Barriers to Representation: Selection Processes and Political Diversity in US Urban Bureaucracy

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Abstract

Research underscores the importance of representative bureaucracies for public service provision, yet partisan and racial gaps persist in US street-level agencies. What drives this misrepresentation within professionalized local bureaucracies? Using novel data on over 300,000 bureaucrats in New York City, this study offers three findings. First, there is significant sorting across agencies, with the police, fire, and sanitation departments showing strong Republican, White, and male dominance. Second, examining recruitment at the NYPD reveals that, despite comparable qualifications and representativeness among candidates, Republican and White applicants have a higher likelihood of being hired. Equalizing hiring rates across partisanship and race could boost the recruitment of underrepresented groups by as much as 61%. Third, once hired, Republican and White officers are also more likely to be promoted, awarded, and have longer tenures. By offering new evidence on the determinants and institutional context of bureaucratic representation, this study calls for a more nuanced understanding of how and when it impacts governance outcomes.

1   Introduction

A growing body of evidence shows that many US local bureaucracies, including police departments and public schools, have strong partisan and racial leanings and are often unrepresentative of the jurisdictions they serve. For example, 79% of US public school teachers are White, and White teachers often constitute the majority of a school's faculty, even in schools where most students are non-White (National Center for Education Statistics, 2020). Similarly, substantial gaps exist in the representation of US police: across a sample of 98 major US law enforcement agencies, 56% of officers are White, relative to only 38% of the population in the relevant jurisdictions. Similarly, 32% of officers are Republican vis-à-vis 14% of voting-age citizens, and only 31% of officers identify with the Democratic party relative to 43% of civilians (Ba et al., 2025).

To date, we have an incomplete understanding of what determines such a dominance of particular partisan or racial groups among rank-and-file bureaucrats in meritocracies. In this paper, I provide a first step toward understanding the drivers of representational disparities between the makeup of local bureaucrats and the demographics of corresponding US populations. Drawing on novel data from a major US city, I show that representational gaps are not simply artifacts of who applies or passes entry exams. Instead, these gaps emerge and compound across multiple stages of selection—especially during hiring, career progression, and attrition. This multi-stage lens highlights how bureaucratic institutions, despite neutral procedures, systematically advantage certain groups over others.

Understanding the complex selection processes that dictate the representativeness of public agencies is important for multiple reasons. First, the inclusion of diverse groups and preferences within government often meaningfully affects the quality of public goods provision and enhances the bureaucracy's ability to address the needs of marginalized communities (Bradbury and Kellough, 2011; Nicholson-Crotty et al., 2016; Bhavnani and Lee, 2018; Xu, 2021; Ba et al., 2021, 2025; Harvey and Mattia, 2022; Harris, 2023). Beyond demographics,

partisan identities are crucial for active representation, especially given the extreme polarization of American parties and the fact that partisanship is a crucial predictor of individuals' attitudes on many policy issues. Skewed partisan representation in street-level bureaucracies has been found to have important distributional consequences for public service provision, especially in law enforcement (Lerman and Page, 2015; Forand et al., 2022; Ba et al., 2025; Donahue, 2023). Second, in a diverse society, a representative bureaucracy fosters government legitimacy. It showcases equitable access to power, active involvement of diverse groups in bureaucratic proceedings, and recognition of varied expertise within government (Selden, 1997; Theobald and Haider-Markel, 2008; Riccucci et al., 2014; Kringen, 2016). Third, personnel expenditures constitute a substantial portion of city budgets nationwide. In 2021, local governments across the US employed 14 million individuals and spent more than \$767 billion or 35% of their annual expenses on wages and salaries for employees (US Census Bureau, 2021a,b).[1] Thus, public employment is a key tool for distributive spending by local governments, and particularly for minority and historically disadvantaged groups, government employment serves as a symbol of status and a source of mobility (Meier, 1975). Finally, public sector employees and their unions are among the most active and powerful interest groups in American politics, especially at the local level (Anzia, 2022). Public sector unions increasingly engage in issues beyond their immediate material interests, such as matters of political identity[2], and their endorsements of local political candidates are perceived as highly partisan (Gaudette, 2024). Hence, the individuals who enter and persist in public sector unions can significantly shape the broader interests represented in politics.

