as during the Omicron surge, agencies relied heavily on overtime and sometimes reduced police services out of necessity (Lyons, 2022).

When COVID vaccines became available in 2021, some California cities and counties mandated that all employees be vaccinated, including police (CA Healthcare Foundation, 2021). While many officers quickly received the vaccine, others strongly opposed vaccine mandates. After facing significant opposition from officers who refused to vaccinate – often backed by their unions – some jurisdictions retracted their mandates (Angst, 2022; Lin and Money, 2023). Other jurisdictions held the line, and ultimately fired small numbers of officers who refused to vaccinate and did not qualify for medical or religious exemptions (Jany, 2024; Cassidy, 2022).²⁰

Labor market turmoil

The COVID pandemic disrupted labor markets other than law enforcement. Many employers issued layoffs in spring and early summer 2020, particularly in hard-hit industries like leisure and hospitality (Ansell and Mullins, 2021). Although the economy rapidly recovered in

²⁰ I observe if officers are discharged by their agency in my empirical analysis and drop them from the sample.

2021 and 2022, employment deviated from the pre-pandemic era in several key ways. First, some workers dropped out of the labor force altogether. This decline may have been driven by long COVID and fear of contracting the disease, as the drop in labor force participation was largest for older workers who faced the greatest risks from illness (Abraham, 2023; Forsythe, 2022). Second, workers also increasingly switched jobs as part of a broader trend labeled the “Great Resignation” (Michaels, 2024). As employers lost workers and struggled to quickly find new replacements, job vacancy rates rose (Forsythe, 2022), expanding workers’ employment opportunities.

Police did not suffer pandemic-induced layoffs like workers in other industries. However, they were exposed to COVID’s health effects and the strong job market of 2021 and 2022, and along with substantial changes in the police climate, these forces could impact their exit decisions. I consider officers’ exit decisions in the next section.

3. Conceptual Framework and Hypotheses

3.1 Conceptual Framework

I develop a conceptual framework to illustrate a police officer’s decision to exit police employment. Building on the framework for other public employees from Asch et al. (2005), consider lifetime utility $V_t(e)$ for a police officer i employed at agency j in current year t who exits policing in year e . Suppose his utility while working as a police officer during any year s is $U_P(Y_s, C_s, X_i)$, where Y_s represents his earnings, C_s represents the favorability of the police climate, and X_i represents the officer’s demographic identity including gender, ethnicity, and party affiliation. Suppose the officer’s annual utility after exiting police employment is $U_E(B_s(e), Z_s, X_i)$. Here, $B_s(e)$ represents his pension’s annual benefit and Z_s represents any earnings from other employment. His lifetime utility at year t of exiting policing in year e is

$$V_t(e) = \sum_{s=t}^{e-1} \beta^{s-t} U_P(Y_s, C_s, X_i) + \sum_{s=e}^T \beta^{s-t} U_E(B_s(e), Z_s, X_i)$$

Where β is the discount factor, and T is the year he dies.

The police officer exits when the expected utility of exiting now in year t is greater than the expected utility of exiting at a future year e , i.e., when $\mathbb{E}_t V_t(t) > \mathbb{E}_t V_t(e)$, or

$$\sum_{s=t}^T \beta^{s-t} \mathbb{E}_t[U_E(B_s(t), Z_s, X_i)] > \sum_{s=t}^{e-1} \beta^{s-t} \mathbb{E}_t[U_P(Y_s, C_s, X_i)] + \sum_{s=e}^T \beta^{s-t} \mathbb{E}_t[U_E(B_s(e) Z_s, X_i)]$$

for all $e > t$.

3.2 Police Analysis: Mechanisms and Hypotheses

I consider how the two key changes to the environment in this era – negative shocks to the police climate and the COVID pandemic – influence police exits according to Section 3.1’s conceptual framework. I theorize their impact across all officers, as well as potential heterogeneous impacts across officer identity.

3.2.1 Mechanism 1: Police climate

Overall impact

First, I consider how negative shocks to the police climate – whether mass protest events, state-level police reforms, or local changes in enforcement priorities – influence officers’ utility of working as police. Evidence from sources in law enforcement consistently implies that police climate shocks reduced officers’ utility of working in police employment and induced some officers to exit.

Anecdotal evidence from law enforcement leaders suggests that negative shocks to the police climate damaged officer morale and willingness to work as police. In a 2021 police staffing survey, one police leader explained that the police climate came up frequently during exit interviews, stating “We have seen an increase in separations in all categories. A variety of different issues are presented during exit interviews, but consistently stated is the national climate on policing” (PERF, 2021). Other police leaders directly tied police reform to officer morale and retention. In a 2024 police staffing survey, one leader explained that “[The biggest challenge with retention is] keeping officers wanting to do this job when it seems like legislators only want to make our jobs harder ... officers [have] to do so much more than before to ensure they are doing their job properly in the eyes of the legislators. It used to be an officer’s word was good enough in a court of law...” (IACP, 2024).

Moreover, survey research registers individual officers' distaste for changes in the police climate during this era. In a major national survey of nearly 8,000 officers, 86% of police said that high profile deadly force incidents between police and Blacks made their jobs harder (Morin et al., 2017).²¹ Additionally, a second survey of police officers reveals that the backlash following the George Floyd murder was so severe that it led many officers to consider leaving policing. Specifically, 51% of officers surveyed agreed that the public reaction to the George Floyd murder made them reconsider their careers as police officers (Rossler and Scheer, 2024).

In California, law enforcement groups' vigorous opposition to state-level police reforms reflects their officers' opposition to these changes.²² These groups reserved much of their strongest opposition for accountability-focused reforms like AB 392 and SB 2 that placed stricter limits on police use of deadly force and increased penalties for officers who overstepped their legal authority. For instance, during negotiations over 2019's AB 392, a key statewide law enforcement group warned its members that California's police were "under attack" and that the bill "threatens your life and the lives of those you protect" by imposing penalties, including prison, for split-second use of force decisions (PORAC, 2019b).²³ The same group and others also opposed 2021's SB 2 in strong terms, labeling SB 2 "dangerous legislation" that creates an unfair decertification process "where the deck is stacked against [police]." The group also strongly opposed SB 2's removal of qualified immunity, arguing that it would "place even the most respectful officers at risk of being personally liable for honest mistakes, even if they acted in accordance with the law" (PORAC, 2021). California police groups' virulent opposition to these reforms reflected their growing concern with the new police climate.²⁴

²¹ This survey evidence is consistent with later empirical evidence demonstrating that police-community trust collapsed following the George Floyd murder (Ang et al., 2024; Mikdash and Zaiour, 2022).

²² For additional evidence of California police groups' opposition to these reforms, see the links in the table below Figure 2.

²³ Later, many law enforcement groups that initially vigorously opposed AB 392 withdrew their public opposition after their allies in the state legislature successfully amended the bill to remove certain provisions that were seen as especially threatening to law enforcement (League of California Cities, 2019; Chabria, 2019), but they remained concerned with the new law (PORAC, 2019a).

²⁴ Police opposed many local reforms as well. They registered their opposition to reform-minded prosecutors (Barba, 2019), restrictions on traffic stops (Kirkpatrick et al., 2022), and the defund the police efforts (McClain, 2020).

Heterogeneity across officer identity

Negative shocks to the police climate may have differential effects across officers. Given differences in support for police reform and enforcement decisions across officers' demographic identities, it seems likely that negative shocks to the police climate cause a differentially large reduction in the utility of police employment for male, white, and Republican officers compared to other officers and could lead to differences in exits.

Survey evidence reveal that support for the BLM movement and police reform differs by gender, ethnicity, and party affiliation. In a major national survey of police officers, male and white police officers were more likely to express skepticism of BLM protestors' motives than other officers (Morin et al., 2017). Moreover, among the general public, white and Republican civilians have more confidence in police and are more likely to oppose police reform than other groups (Morin and Stepler, 2016; Brown, 2017; Pew, 2020). In fact, across a broad range of demographic factors, party, political ideology and race/ethnicity are the strongest predictors of policing attitudes (Ba et al., 2024). Thus, police may also differ in their level of support or (more often) opposition to changes in the police climate across these demographic identities.

Officers also differ in their enforcement decisions across their demographic identities. Specifically, male, white, and Republican officers use more force and make more stops and arrests than other officers (Ba et al., 2021; Ba et al., 2024; Goncalves and Tuttle, 2024; Hoekstra and Sloan, 2022; Weisburst, 2024). Changes in the police climate – both policy changes like California's AB 392 and changes in public opinion (such as increased pressure on officials to prosecute the use of excessive force) – disincentivize this type of zealous enforcement behavior. Thus, negative shocks to the police climate may also disproportionately impact male, white, and Republican officers because these officers face the greatest increase in the "cost" of maintaining their status quo enforcement behavior.

3.2.2 Mechanism 2: COVID pandemic and labor market turmoil

Overall impact

The COVID pandemic seems likely to lower officers' utility of police work and could contribute to exits, as officers risked contracting COVID on the job and were increasingly

required to work overtime to maintain minimum staffing levels when other officers were out sick (Lyons, 2022). Moreover, labor market turmoil in 2021 and 2022 increased the availability of jobs outside of policing (Forsythe, 2022), improving officer's outside employment options.

Heterogeneity across officer identity

The COVID pandemic and subsequent labor market turmoil may have differential impacts across officers. The COVID pandemic likely differentially decreases female officers' utility of police work because the pandemic led to a differential decline in women's labor force participation in other sectors (e.g., Albanesi, 2023; Goldin, 2022), suggesting that there was a decline in the utility of remaining in existing employment arrangements for women. Meanwhile, the pandemic's theoretical employment impact across ethnicity and party affiliation is unclear. There is limited and mixed evidence of the pandemic's labor market impact across ethnic groups (e.g., Michaels, 2024; Bacher-Hicks et al., 2023). Across party affiliation, surveys find that Democrats were especially concerned about the risk of COVID infection (Tyson, 2020), which could differentially reduce their utility of police work. However, research also finds that Republicans were more likely to oppose mask and COVID vaccine mandates like those imposed by many local governments in California (Caputo, 2021), potentially leading to a differential reduction in Republicans' utility of police work.

3.2.3 Hypotheses

Hypothesis 1: *The combined impact of (1) negative shocks to the police climate and (2) the COVID pandemic and labor market turmoil leads to an increase in police exit probability in the early 2020s.*

Hypothesis 2: *The exit probabilities of male, white, and Republican officers increase relative to other officers if the net change in utility from negative shocks to police climate outweigh changes in utility from the COVID pandemic and labor market boom.*

For both hypotheses, changes in the environment induce officers to exit who were already near the margin of exiting policing for other careers or retirement. Note that for Hypothesis 2, given the multitude of potential impacts that the COVID pandemic may have across officers, evidence supporting the hypothesis should be viewed as inconclusive but consistent with police climate's expected impact on police exits.