It's challenging to examine the drivers of bureaucratic representativeness, as it requires detailed micro-level data on individual bureaucrats and their career trajectories over time. I draw on novel administrative data for employees across New York City (NYC) agencies and

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[1]Note that this excludes expenses on retirement funds which also constitute a substantial source of expenditures.

[2]For example, the National Education Association fought book bans through their union via lawsuits and lobbying efforts. https://www.nea.org/nea-today/all-news-articles/educators-fight-book-bans-through-their-union

combine multiple relevant records, including civil service exam data, payroll information, promotion and attrition decisions, and official voter registration records. In addition to employment information, the resulting data contains measures of the partisanship, race, gender, age, place of work, and residence of individual bureaucrats. My data allows me to thoroughly trace the careers of partisan and racial groups in one of America's largest bureaucracies, covering more than 300,000 employees on the NYC payroll since 2014.

My analysis proceeds in three steps: First, I estimate municipal employees' different degrees of representativeness vis-à-vis citizens. In addition to observable traits, such as race and gender, I estimate how city employees mirror citizens of NYC in terms of their partisanship. I show stark differences in representativeness across agencies, geographic regions, and characteristics. While police, fire, and sanitation departments are consistently more Republican, White, and male relative to NYC's voting population, the Department of Social Services employs more Democrats, African Americans, and female individuals compared to the general public. Among the top six city agencies, only the Department of Correction manages to closely mirror NYC's citizens in its partisan and racial composition.

In the second step, I focus on selection within the New York City Police Department (NYPD) and unpack the drivers of descriptive misrepresentation. I trace the types of individuals selecting into law enforcement and examine career trajectories and attrition rates of more than 58,000 officers. Contrary to a common perception that differential attraction to the job is a key determinant of demographic imbalances in US police, my analysis suggests that representational disparities are minimal among NYPD aspirants (exam-takers who pass the first entry exam). Instead, the gaps loom large for each subsequent selection stage: Republicans and Whites are more likely to get hired, gain higher ranks in NYPD's hierarchy, are more often appointed to elite units, and receive more departmental awards than Democrats and non-Whites. Additionally, I show consistent trends of homophily and stratification: Teams led by Democratic, Black, or Hispanic leaders tend to have fewer lower-ranked Republican or White members and display greater racial diversity. Lastly, Republican and

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White officers are more likely to remain with the force beyond retirement age and face lower rates of involuntary dismissal or termination.

In a final step, I assess how equalizing selection processes across partisan and racial groups at each stage of the selection pipeline could hypothetically impact the representativeness of the NYPD. I use simple counterfactual analyses to estimate the potential increase in the number of Democrats and non-Whites on the NYPD payroll under scenarios where disparities in applications rates, hiring rates, career progressions, and retention rates are eliminated. The estimates suggest that equalizing hiring rates between partisan and racial groups is the most effective lever to enhance the NYPD's representativeness. If the NYPD were to hire Democratic and Black applicants at equal rates as Republicans and Whites, the agency could hypothetically increase the recruitment of Democrats and Blacks by up to 61% and 27%, respectively.

This project is primarily descriptive, following important calls for larger-scale quantitative description (Gerring, 2012). While we cannot ascribe causal meaning to the identity markers studied here (e.g., it remains unclear whether Democrats and non-Whites face steeper career progression *because* of their partisanship and race), a richer descriptive understanding of bureaucratic selection processes has two important benefits. First, it enhances our ability to theorize about when and how representation improves bureaucratic performance. A substantial body of research examines the effects of bureaucratic representation on behavior and policy outcomes (e.g., Bradbury and Kellough (2011); White et al. (2015); Ba et al. (2021, 2025); Harvey and Mattia (2022)). Yet, the conditions and mechanisms by which representation influences performance are often under-theorized, leading to mixed empirical findings (Meier, 2018). Understanding the *origins* of representation is critical to address this lacuna because the same level of demographic composition could produce different outcomes depending on how that composition is achieved. Second, for policy-makers, agencies, and scholars committed to increasing the representativeness of local bureaucracies, I illuminate which selection processes should be targeted to improve the selection and retention of

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under-represented groups in local bureaucracies, particularly law enforcement.

This research advances our understanding of bureaucratic representation and stratification in three key ways. First, it identifies multi-stage selection dynamics rather than focusing exclusively on entry points. While a growing literature on the "hidden curriculum" in meritocracies emphasizes barriers at the examination stage (Riccucci and Riccardelli, 2015; Kuipers and Sahn, 2022; Kuipers, 2023), this article demonstrates that significant representational gaps can emerge after candidates have passed exams, particularly during hiring. Second, it highlights the role of agency-specific organizational cultures in mediating formal civil service rules. Variation across agencies operating under identical civil service rules suggests that seemingly neutral selection processes interact with agency cultures to produce different representational outcomes. Third, it incorporates bureaucratic hierarchy and temporal dynamics as central to understanding representation. Bureaucratic representation is not simply determined at the point of entry but evolves through career-long processes of promotion, assignment, and attrition. By examining these career trajectories, this research reveals how initial disparities can compound over time through institutional mechanisms of selection.

2   Existing Perspectives on Bureaucratic Misrepresentation

A large literature spanning political science, public administration, and economics emphasizes the importance of having a bureaucracy that reflects the composition of the population it serves. This literature rests on several key premises: bureaucrats wield significant power and discretion in shaping service provision and policy-making (Meier, 1975); bureaucracies often favor more privileged segments of society, who have the necessary resources to mobilize politically and ensure favorable outcomes from the state (Riccucci and Ryzin, 2017; Meier, 2018); and centralized political control over bureaucracies is often too weak to ensure bureaucratic responsiveness to the diverse interests within democratic societies (Meier, 2018).

The overarching claim is that achieving passive representation—where the bureaucracy mirrors relevant demographic attributes and social identities of the population it serves—can help address this lack in bureaucratic responsiveness and improve public service provision, particularly for marginalized groups (Kingsley, 1944; Meier, 1975). Bureaucratic agents who share the demographics of the general population (passive representation) are more likely to behave in ways that benefit citizens with those same traits due to shared values and identities (active representation) (Meier, 1975). A better representation of constituencies is also expected to improve citizens' trust in bureaucracy and government more broadly (symbolic representation) (Riccucci et al., 2014).

A substantial body of research confirms the underrepresentation of demographic minorities among US federal, state, and local bureaucracies (Meier, 1975; Riccucci and Saidel, 1997; Ba et al., 2025). Additionally, this research largely corroborates the positive effects of a representative bureaucracy, both at the individual and agency level (see Bishu and Kennedy (2020) for a review and Ding et al. (2021) for a meta analysis).[3] These benefits are especially pronounced for street-level bureaucrats, including public school teachers (Nicholson-Crotty et al., 2016), judges and correction officers (Bradbury and Kellough, 2011; Harris, 2023), as well as police forces (Riccucci et al., 2014; Miller and Segal, 2018; Ba et al., 2021), where effective oversight of bureaucratic discretion is difficult and bureaucrat-citizen interactions are frequent. For example, Ba et al. (2021) show that Black, Hispanic and female officers in Chicago use force less often on the same shift and patrol assignment, especially against Black civilians and in majority-Black areas.[4] Recent work also highlights that the partisan identities of street-level bureaucrats have instrumental implications for how they do their jobs. For example, when incarceration is politically salient, Democratic correction officers are more

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[3]Yet, important aspects of the theory remain underdeveloped and some empirical findings remain inconclusive (Shjarback et al., 2017; Meier, 2018; Garner et al., 2020).