3.3 Police and Firefighter Analysis

Hypothesis 3: *Negative shocks to the police climate in the early 2020s lead to an increase in police exit probability relative to firefighter exit probability.*

To obtain further insights into the mechanisms driving elevated police exits, I compare police and firefighter retention in California. These two groups of employees share several key characteristics. First, police and firefighters work for the same government employers in hazardous public safety occupations that are stressful, physically demanding and male dominated. Second, both groups participate in similar generous DB pension plans that critically influence when employees exit. Third, both groups are exposed to the COVID pandemic and labor market turmoil. However, police and firefighters differ in a key way: changes in the police climate seem likely to overwhelmingly affect police, with limited spillovers on firefighters. This difference allows me to use firefighters to infer how police exits would have changed in the 2010s and early 2020s if not for negative shocks to the police climate.

To draw inferences from police – firefighter comparisons, I assume that (1) negative shocks to the police climate have a negligible impact on firefighter exits, and (2) the COVID pandemic has a similar impact on police and firefighter exits.²⁵ Any violations of these assumptions would bias the inferences drawn from this analysis. First, if changes in the police climate have negative spillovers on firefighters (e.g., firefighters must assist in volatile mass protest events; firefighters face greater public distrust of all public safety employees; Foskett, 2024), firefighter exits could increase. Second, given California firefighters' substantial role in

²⁵ Note that implicitly, I also assume that there are no meaningful changes in firefighter-specific mechanisms during the period studied.

emergency medical response (Alameda County Health, “About the EMS System;” Caughey, 2025), it seems likely that the COVID pandemic could impose a differentially greater burden on firefighters, causing a relative increase in firefighter exits. Crucially, in both cases, it seems likely that violations of these assumptions would lead to a relative increase in firefighter exits and thus *understate* the impact of police climate shocks on police exits.

4. Police Exit Decisions

4.1 Data

This study’s central police employment dataset comes from the California Commission on POST. These data cover officers at law enforcement agencies throughout the state.²⁶ The POST data include officers’ names, agencies, and employment dates. Crucially, the data provide officers’ full employment history at POST-participating agencies in California, allowing me to measure officers’ years of experience. Additionally, the POST data indicate whether exits are officer-initiated or agency-initiated, allowing me to drop officers discharged by their agencies and focus exclusively on officers’ exit decisions.

I use the POST data to construct an annual panel of California police employment. I define police exits using a binary variable that indicates when an officer permanently separates from POST employment. I define an officer’s years of experience as the sum of years that he or she appears in the POST data.

I supplement the POST data with California voter registration records from 2014-2023 from the data provider L2. These data include a registered voter’s name, date of birth, gender, imputed ethnicity, party affiliation, and county. Critically, the date of birth field allows me to determine an officer’s age and therefore his or her expected retirement eligibility status.

To merge the police and voter data, I match officers to registered voters living in their agency’s county or in adjacent counties by name. When matching, I require that the officer’s initial hire date and voter’s date of birth imply that the officer was first hired between the ages

²⁶ The POST data cover law enforcement officers at municipal police departments, county sheriff’s departments, and state agencies like California Highway Patrol. They also include many but not all special purpose agencies at places like school districts and universities, district attorney’s offices, and county probation departments.

of 18 and 41. Using this process, I match 69% of officers to exactly one registered voter. I drop the 19% of officers who merge to multiple plausible voters, as well as the 12% of officers who match to zero voters.²⁷

The analysis sample consists of police officers employed at municipal PDs and county SDs.²⁸ For inclusion, I require that officers were first hired before 2013 to mitigate potential changes in entry into police careers in later years. I also require that officers have at least five years of experience so they are likely vested in their pensions. I drop approximately two percent of officers who are discharged by their agency or die during employment. For full details on sample restrictions, see Appendix B.

4.2 Descriptive statistics and figures

Descriptive statistics

Table 1 presents summary statistics for the analysis sample of California police officers from 2012 to 2022. In the full analysis sample, officers are on average 44.2 years of age and have 17.2 years of experience.²⁹ The majority of officers are male (86.7%), white (62.4%), and Republican (59.1%). The sample covers officers at 392 agencies. There are over 44,000 unique officers and 377,000 officer-year observations.

Table 1 also provides summary statistics for subsamples of police who are likely retirement-ineligible (younger than 50) and retirement-eligible (ages 50 and older). Mechanically, retirement-ineligible officers are younger and less experienced. They also have much lower exit probabilities: 1.8% of retirement-ineligible officers exit annually, whereas 15.1% of retirement-eligible officers do so. Moreover, the retirement-ineligible subsample is comparatively large: there are over 270,000 officer-year observations for retirement-ineligible officers, relative to just over 100,000 officer-year observations for retirement-eligible officers.

²⁷ These match rates seem broadly consistent with other literature linking police officers to registered voters after accounting for differences in the employment data and populations studied (Ba et al., 2024; Domènech-Arumí, 2023, Goncalves and Tuttle, 2024).

²⁸ These agencies make up 83% of total POST employment, while state and special purpose agencies make up the remaining 17%.

²⁹ Due to sample restrictions, officers skew older and more experienced than the full population of officers.

Descriptive figures

Figure 3 plots the relationship between exit probability and age for California police. For officers in their 30s and 40s, exit probability is between 1.4 and 2.2 percent, indicating that retirement-ineligible officers have very low annual exit probabilities. At age 50, exit probability abruptly increases to 13.8 percent, representing a five-fold increase relative to officers in their late 40s. This sharp spike in exit probability at age 50 reflects the beginning of retirement eligibility when officers may begin to receive their DB pension's annual benefit. Exit probability remains elevated at around 10 to 12 percent in officers' early 50s. At age 55, exit probability spikes again to more than 20 percent and remains at this high level for older officers.³⁰

This relationship between exit probability and age varies considerably by an officer's years of experience. Figure A.1 plots this relationship for officers with low, medium, and high experience at age 50. The figure reveals that while there is little difference in exit probability by experience for retirement-ineligible officers, there is a sharp split once officers reach retirement eligibility at age 50. At that age, exit probability increases to just 6.8 percent for the low experience group, while it rises to 14.2 percent for the medium experience group, and it spikes to 22.7 percent for the high experience group. Throughout most of an officers' 50s, the low experience group is the least likely to exit and the high experience group is the most likely to exit in any year. Because years of experience enters an officer's DB pension formula and is strongly correlated with his or her replacement rate, this descriptive figure provides suggestive evidence that pension-driven financial incentives play an important role in officers' exit decisions. While I do not have data on officers' earnings or replacement rates and thus cannot calculate their exact financial incentives,³¹ I include years of experience in my empirical specification to account for the strong relationship between experience and exit probability.

³⁰ In some pension plans, officers receive a higher replacement rate if they delay retirement until age 55 (CalPERS, "Benefit Factor Charts;" SFERS, "Membership").

³¹ Most pensions systems have multiple pension plans in which police participate. It is challenging to reliably assign officers to their system-specific plan and formula – and thus infer their replacement rate – without obtaining separate administrative data from each system.

4.3 Empirical specification

I estimate an officer's per period exit probability as a function of his or her age and experience, demographic identity, agency, and the current year. I estimate this discrete time hazard model using Ordinary Least Squares (OLS) and the following empirical specification:

$$Pr(Exit_{ijt} = 1 \mid Exit_{i,t-1} = 0, \mathbf{X}_{it}, \mathbf{X}_i, \mathbf{Year}_t, \gamma_j) = \beta_0 + \mathbf{X}_{it}\boldsymbol{\beta}_1 + \mathbf{X}_i\boldsymbol{\beta}_2 + \mathbf{Year}_t\boldsymbol{\beta}_3 + \gamma_j + \varepsilon_{it}$$

where $Exit_{ijt}$ is a binary indicator for whether officer i at agency j permanently exits POST employment in year t . The vector \mathbf{X}_{it} includes time-varying officer covariates including age bin indicators and years of experience. The vector \mathbf{X}_i includes indicators for the officer's gender, ethnicity, and party affiliation. The vector \mathbf{Year}_t is a set of year indicators, where 2019 is the omitted year. I include agency fixed effects γ_j that identify differences in exit probability across agencies. I cluster standard errors at the agency level. To account for retirement eligibility's central role in exit decisions, I estimate this specification twice: Once for retirement-ineligible officers, and once for retirement-eligible officers.

4.4 Results: Police exit decisions

To understand the "fundamentals" of police exit decisions, I first focus on the relationship between exit probability and officer characteristics (\mathbf{X}_{it} and \mathbf{X}_i). Figure 4's left panel presents the $\boldsymbol{\beta}_1$ and $\boldsymbol{\beta}_2$ coefficients and their 95 percent confidence intervals for retirement-ineligible officers. The figure reveals that holding all else equal, there is not a statistically significant relationship between exit probability and an officer's age or years of experience for retirement-ineligible officers. However, there is a statistically significant relationship between exit probability and officer demographics for these officers. Relative to their observably similar male colleagues, female officers are 1.1 percentage points (58 percent) more likely to exit. Moreover, relative to observably similar white colleagues, Latino and Asian officers are 0.6 and 0.7 percentage points (31 and 34 percent) less likely to exit, respectively. Police from other ethnic groups or missing ethnicity data are also less likely to exit than their white colleagues, while the estimate for Black officers is not statistically significant. Meanwhile, there is not a statistically significant relationship between exit probability and an officer's party affiliation.

The estimates in Figure 4's right panel for retirement-eligible officers illustrate the centrality of DB pensions to these older officers' exit decisions. The estimates reveal that consistent with Figure 3, there is a U-shaped pattern to exit probability across age for retirement-eligible officers. Relative to the excluded group of 50-year-old officers (the first year of retirement eligibility), officers ages 51 to 54 are 3.2 percentage points (21 percent) less likely to exit, all else equal. Exit probability then rises at older ages: Officers ages 55 to 59 are 5.6 percentage points (37 percent) more likely to exit than similar 50-year-old officers. The coefficient for officers ages 60 and older is positive but not statistically significant. Additionally, the coefficient on years of experience implies that consistent with Figure A.1, there is a strong, positive relationship between exit probability and experience: a one standard deviation (SD) increase in years of experience is associated with a 8.1 percentage point (51 percent) increase in exit probability, all else equal.

Figure 4's right panel also demonstrates that retirement-eligible officers' exit probability varies across officer demographics. Broadly speaking, the pattern for retirement-eligible officers mirrors that for retirement-ineligible officers, but with larger magnitudes. Female officers are 4.3 percentage points (28 percent) more likely to exit than observably similar male colleagues, while Latino and Asian officers are 2.4 and 1.6 percentage points (16 and 11 percent) less likely to exit than similar white colleagues, respectively. Estimates for other ethnic categories are not statistically significant. Finally, there is some minor variation across party affiliation: relative to Republican officers, Democrat officers are 0.8 percentage points (5 percent) less likely to exit.

In sum, Figure 4 reveals that exit probability varies meaningfully across demographic identity within groups of retirement-ineligible and retirement-eligible officers. Moreover, for retirement-eligible officers, there is a strong relationship between exit probability and age, as well as year of experience.