[4]This body of work does not imply that simply increasing passive representation among police will necessarily reduce racial disparities in policing outcomes. As research on the *perceptions* of representativeness and the importance of local contexts for policing shows (Brunson and Gau, 2015; Benton, 2020; Socia et al., 2021), the link between the representativeness and performance of police departments is complex, and more work is needed to determine how macro-level socioeconomic and institutional factors interact with the effect of officer identity.

likely to support rehabilitative models and less likely to favor punitive models of incarceration than their Republican counterparts (Lerman and Page, 2015). Similarly, Democratic police officers make fewer traffic stops and arrests, use force less often, and exhibit smaller racial disparities than Republican officers (Donahue, 2023).[5]

To explain the dominance of certain partisan and racial groups in bureaucracies, existing work has primarily focused on two mechanisms. First, scholars have highlighted the role of political turnover and politicians' ability to influence bureaucratic staffing, both in the US (Bertelli and Lewis, 2012; Doherty et al., 2018, 2019; Bolton et al., 2020; Aneja and Xu, 2021; Spenkuch et al., 2023; Goehring, 2024) and other electoral democracies (Xu, 2018; Colonnelli et al., 2020; Fiva et al., 2021; Akhtari et al., 2022; Toral, 2022). Under this mechanism, politicians use their appointment power to shape bureaucratic composition by selecting co-partisans or demographically similar bureaucrats who share their policy preferences. However, this explanation does not necessarily apply to bureaucratic selection in US cities, including in NYC. Strong civil service protections with strict hiring and promotion rules ensure bureaucrats maintain a high level of independence from political control. Additionally, with the majority of elected officials in NYC consistently being Democrats, traditional explanations for partisan selection through political cycles become less relevant.

A second stream of work emphasizes the "hidden curriculum" of examination-based systems to explain why even professionalized bureaucracies fail to represent their jurisdictions. In the US, scholars studying the effect of Progressive Era reforms have criticized civil service reforms for their unstated intent to purposefully advantage middle- and upper-class, native born whites through written exams (Hofstadter, 1955; Shefter, 1993).[6] Research has identified several mechanisms through which seemingly neutral merit-based exams reproduce existing societal inequalities. Educational disparities create significant barriers as candidates

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[5]However, Ba et al. (2025) find little difference between Republican and Democratic officers in Chicago and Houston, after accounting for multiple comparisons.

[6]But see Kuipers and Sahn (2022) for an evaluation of this claim, showing that, contrary to traditional narratives, foreign-born whites were often underrepresented in municipal government before reforms, and civil service reforms in some contexts actually "bolstered the representation of members from foreign-born constituencies who had previously been locked out of government jobs."

from marginalized communities often lack access to the same quality schooling as their more privileged counterparts (Kuipers and Sahn, 2022). The growing industry of test preparation services for civil service exams presents financial barriers that further disadvantage lower-income applicants (Kuipers, 2023). Additionally, examination content itself often contains built-in advantages for applicants from particular backgrounds, with questions that favor those with certain educational experiences (Portillo et al., 2020). As a result, the validity and effect of civil service exams has been questioned, with some scholars concluding that "It is the use of written exams that has perhaps been the biggest obstacle for police and fire departments to achieve social diversity based on race and ethnicity" (Riccucci and Riccardelli, 2015). While the hidden curriculum perspective offers important insights, it focuses predominantly on entry exams and initial selection, neglecting the multistage nature of bureaucratic selection processes.

3 Extending the Hidden Curriculum: Representation Gaps Across Bureaucratic Careers

This study offers a different framework for understanding how bureaucratic representation in meritocracies is shaped through multiple interlocking mechanisms across various stages of selection. While the hidden curriculum literature focuses primarily on written entry exams, and political theories emphasize appointment power and political turnover, I propose that bureaucratic stratification emerges from the interaction of formal and informal selection institutions throughout bureaucrats' careers.