4.5 Results: Change in police exit decisions – Overall

Descriptive figure

I next analyze how officers' exit decisions changed from 2012 to 2022. Figure 5 plots average exit probability by year for retirement-ineligible and retirement-eligible officers. For

retirement-ineligible officers, the figure reveals that exit probability gradually increased in the 2010s before sharply increasing in 2021 and 2022. For retirement-eligible officers, exit probability also increases during these years, but the change in the early 2020s is less stark. Motivated by these figures – which plot raw time trends but do not account for compositional differences across time – I explore changes in police exit decisions further in the next section.

Regression results

Figure 6 plots the β_3 coefficients and 95% confidence intervals from Section 4.3's empirical specification that reflect how exit probability changed for California police officers from 2012 to 2022 while controlling for age, experience, demographics, and agencies. The figure's top panel demonstrates that for retirement-ineligible officers, there is a long, gradual increase in exit probability in the 2010s, with exit probability rising a total of 0.6 percentage points from 2012 to 2019. In contrast, after holding steady in 2020, there is a sharp increase in exit probability in 2021 and 2022. By 2022, these officers are 1.4 percentage points more likely to exit than similar officers in 2019, representing a 70 percent increase over the 2019 mean of 1.9 percent.

In comparison to these younger officers, the figure's bottom panel reveals that retirement-eligible officers' exit probability increases more steadily throughout the panel. Officers' exit probability continues to rise in the 2020s along a pre-existing upward trend: by 2022, retirement-eligible officers are 2.8 percentage points more likely to exit than similar officers in 2019, representing an 18 percent increase over the 2019 mean of 15.1 percent.

It is important to note that the composition of officers remaining in the sample changes each year due to dynamic selection. For instance, officers who exit policing in 2021 are no longer in the sample in 2022. This shift may particularly impact the results for retirement-eligible officers given their relatively higher exit probabilities.

4.6 Change in police exit decisions – Heterogeneity

Descriptive figures

I next investigate whether officers' exit decisions change heterogeneously across gender, ethnicity, and party affiliation from 2012 to 2022. If retention changes heterogeneously across identity groups, this trend could influence the demographic composition of the police labor force. Moreover, testing for heterogeneity can help illuminate the mechanisms behind the police exodus. This analysis tests Section 3.3's Hypothesis 2, which predicts that exit probabilities differentially increase for male, white and Republican officers due to differences in officers' views on police reform and enforcement behavior.

Figure A.2 plots average exit probability by year for officers who are male, white, and Republican compared to all other officers. For retirement-ineligible officers, the two series diverge in 2021 and 2022, with exit probabilities doubling from 2019 to 2022 for officers who are male, white and Republican, compared to a smaller increase for other officers. For retirement-eligible officers, there is no obvious break in the trend between the two groups of officers. Motivated by these descriptive figures, I explore time-varying heterogeneity in police retention more rigorously in the next section.

Empirical specification

To evaluate how officers' exit decisions change over time across demographic groups, I use the following empirical specification:

$$\Pr(\text{Exit}_{ijt} = 1 \mid \text{Exit}_{i,t-1} = 0, \mathbf{X}_{it}, \mathbf{X}_i, \mathbf{Year}_t, \gamma_j) = \beta_0 + \mathbf{X}_{it}\boldsymbol{\beta}_1 + \mathbf{X}_i\boldsymbol{\beta}_2 + \mathbf{Year}_t\boldsymbol{\beta}_3 + (\mathbf{Year}_t * \mathbf{X}_{it})\boldsymbol{\beta}_4 + (\mathbf{Year}_t * \mathbf{X}_i)\boldsymbol{\beta}_5 + \gamma_j + \varepsilon_{it}$$

In this analysis, the vector of officer covariates \mathbf{X}_i consists of indicators for male, white, and Republican officers. All other terms are defined similarly to the specification in Section 4.3. The $\boldsymbol{\beta}_5$ coefficients from the \mathbf{Year}_t and \mathbf{X}_i interactions are the coefficients of interest. They represent the difference in officers' exit probability across these demographic groups in a given year relative to the difference in 2019, holding all else equal.³² Note that due to the agency fixed

³² For instance, the white indicator for the year 2022 reflects the difference in exit probability for white versus nonwhite officers in that year, relative to the white versus nonwhite difference in 2019.

effect, these coefficients compare individuals exposed to the same police climate and local COVID pandemic and labor market conditions across time. Similar to the previous analysis, given retirement eligibility's central role in retention, I estimate this specification separately for retirement-ineligible and retirement-eligible officers.

Regression results

Figure 7 plots the β_5 coefficients and 95% confidence intervals from this specification that reflect differences in exit probability across time by gender, ethnicity, and party affiliation. The three panels in the top half of the figure present estimates for retirement-ineligible officers, while those in the bottom half reflect estimates for retirement-eligible officers. For both samples, the coefficients for the male indicators reveal that there is not a clear change in exit probability by gender across time, although these results are imprecise due to the small sample of female officers. This null result may also reflect the fact that the two key shifts in the environment in the 2020s are expected to have opposing effects across gender: changes in the police climate are expected to differentially increase male exits, while the COVID pandemic is expected to differentially increase female exits.

In contrast, when viewing officers across ethnicity, Figure 7 reveals that exit probability differentially increases for white officers relative to nonwhite officers in the early 2020s. For white, retirement-ineligible officers, exit probability increases by 0.8 and 1.1 percentage points (40 and 56 percent) in 2021 and 2022 relative to nonwhite officers, respectively. There is also a spike in exit probability for white, retirement-eligible officers: their exit probability increases by 2.9 percentage points (19 percent) in 2021 relative to similar nonwhite officers.

Moreover, Figure 7 reveals that exit probability differentially increases for Republican officers relative to non-Republican officers in the early 2020s. For Republican, retirement-ineligible officers, Republican officers' exit probability spikes by 0.6 percentage points (33 percent) in 2022 relative to non-Republicans. For retirement-eligible officers, the partisan change in exit behavior occurs earlier. After remaining stable throughout the 2010s, Republican officers' exit probability spikes by 2.8 percentage points (19 percent) in 2020 relative to non-

Republicans. In sum, Figure 7 indicates that all else equal, white and Republican officers are more likely to exit in the early 2020s than their nonwhite and non-Republican colleagues.

5. Comparing Police and Firefighter Exits

5.1 Data

To gain further insight into the mechanisms driving elevated police exits in the early 2020s, I compare California police and firefighter retention. For this analysis, I use an administrative employment dataset from CalPERS that covers public safety employees at CalPERS-participating employers from FY 2014-15 to FY 2023-24. These data include an employee's name, employer, date of initial CalPERS employment, CalPERS service credit, and retirement formula. Similar to the POST data, I match employees to their voter registration records from L2 to obtain their date of birth, gender, imputed ethnicity, and party affiliation.

To create an annual panel of CalPERS police and firefighter employment, I link individuals across CalPERS' annual employment files.³³ I restrict the sample to 163 municipalities that employ both police and firefighters across the full panel to ensure that I compare employees in similar environments. Similar to the POST sample, I require that employees were hired prior to 2013 to mitigate potential changes in entry into these careers in later years. I also require that employees have at least five years of CalPERS service credit so they are vested in their CalPERS pensions. When I link CalPERS employees to their voter registration records, I match 70% of police and firefighters to a single registered voter. I drop 18% of employees who match to two or more plausible voters, as well as 12% of employees who do not match to a plausible voter. See Appendix B for more details on the CalPERS sample.

The CalPERS data differ meaningfully from the POST data in several key dimensions. First, because I restrict the sample to the 163 CalPERS municipalities that employ both police and firefighters in every year, the sample is smaller than Section 4's POST sample. Specifically, the municipalities included in the CalPERS sample represent just 22 percent of police

³³ While the CalPERS data do not include a unique individual ID, I confidently link 96% of observations to a unique individual using employee name, membership date, and employer. I drop the 4% of observations that I am unable to confidently link to a unique individual. See Appendix B for more details on the CalPERS sample.

employment in the POST sample. The five large cities and 20 counties with separate pension systems are excluded, along with the remaining county agencies and municipalities without both a police and fire department. Second, because the CalPERS data only cover employment at jurisdictions participating in CalPERS, I observe when employees exit CalPERS employment as opposed to when they exit all police and firefighter employment in the state. These two definitions of exits differ when employees laterally transfer from a CalPERS jurisdiction to a non-CalPERS jurisdiction, although the POST data indicate that these transfers are relatively uncommon for police.³⁴ Finally, unlike the POST data, the CalPERS data do not provide a reason for separation when employees exit the dataset. Thus, I cannot distinguish employee-initiated exits (e.g., resignations and retirements) from other exits (e.g., agency-initiated exits and deaths), although the POST data demonstrate that other exits are relatively rare for police.³⁵

Table 2 presents summary statistics for the analysis sample of municipal CalPERS police and firefighters. In the full sample, the age and experience profiles of police and firefighters look relatively similar, with only small differences in police and firefighters' average age (43.8 and 45.0, respectively), years of service credit (18.1 and 18.7), and replacement rates (53.2% and 53.5%).³⁶ Compared to firefighters, police are less likely to be male (90.3% vs. 96.1%) and white (65.9% vs. 71.4%) and they are more likely to be Republican (60.2% vs. 44.4%). Police have a higher exit probability (7.7% vs. 5.2% for firefighters). The police sample size is also larger as there are approximately 66,500 police employee-year observations compared to 47,700 firefighter employee-year observations.

5.2 Empirical specifications

I estimate police and firefighters' per period exit probability as a function of their time-varying characteristics, demographic identity, employer, and the current year. First, I estimate

³⁴ For police, the POST data reveal that exiting CalPERS agencies for non-CalPERS agencies is relatively rare. Less than 5% of CalPERS PD officers exit and begin employment at non-CalPERS agencies out of approximately 46% of who exit POST employment during the panel.

³⁵ The POST data reveal that only about 2% of in-sample officers exit the panel due to agency-initiated exits or death.

³⁶ Similar to the POST analysis sample, due to sample restrictions, employees in the CalPERS analysis sample skew older and more experienced than the full population of CalPERS police and firefighters.

specifications for police and firefighters *separately* to examine how exit probability evolves within each occupation over time. I use the following empirical specification:

$$\Pr(\text{Exit}_{ijt} = 1 \mid \text{Exit}_{i,t-1} = 0, \mathbf{X}_{it}, \mathbf{X}_i, \mathbf{Year}_t, \gamma_j) = \beta_0 + \mathbf{X}_{it}\boldsymbol{\beta}_1 + \mathbf{X}_i\boldsymbol{\beta}_2 + \mathbf{Year}_t\boldsymbol{\beta}_3 + \gamma_j + \varepsilon_{it}$$

where Exit_{ijt} is a binary indicator for whether employee i at employer j permanently exits CalPERS safety employment in year t . The vector \mathbf{X}_{it} includes time-varying employee covariates including age bin indicators, CalPERS service credit, and pension replacement rate. The vector \mathbf{X}_i includes indicators for male, white, and Republican employees. The vector \mathbf{Year}_t is a set of year indicators, where FY 2019-20 is the excluded year. The term γ_j is a fixed effect for employer. I cluster standard errors at the employer level. In this analysis, the $\boldsymbol{\beta}_3$ coefficients are the coefficients of interest. They reflect the difference in exit probability for employees in a given year relative to FY 2019-20, holding the employee's observable characteristics and agency constant.

Second, to investigate how exit probability evolves for police *relative to* firefighters, I estimate the following specification for police and firefighters simultaneously:

$$\Pr(\text{Exit}_{ijt} = 1 \mid \text{Exit}_{i,t-1} = 0, \mathbf{X}_{it}, \mathbf{X}_i, \mathbf{Year}_t, \gamma_j) = \beta_0 + \mathbf{X}_{it}\boldsymbol{\beta}_1 + \mathbf{X}_i\boldsymbol{\beta}_2 + \mathbf{Year}_t\boldsymbol{\beta}_3 + (\text{Police}_i * \mathbf{X}_{it})\boldsymbol{\beta}_4 + (\text{Police}_i * \mathbf{X}_i)\boldsymbol{\beta}_5 + (\text{Police}_i * \mathbf{Year}_t)\boldsymbol{\beta}_6 + \gamma_j + \varepsilon_{it}$$

In this specification, the employer fixed effect γ_j is occupation-specific (e.g., Sacramento Fire Department). Here, the $\boldsymbol{\beta}_6$ coefficients from the $(\text{Police}_i * \mathbf{Year}_t)$ interactions are the coefficients of interest. They represent the difference in police and firefighter exit probability in a given year relative to the difference in FY 2019-20, holding all else equal.

5.3 Results

Figure 8 plots the first specification's $\boldsymbol{\beta}_3$ coefficients that reflect how CalPERS exit probability evolves for municipal police and firefighters from FY 2014-15 to FY 2023-24. The two panels on the figure's top row present estimates for retirement-ineligible employees, while those in the bottom row reflect estimates for retirement-eligible employees. The top row's panels demonstrate that for retirement-ineligible employees, there is a sharp increase in police exit probability in the early 2020s but little change in firefighter exit probability. In FY 2021-22, retirement-ineligible police are 2.0 percentage points more likely to exit than similar officers in

FY 2019-20, representing a 74 percent increase over the FY 2019-20 mean of 2.7 percent. Police exit probability remains elevated in the years that follow. In comparison, in FY 2021-2022, retirement-ineligible firefighters are 0.3 percentage points more likely to exit than similar employees in FY 2019-20, which represents a 25 percent increase over the FY 2019-20 mean of 1.1 percent.

The panels in Figure 8's bottom row reveal a different pattern for retirement-eligible employees. During the 2010s, police exit probability rises, while firefighter exit probability is relatively constant. Then, in the early 2020s, exit probability increases for both occupations. In FY 2020-21, both police and firefighter exit probability increase by about 5 percentage points relative to FY 2019-20, which represent increases of 22.9 percent and 37.9 percent for police and firefighters relative to the previous year, respectively.

To complement this first analysis, Figure 9 plots the β_6 coefficients from the second specification's ($Police_i * Year_t$) interactions that reflect how CalPERS exit probability changed for police *relative to* firefighters from FY 2014-15 to FY 2023-24. Estimates from the figure's top panel for retirement-ineligible employees imply that police exit probability differentially increases relative to firefighter exit probability in the early 2020s. In FY 2021-22, the police – firefighter exit gap grew by 1.7 percentage points relative to FY 2019-20. Among retirement-eligible employees, I fail to reject the null hypothesis that there is a differential change in police and firefighter exit probability in the early 2020s at any typical confidence level.

6. Discussion

I explore California police officers' exit decisions, examine how they changed, and investigate why officers increasingly exited the profession in the early 2020s. I find a marked increase in police exits among retirement-ineligible officers and a more modest increase for retirement-eligible officers. Exits increase most for white and Republican officers, and unlike police, there is no comparable exodus of retirement-ineligible firefighters. Altogether, these findings suggest that shifts in police climate substantially contributed to the early 2020s police exodus in California.

More broadly, my paper suggests that there can be tradeoffs between police reform and officer retention. In response to mass protests over high-profile police killings, policymakers in California and many other states and jurisdictions implemented reforms to increase police transparency and accountability. Police groups often vigorously opposed these measures, preferring to maintain the status quo. One of my study's central findings – that there is a 70 percent increase in exit probability for retirement-ineligible officers in California from 2019 to 2022 – speaks to how strongly some officers disapprove of these changes. The California police officers in my study receive the highest statewide median police wages in the US (Hernandez, 2024) and they participate in famously generous pension plans. The fact that so many are willing to incur a substantial opportunity cost to exit policing before retirement eligibility testifies to their distaste for police work in the new police climate.

Alarming, the police exodus may have a compounding effects that reverberate for years to come. In addition to rising exits, police agencies simultaneously faced a severe recruitment “crisis” in the early 2020s, with leaders expressing concerns that the quantity and quality of police applicants sharply declined relative to previous years (Elinson, 2022; Klemko, 2023; PERF, 2021). These twin forces of rising exits and declining recruitment caused staffing shortages that resulted in slower 911 response times and more unsolved crimes (The Economist, 2023; French, 2023). As agencies struggled to deliver essential police services due to staffing shortages, they faced pressure fill vacant positions. In a sign of their growing desperation, some agencies lowered their minimum hiring standards (Condon et al., 2023; Elinson, 2022). In California, some agencies even admitted to hiring lower quality employees to fill vacant positions. A spokesman for the Alameda County Sheriff's Department acknowledged “We're hiring people we wouldn't normally hire” and “We're scraping the barrel” (Elinson, 2022). The lowering of hiring standards appears to be widespread: a recent investigative report found that California police agencies increasingly hired officers who had previously been fired or dismissed from other departments (Cassidy et al., 2025). This apparent decline in the quality of recent police hires bodes poorly for the future of police services and police-community interactions.

My paper highlights the need for future research examining the causes and consequences of declining police retention and police staffing issues more generally. While my study suggests that the police climate likely contributed to the early 2020s spike in officer exits, future research could unpack the many components of the changing police climate (e.g., major deadly force protests, state-level reforms, agency-level policy changes) that may drive some officers out of the profession. Additional research could investigate potential differences in enforcement patterns among the officers who exited policing in the early 2020s and those who remained. Moreover, future research could study the interplay between retention and recruitment, particularly as agencies face difficult tradeoffs between officer quantity and quality.

Throughout years of tension that culminated in the 2020 George Floyd protests, policymakers implemented reforms to improve police transparency and accountability. My paper shows that the public's outrage and these reform efforts likely pushed some officers out of policing, exacerbating police staffing shortages. Facing a simultaneous shortage of qualified new recruits, police agencies now must weigh difficult tradeoffs when trying to replace the experienced officers they lost.

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8. Tables and Figures

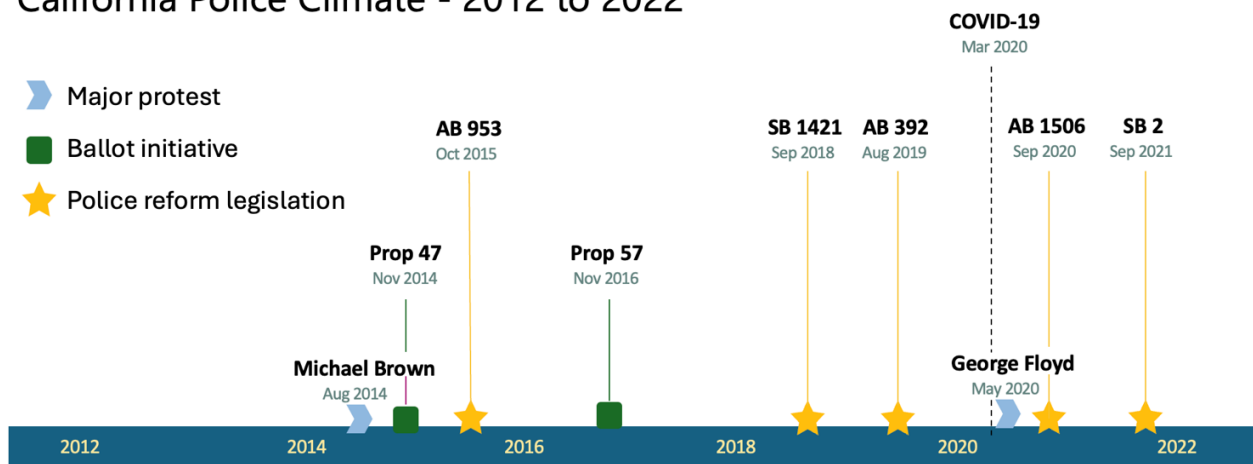
Figure 1



Notes: This figure represents an officer first hired at age 25 who participates in the CalPERS “3% at 50” pension plan. The black dashed line represents the officer’s replacement rate, or pension income expressed as a percentage of pre-retirement earnings, depending on the age at which the officer exits police employment. The dots mark three hypothetical exit ages: 45, 50, and 55. The horizontal lines represent pension income during years of pension receipt. The vertical line at age 50 denotes the beginning of retirement eligibility. See Section 2.1 for institutional details. CalPERS = California Public Employees’ Retirement System.