3.1 Attraction

Scholars have suggested that individuals self-select into bureaucracies based on perceived value alignment (Besley and Ghatak, 2005), responses to an agency's public image (Donohue, 2021), and demographic representation within the profession (Foley et al., 2008). For

instance, as policing has historically been an all-White male-dominated occupation, potential recruits among minority groups may choose not to become police officers due to perceived lack in mission-congruence. Similarly, issues of policing are highly politicized and polarized along partisan lines in the US. Republicans are substantially more likely to trust police, less likely to perceive police killings as a problem, and more likely to oppose protests and other efforts to reduce police violence in minority communities (Pew, 2016; Ba et al., 2025; Donahue, 2023). Moreover, the Republican Party increasingly leverages these pro-police sentiments in their electoral campaigns (Grosjean et al., 2023) and connections between police organizations and the Republican Party have recently intensified (Fineout, 2022; Donahue, 2023). Thus, from the pool of potential recruits, Republican and White citizens may be more likely to participate in the police recruitment process than Democratic and non-White individuals.

3.2 Hiring

Even after passing entry exams, disparities can emerge in hiring. Lengthy and complex recruitment processes may create differential voluntary attrition among candidates and skew the pool of potential hires. In the case of policing, this implies that Democratic and non-White applicants tend to self-select out of the hiring process. Indeed, based on interviews with small samples of police recruits, some studies suggest that African American police applicants view the hiring process more negatively, believe the organization is less attractive, identify less with the profession, and are more likely to withdraw from the process than White applicants (Ryan et al., 2000; Ployhart et al., 2002; Kringen and Kringen, 2014).

Stringent recruiting requirements, including degree requirements, background investigations, and psychological evaluations create additional barriers that can have disparate impacts across demographic groups. For instance, some evidence indicates that African American applicants are more likely to be disqualified during background screenings in the police hiring process, suggesting that checks for criminal histories and financial records have

a disparate impact on minority candidates (Kringen and Kringen, 2014; Kringen, 2016). While affirmative action policies of bureaucratic agencies may offset these tendencies, their effectiveness for improving minority representation remains weak (Garner et al., 2020).

3.3 Career Progression

Once hired, the formal and informal structures of bureaucracies continue to condition representation. Promotional opportunities are an essential determinant of job satisfaction and perceived fit in later stages of bureaucrats' careers (Hilal and Litsey, 2020). For law enforcement agencies, for instance, research suggests that minorities and women are particularly dissatisfied with the promotions processes in their agencies (Guajardo, 2014). Part of these differences may be explained by lower promotional aspirations among officer groups whose attributes constitute a minority in the force. Democratic and non-White bureaucrats might self-select out of the promotion process for reasons related to police culture and tokenism. The need to prove themselves in a Republican and White-dominated profession, the possible backlash against perceived preferential treatment, and a lack of role models in senior positions, could impede the ambitions of Democratic and non-White officers to seek promotion (Huff and Todak, 2023). Additionally, while departments and individual supervisors have little influence on official promotions to higher ranks, they can hinder the opportunities for horizontal and discretionary career steps of minority employees, such as assignments to specialty units.

3.4 Attrition and Retention

These dynamics might lead Democratic and non-White officers to retire earlier than Republican and White members of the force. While voluntary departures can reflect personal choice, they may also be influenced by institutional culture or lack of opportunity. For instance, officers from underrepresented backgrounds whose intentions to be promoted are thwarted may become more cynical and more likely to withdraw from the agency (Scarborough et al.,

1999).

Additionally, disciplinary practices are not always applied evenly. Differential rates of dismissal or termination among racial or partisan groups can contribute to differential attrition. Over time, these dynamics compound the initial disparities created during recruitment and hiring, leading to a bureaucracy that diverges increasingly from the populations it serves.