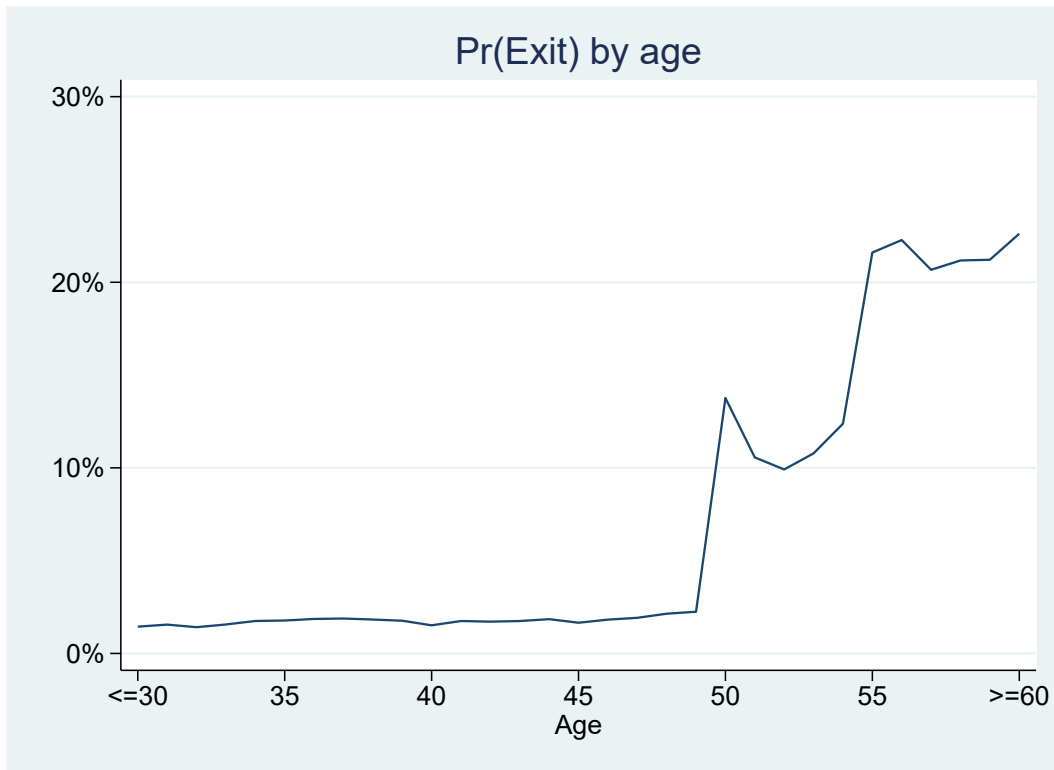
Figure 2

California Police Climate - 2012 to 2022



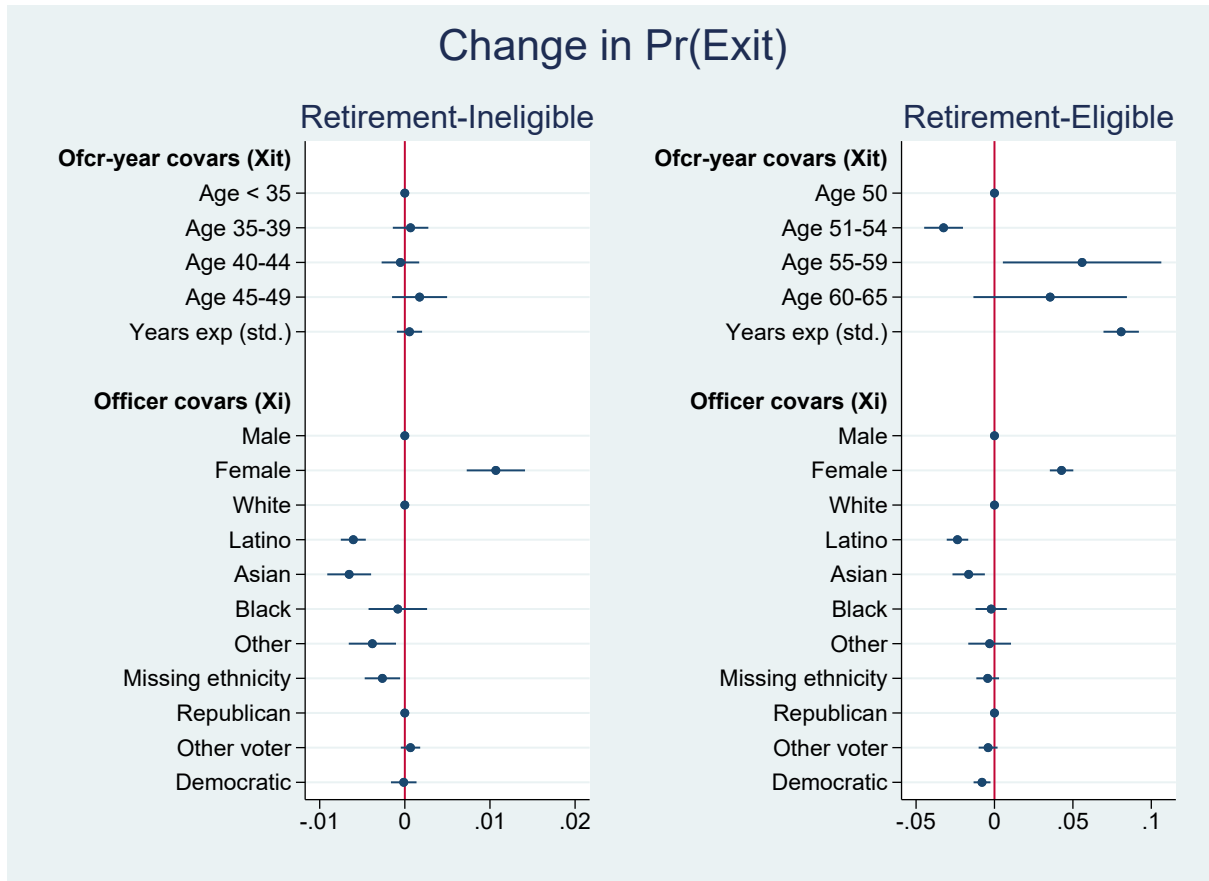
Date	Name	Purpose	Description	Links	Police Response
Nov 2014	Prop 47	Criminal justice reform	Recategorizes certain nonviolent felonies as misdemeanors for common offenses like theft and drug possession.	1 , 2	1 , 2 , 3
Oct 2015	AB 953	Police transparency	Named the Racial and Identity Profiling Act (RIPA) of 2015, this law requires law enforcement officers to collect data on every stop and creates a state oversight board to combat racial and identity profiling.	1 , 2	1 , 2 , 3
Nov 2016	Prop 57	Criminal justice reform	Reduces prison time for certain nonviolent offenders by increasing parole opportunities and rewarding good behavior and education with opportunities for earlier release.	1 , 2	1 , 2 , 3
Sep 2018	SB 1421	Police transparency	Requires law enforcement agencies to release additional records related to use of force and officer misconduct.	1 , 2	1 , 2 , 3
Aug 2019	AB 392	Police accountability	Adopts a new, stricter legal standard for when law enforcement officers can use deadly force. While officers previously could use deadly force when it was deemed “reasonable,” the new standard requires that deadly force only be used only when “necessary.”	1 , 2	1 , 2 , 3 , 4
Sep 2020	AB 1506	Police accountability	Requires the state Attorney General’s office to investigate all fatal police shootings of unarmed civilians.	1 , 2	1 , 2 , 3
Sep 2021	SB 2	Police accountability	Creates a process for POST to decertify law enforcement officers and ends certain qualified immunity provisions that shield officers from civil lawsuits.	1 , 2	1 , 2 , 3

Figure 3



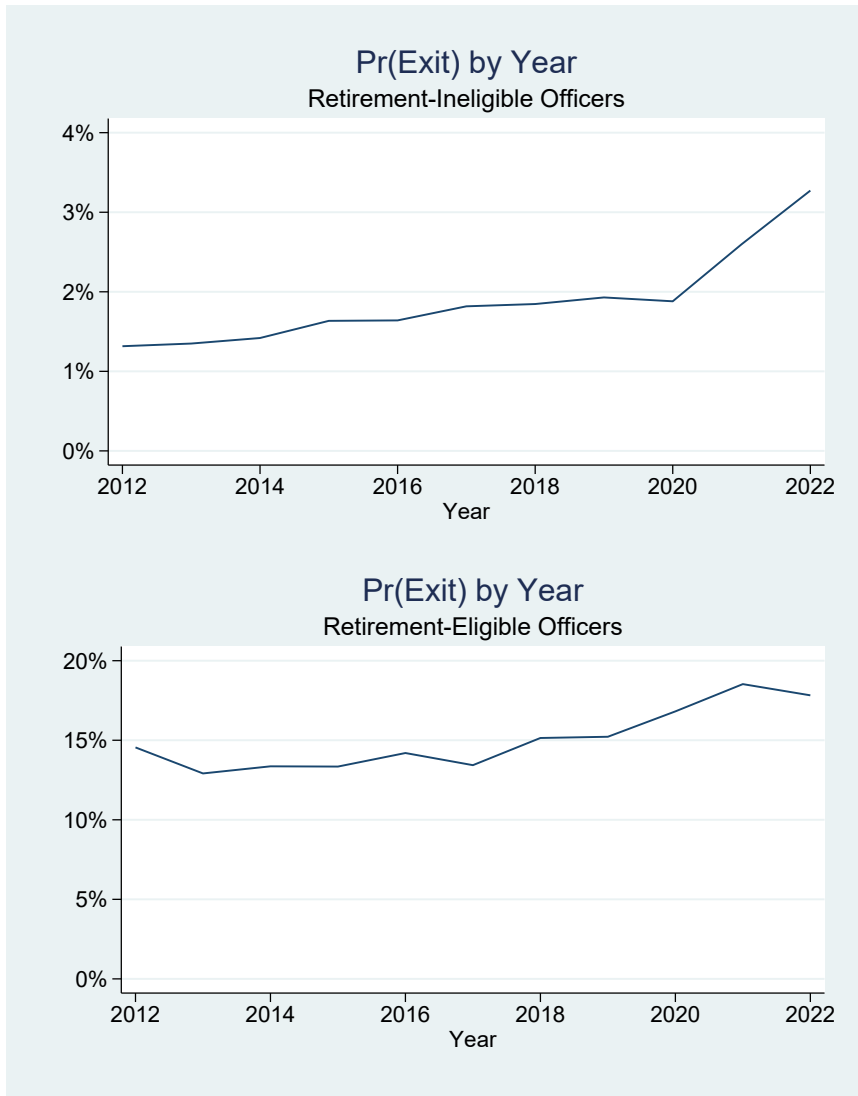
Notes: This figure plots officers' average exit probability by age. Figure uses police and sheriff's department officers in California POST data from 2012 to 2022. Sample consists of officers hired before 2013 with at least five years of experience who match to a unique registered voter. POST = Peace Officer Standards and Training.

Figure 4



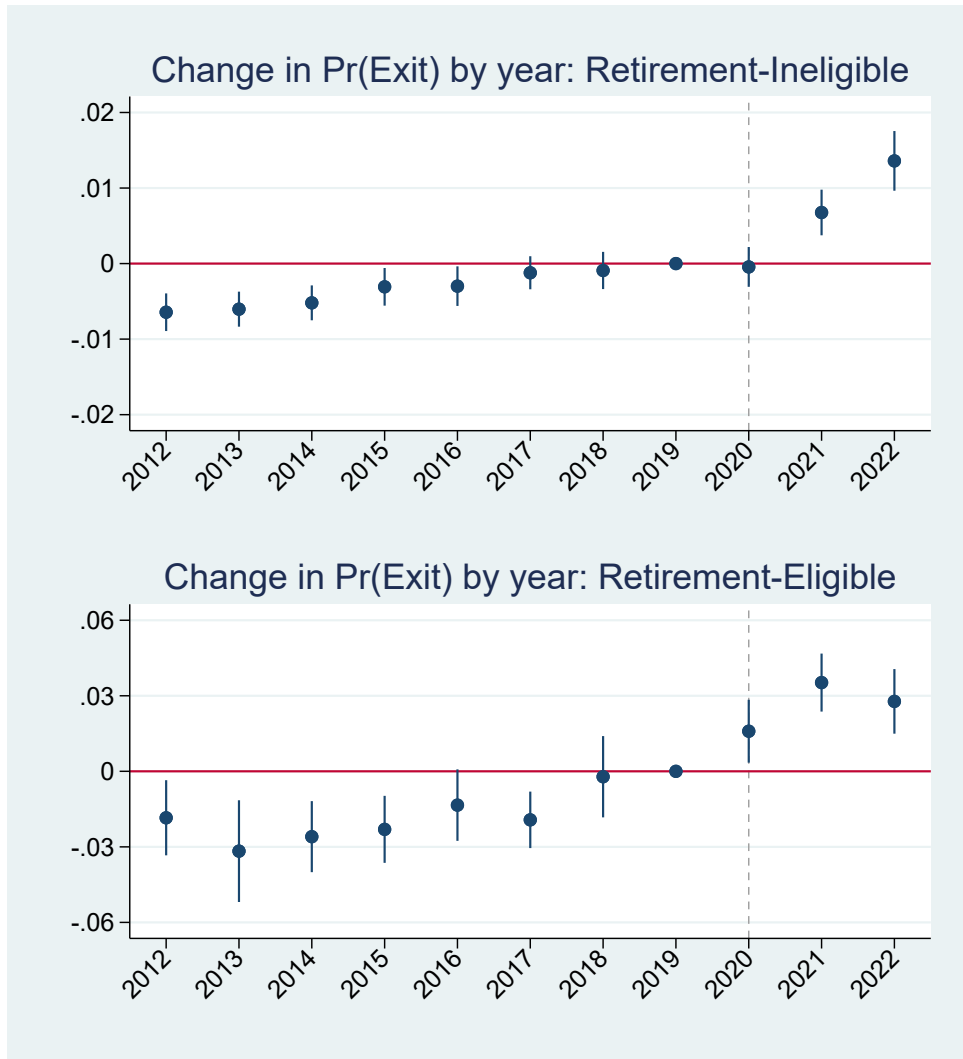
Notes: This figure plots officers' estimated change in exit probability by age, years of experience, and demographic identity. Specifically, the figure plots the coefficient estimates and 95% confidence intervals from the empirical specification in Section 4.3. In 2019, the mean Pr(Exit) for retirement-ineligible officers is 0.019 and for retirement-eligible officers is 0.151. The excluded categories are age < 35 (retirement-ineligible) and age 50 (retirement-eligible), male, white, and Republican. Figure uses police and sheriff's department officers in California POST data from 2012 to 2022. Sample consists of officers hired before 2013 with at least five years of experience who match to a unique registered voter. POST = Peace Officer Standards and Training.