Taken together, this argument recognizes selection as a complex process where disparities in representation can arise at multiple stages of bureaucratic careers. By identifying these processes, this perspective provides a more nuanced critique of meritocracy that goes beyond general concerns about disadvantage in written exams. It demonstrates how seemingly neutral bureaucratic processes—from the length of hiring timelines to patterns of promotion and discipline—can systematically reproduce stratification even among candidates who have met initial merit thresholds.

4   Data and Measurement

I combine detailed administrative data on employees of New York City that allow me to trace bureaucrats' careers in government. NYC is undoubtedly unique in many ways, including its demographic composition and local political environment. Yet, it also provides a valuable case for studying selection dynamics in meritocratic bureaucracies. First, the availability of granular data on the city's bureaucrats allows for a close examination of bureaucratic selection and representativeness across and within agencies. More importantly, NYC is the largest and one of the most professionalized city governments in the US. Its formalized civil service system with strict rules for hiring and promotions ensures a high independence of bureaucrats from political influence and control. Additionally, the vast majority of elected politicians in NYC have consistently been Democrats. This lack of electoral turnover in the ruling party renders the prevailing explanation for bureaucratic partisanship (i.e., political cycles) less relevant. Instead, uncovering the career trajectories of different types of NYC's street-level bureaucrats teaches us about a more endogenous development of bureaucratic

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partisanship and representation.

I start with a roster of roughly 300,000 unique employees across the five major agencies of NYC in terms of their staff size, including the Department of Education, the Police Department, the Fire Department, the Department of Correction, the Department of Social Services, and the Department of Sanitation. This data comes from the NYC annual payroll between 2014 and 2021 and covers employees with appointment dates between 1970 and 2021.[7] To identify the various demographic attributes of these employees, I merge the employment records with the 2021 L2 voter file based on employees' last names, first names, and middle initials. I restrict possible matches to registered voters in the city's five boroughs or one of the neighboring counties of New York State since NYC agencies require their employees to reside within these areas.[8] Following related work (Ba et al., 2025), I employ the probabilistic record linkage algorithm by Enamorado et al. (2019) and retain all matches with a posterior match probability of at least 0.7.

To study the specific drivers of selection among NYPD officers, I then add information on the career trajectories of about 58,000 uniformed police employees, including appointments, promotions, and retirements, from official records published in the City Record newspaper since 2014.[9] For a cross-section of 33,000 active officers (as of October 2021), I am further able to add information on their exact assignment, their arrest history, as well as their departmental awards from the official NYPD profiles.[10] Finally, I obtain data on roughly 96,000 entry-level and 5,700 promotion exams for the NYPD between 2014 and 2021, which I match to the L2 voter file and the NYPD officers on the payroll. This allows me to assess the attributes of both hired and non-hired NYPD aspirants.[11] I link these administrative

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[7]https://data.cityofnewyork.us/City-Government/Citywide-Payroll-Data-Fiscal-Year-/k397-673e; I identify unique employees based on the last name, first name, middle initial, and appointment date.

[8]Technically, NYC also allows employees to reside in Putnam and Orange County. Yet, because these counties are further away from NYC boundaries and relatively small, I exclude these to reduce the risk of false positive matches.

[9]https://www.nyc.gov/site/dcas/about/cityrecord-editions.page

[10]https://nypdonline.org/link/2

[11]Note that the exam data does not provide information on *all* applicants, but instead contains individuals who successfully passed the exam (i.e., those with a score of 70/100 or above).

data probabilistically based on individuals' full names and other employment details, where possible, in all these merging procedures. Appendix A describes these different matching procedures in more detail. As Figure A1 shows, I can correctly match most employees and records with a very high probability—the median posterior probability of a match is above 0.95 across all matching procedures.