Figure 5



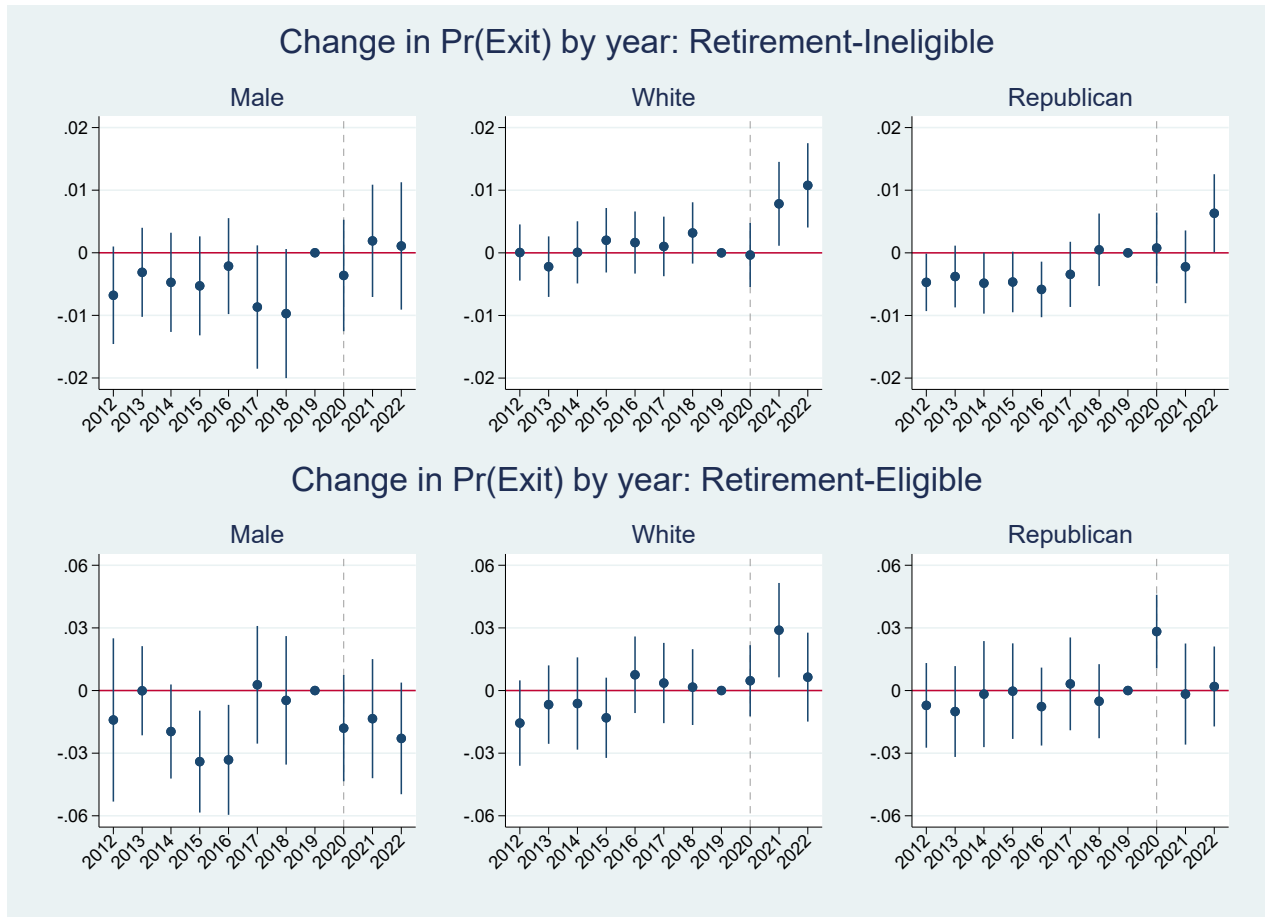
Notes: This figure plots officers' average exit probability by year. Figure uses police and sheriff's department officers in California POST data from 2012 to 2022. Sample consists of officers hired before 2013 with at least five years of experience who match to a unique registered voter. POST = Peace Officer Standards and Training.

Figure 6



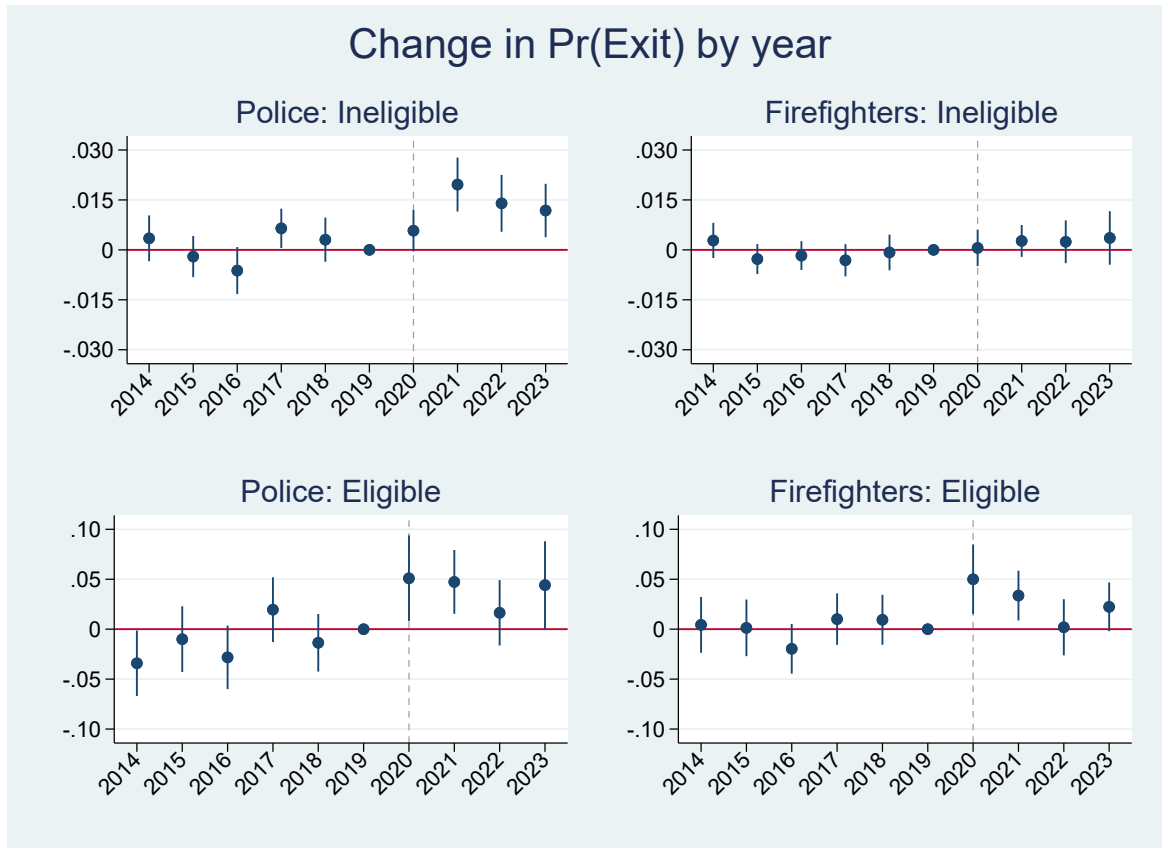
Notes: This figure plots the estimated change in exit probability for officers in a given year relative to 2019. Specifically, the figure plots the coefficient estimates and 95% confidence intervals for the year fixed effects from the empirical specification in Section 4.3. In 2019, the mean Pr(Exit) for retirement-ineligible officers is 0.019 and for retirement-eligible officers is 0.151. Figure uses police and sheriff's department officers in California POST data from 2012 to 2022. Sample consists of officers hired before 2013 with at least five years of experience who match to a unique registered voter. POST = Peace Officer Standards and Training.

Figure 7



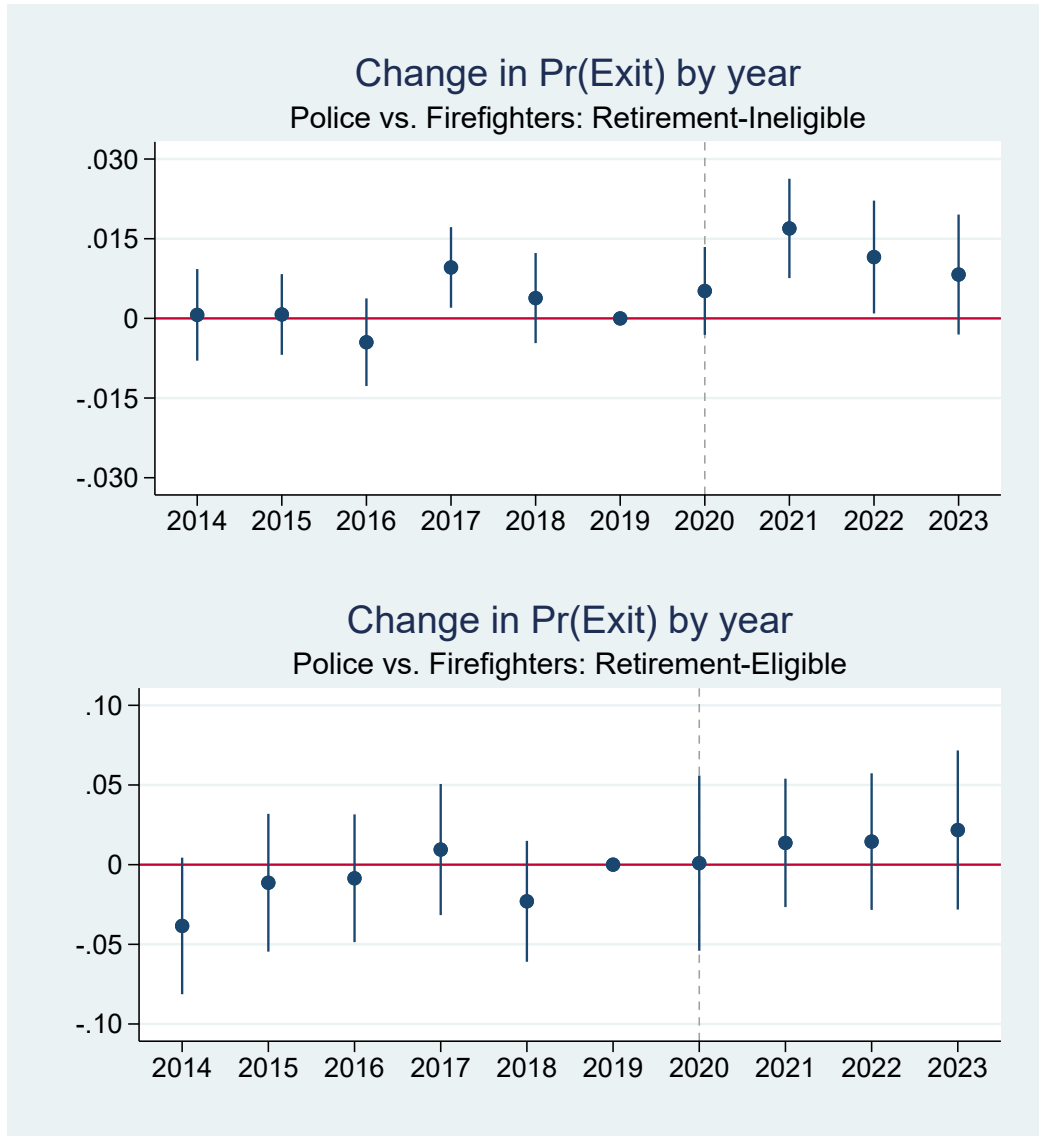
Notes: This figure plots the estimated difference in officers' exit probability across gender, ethnicity, and party affiliation in a given year relative to the difference in 2019. Specifically, this figure plots the β_5 coefficients and 95% confidence intervals from the specification in Section 4.6. Female, nonwhite, and non-Republican are the excluded groups. In 2019, the mean Pr(Exit) for retirement-ineligible officers is 0.019 and for retirement-eligible officers is 0.151. Figure uses police and sheriff's department officers in California POST data from 2012 to 2022. Sample consists of officers hired before 2013 with at least five years of experience who match to a unique registered voter. POST = Peace Officer Standards and Training.

Figure 8



Notes: This figure plots the estimated change in CalPERS exit probability for employees in a given year relative to FY 2019-20. Specifically, this figure plots the coefficient estimates and 95% confidence intervals for the year fixed effects from the first empirical specification in Section 5.2. For police (firefighters) in FY 2019-20, the Pr(Exit) mean for retirement-ineligible employees is 0.027 (0.011) and for retirement-eligible employees is 0.222 (0.132). Figure uses municipal police and firefighters in CalPERS data from FY 2014-15 to FY 2023-24. Sample consists of employees hired before 2013 with at least five years of service who match to a unique registered voter. CalPERS = California Public Employees' Retirement System. FY = Fiscal Year.

Figure 9



Notes: This figure plots the estimated difference between police and firefighter CalPERS exit probability in a given year relative to the difference in FY 2019-20. Specifically, this figure plots the β_6 coefficients and 95% confidence intervals from the second empirical specification in Section 5.2. For police (firefighters) in FY 2019-20, the Pr(Exit) mean for retirement-ineligible employees is 0.027 (0.011) and for retirement-eligible employees is 0.222 (0.132). Figure uses municipal police and firefighters in CalPERS data from FY 2014-15 to FY 2023-24. Sample consists of employees hired before 2013 with at least five years of service who match to a unique registered voter. CalPERS = California Public Employees' Retirement System. FY = Fiscal Year.

Table 1

Police Analysis Sample (POST)						
	Full Sample		Retirement-Ineligible		Retirement-Eligible	
	All ages		Age < 50		Age >= 50	
	Mean	SD	Mean	SD	Mean	SD
Age	44.2	7.77	40.7	5.69	53.8	3.41
Experience	17.2	7.36	14.4	5.61	25.0	5.90
Male	86.7%	0.34	86.6%	0.34	87.0%	0.34
Female	13.3%	0.34	13.4%	0.34	13.0%	0.34
White	62.4%	0.48	61.1%	0.49	65.8%	0.47
Latino	21.2%	0.41	22.3%	0.42	18.3%	0.39
Black	1.5%	0.12	1.3%	0.12	1.8%	0.13
Asian	4.0%	0.20	4.1%	0.20	3.8%	0.19
Other	2.4%	0.15	2.6%	0.16	1.9%	0.14
Missing	8.5%	0.28	8.6%	0.28	8.4%	0.28
Republican	59.1%	0.49	58.0%	0.49	62.2%	0.49
Other voter	23.2%	0.42	25.0%	0.43	18.2%	0.39
Democrat	17.7%	0.38	17.0%	0.38	19.6%	0.40
Exit	5.3%	0.23	1.8%	0.13	15.1%	0.36
N agencies	392		390		389	
N officers	44,549		36,724		23,381	
N officer-year obs	377,344		277,220		100,124	

Notes: Table uses police and sheriff's department officers in California POST data from 2012 to 2022. Sample consists of officers hired before 2013 with at least five years of experience who match to a unique registered voter. POST = Peace Officer Standards and Training.

Table 2

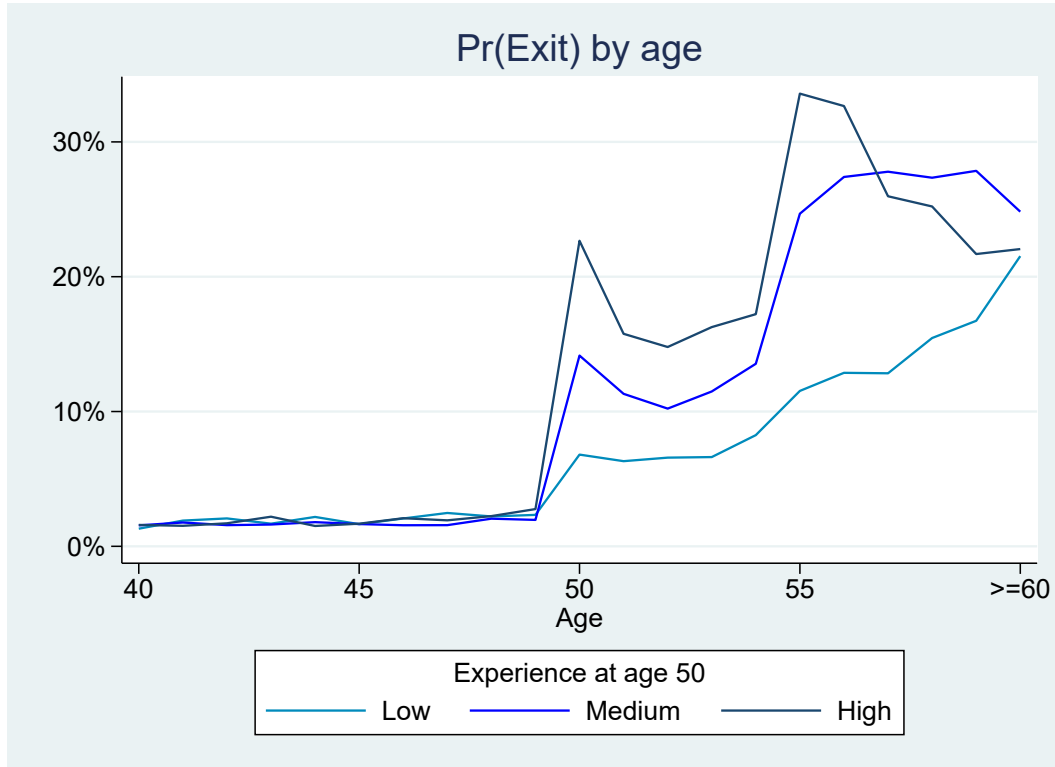
	Police and Firefighters Analysis Sample (CalPERS)											
	Full Sample All ages				Retirement-Ineligible Age < 50				Retirement-Eligible Age >= 50			
	Police		Firefighters		Police		Firefighters		Police		Firefighters	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	43.8	6.96	45.0	7.50	41.2	5.39	41.2	5.22	53.0	3.04	53.9	3.37
Service credit	18.1	6.47	18.7	6.77	16.3	5.50	15.9	5.17	24.6	5.31	25.2	5.40
Replacement rate	53.2	19.49	53.5	20.29	47.7	17.03	45.1	16.14	72.3	14.99	73.0	14.86
Male	90.3%	0.30	96.1%	0.19	89.7%	0.30	96.4%	0.19	92.3%	0.27	95.5%	0.21
Female	9.7%	0.30	3.9%	0.19	10.3%	0.30	3.6%	0.19	7.7%	0.27	4.5%	0.21
White	65.9%	0.47	71.4%	0.45	65.4%	0.48	71.6%	0.45	67.6%	0.47	71.1%	0.45
Latino	17.4%	0.38	12.6%	0.33	17.9%	0.38	12.6%	0.33	15.9%	0.37	12.4%	0.33
Black	0.9%	0.09	0.8%	0.09	0.9%	0.09	0.6%	0.08	0.9%	0.10	1.3%	0.11
Asian	3.5%	0.19	2.7%	0.16	3.6%	0.19	2.8%	0.16	3.4%	0.18	2.4%	0.15
Other	2.4%	0.15	2.1%	0.14	2.4%	0.15	2.2%	0.15	2.0%	0.14	2.0%	0.14
Missing	9.9%	0.30	10.4%	0.31	9.9%	0.30	10.2%	0.30	10.0%	0.30	10.8%	0.31
Republican	60.2%	0.49	44.4%	0.50	59.0%	0.49	42.8%	0.50	64.6%	0.48	48.2%	0.50
Other voter	24.5%	0.43	30.7%	0.46	25.9%	0.44	33.8%	0.47	19.9%	0.40	23.6%	0.42
Democrat	15.2%	0.36	24.9%	0.43	15.1%	0.36	23.4%	0.42	15.5%	0.36	28.2%	0.45
Exit	7.7%	0.27	5.2%	0.22	3.1%	0.17	1.1%	0.10	23.7%	0.43	14.7%	0.35
N employers	163		157		163		155		162		150	
N employees	9,416		6,108		7,966		4,681		4,520		3,376	
N employee-year obs	66,511		47,734		51,739		33,420		14,772		14,314	

Notes: Table uses municipal police and firefighters in CalPERS data from FY 2014-15 to FY 2023-24. Sample consists of employees hired before 2013 with at least five years of service who match to a unique registered voter. CalPERS = California Public Employees' Retirement System.

Appendices

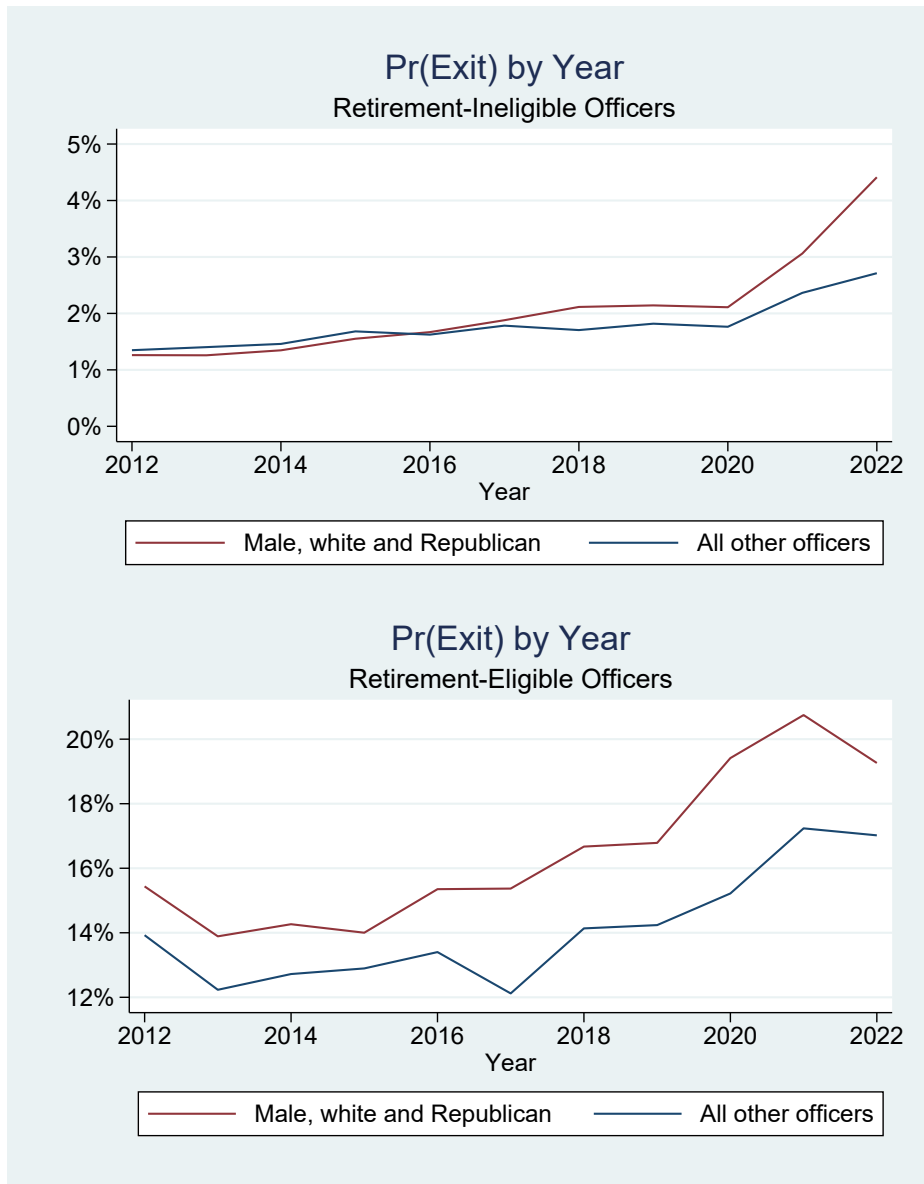
A. Figures

Figure A.1



Notes: This figure plots the average exit probability for officers by age for three groups. The low experience at age 50 group was first hired at age 30 or later, the medium group was hired between ages 24 and 29, and the high group was hired between ages 18 and 23. Figure uses police and sheriff's department officers in California POST data from 2012 to 2022. Sample consists of officers hired before 2013 with at least five years of experience who match to a unique registered voter. POST = Peace Officer Standards and Training.

Figure A.2



Notes: These figures plot the average exit probability for officers who are male, white, and Republican compared to all other officers by year. Figure uses police and sheriff's department officers in California POST data from 2012 to 2022. Sample consists of officers hired before 2013 with at least five years of experience who match to a unique registered voter. POST = Peace Officer Standards and Training.

B. Data Appendix

B.1 POST Sample

My central police employment dataset comes from the California Commission on Peace Officer Standards and Training (POST). I received these data via public records request on December 7, 2023. The POST data are at the officer – employment position level and contain a unique identifier for each officer. I use these data to construct an annual panel dataset of police employment in California. First, I drop records for employment spells where the appointment status variable indicates that an officer is working in a non-peace officer or reserve officer capacity. I also drop the small group of officers with an initial hire date before 1970 as the data appear incomplete for these very early years. Furthermore, I drop the handful of officers with illogical dates of employment (i.e., when officers are marked as concluding employment before they were initially hired). I also drop the small share of officers who are marked as concluding employment but missing a precise date. Additionally, I drop the small share of officers where POST omits names to protect the identities of undercover officers.

With this dataset of full-time officers, I transform the data from the officer – employment position level to the officer – year level. I define an officer as working in a given year if he or she works any day in that calendar year. I define an officer as exiting using a binary variable that indicates when an officer concludes POST-covered employment and does not return to the dataset in the following year. I define an officer’s years of experience as the sum of years that he or she appears in the POST data. To focus on employment from 2012 to 2022, I drop observations for employment spells before 2012. I also drop the small share of observations for officers with extremely high levels of service, defined as more than 42 years. To focus on employment at municipal police and county sheriff’s departments, I drop employment spells at state agencies (e.g., California Highway Patrol) and special purpose agencies (e.g., school districts and universities, district attorney’s officers, county probation departments).

I next match officers from the POST data to voter registration records compiled by the data vendor L2. I use vintages of California voters from 2014 to 2023. To match voters to officers, I match voters in county A to officers in county A and all adjacent counties using exact name. I do this first for full name; next for first and last names with a middle initial; and finally

for first and last name only. With the merged data, I keep matches when the voters' date of birth and officers' initial hire date imply that the officer was first hired between the ages of 18 and 41. Using this process, I match 69% of officers to exactly one registered voter. I drop the 19% of officers who merge to multiple plausible voters, as well as the 12% of officers who match to zero voters.

To construct the final analysis sample, I require that officers were first hired before 2013 to mitigate potential changes in entry into police careers in later years. I also require that officers have at least five years of experience so they are likely vested in their pensions. I drop the less than two percent of officers who are discharged by their agency or die during employment. I also drop the small group of officers with an employment gap that covers at least one full calendar year. I drop approximately four percent of officers who transfer into or out of the sample of municipal police and sheriffs departments to other POST agencies during 2012 to 2022. I also drop the very small shares of officers missing gender in the L2 data and observations for officers marked as working in police employment past age 65.

B.2 CalPERS Sample

My data on police and firefighter employment come from the California Public Employees' Retirement System (CalPERS). I received these data on November 21, 2024 and March 19, 2025 via public records requests. I use these data to construct an annual panel dataset of police and firefighter employment at CalPERS-participating municipalities with both a police and fire department. The data contain separate files for each fiscal year (FY) from FY 2013-14 to FY 2023-24.

To obtain a dataset that is unique at the employee – year level, I first “de-duplicate” the data for the approximately one percent of employees that appear multiple times in the same year. (For this first step, I use an employees' name and membership date to define individuals). When an employee appears in two or more rows for an employer in a single year, I keep the row with the highest earnings. For employees who transfer across employers, I keep the employee's new employer in the year of the transfer. I drop the very small share of remaining employees (<0.1%) listed as working at multiple employers simultaneously.

Next, I assign a unique individual identifier to all employees whom I can confidently track across files. (The initial CalPERS data do not contain a unique individual identifier.) I confidently link 96% of observations to a unique individual using an employees' name, initial CalPERS membership date, and employer. Most (92%) of these observations are for a unique full name and initial CalPERS membership date pair. Some (4%) are for full names and two or more CalPERS membership dates that appear to change arbitrarily but represent a single individual. I am unable to confidently link the remaining 4% of observations to a unique individual and therefore exclude them from the sample. For most of these excluded observations (3%), there are multiple employees with the same name employed in a given year. For others (1%), a unique name has at least two membership dates and two employers. In both cases, it is challenging to reliably discern which observations are for separate individuals versus which observations are for a single individual transferring across employers.

I next create an indicator that defines an employee as exiting CalPERS employment in the year following their last appearance in the employment data. (Separate CalPERS-provided data on retirees and their separation dates confirm that an employee's true date of exit occurs in the year *after* they last appear in the employment data). Therefore, I drop data for the first year of the panel (FY 2013-14) because the data do not reveal which employees exit in this year. I then drop the small shares of employees that have an employment gap of one or more years; employees with very low earnings that suggest part-time employment; employees with multiple years of zero earnings that obscure the employees' true date of exit. I also drop the less than one percent of observations for employees with the same first and last names and membership dates but with different unique IDs. (Careful inspection reveals that these observations frequently represent a single employee who changes their name during the panel, leading to false exits.) Finally, I restrict the sample to only include municipal employers that employ police and firefighters in every year from FY 2014-15 to FY 2023-24.

I then match employees from the CalPERS data to their voter registration records compiled by the data vendor L2. I use vintages of California voters from 2014 to 2023. To match voters to employees, I match voters in county A to employees in county A and all adjacent counties using exact name. I do this first for full name; next for first and last names with a

middle initial; and finally for first and last name only. With the merged data, I keep matches when the voters' date of birth and employees' CalPERS membership date imply that the employee was first hired between the ages of 18 and 41. Using this process, I match 70% of police and firefighters to a single registered voter. I drop 18% of employees who match to two or more plausible voters, as well as 12% of employees who do not match to a plausible voter.

To construct the final analysis sample, I calculate an employees' pension replacement rate according to their pension formula, CalPERS service credit, and CalPERS-provided replacement rate tables (CalPERS, "Benefit Factor Charts"). I drop the less than two percent of employees who have different pension formulas across years. From FY 2014-15 to FY 2015-16, there is an inconsistency in the data where employees' service credit increases by 0.1 years on average. To address this inconsistency and harmonize service credit across all years in the data, I subtract 0.9 from employees' service credit in FY 2014-15. Similar to the POST sample, I require that employees were hired prior to 2013 to mitigate potential changes in entry into these careers in later years. I require that employees have at least five years of CalPERS service credit so they are vested in their CalPERS pensions. I also drop the very small shares of officers missing gender in the L2 data and observations for employees marked as working in police or firefighter employment past age 65.