To measure the partisanship and race of individuals in my data, I rely on the information in the L2 voter files. For partisanship, I focus on the three main categories included in L2: Democrat, Republican, and Non-Partisan. Together, these comprise 96% of the 7,940,000 voter registrations in NYC and its surrounding counties. Note that the L2 information on partisanship in New York—unlike for other US states—is based on official registration records and does not require imputations. However, I must rely on L2's proprietary imputation algorithm to measure bureaucrats' and citizens' race. To code racial categories of registered voters, L2 combines the given name, surname, and demographics of a voter's census block for their inference. To assess the validity of the L2 race categories, I compare my estimates against (1) official counts of race groups reported by the NYPD to the 2020 Law Enforcement Management and Administrative Statistics (LEMAS) survey and (2) measures of employees' race using Bayesian predictions (Imai and Khanna, 2016) in Appendix A.7.

5 Representativeness of NYC's Bureaucracy

I first compare the demographic composition of street-level bureaucrats and civilians in their jurisdictions along partisanship, race, and gender. Figure 1 displays results across NYC's six major agencies. Most agencies diverge from their jurisdictions regarding these attributes, albeit in different directions. Relative to the NYC voting population, the police, fire, and sanitation departments have substantially smaller shares of Democratic, non-White, and female members. For instance, while almost 70% of registered voters in NYC are Democrats or non-White, this only applies to 46% and 42% of front-line workers at the fire department, respectively. Interestingly, the two law enforcement agencies considered here (i.e., the

Figure 1: Share of Demographics, Agencies vs. Registered Voters in NYC
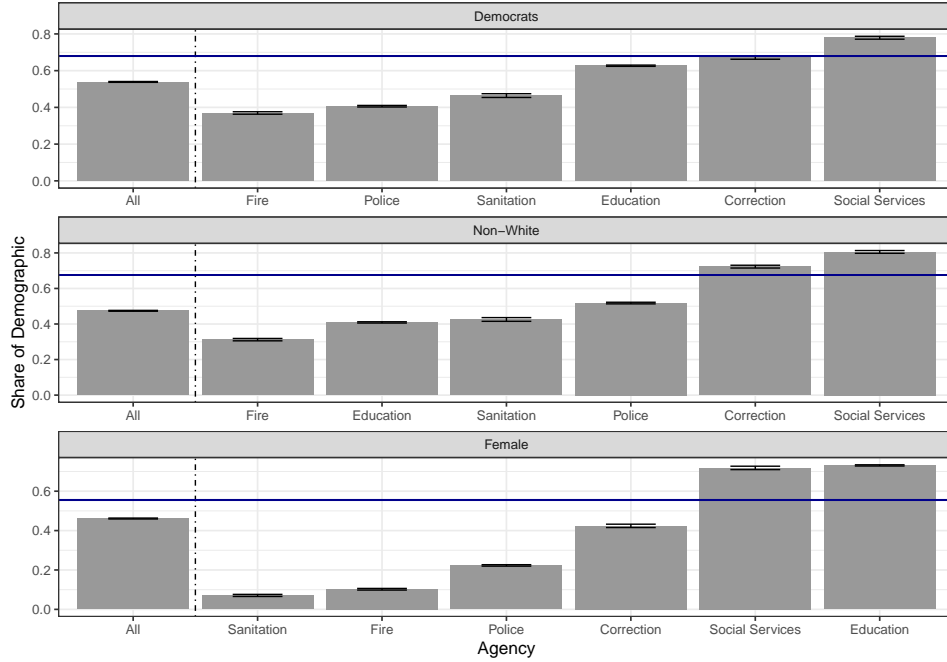
The blue line represents respective share of demographic among NYC voters. Agency employees only include uniformed/public facing employees plus leadership (i.e., I exclude administrative and other agency staff). Agency personnel includes individuals living in NYC's five boroughs and neighboring boroughs, while NYC citizens are restricted to NYC's five boroughs. Agency estimates are weighted by the posterior probability of matches between agency payrolls and the voter file.

police and correction departments) differ in their representativeness. The NYPD substantially underrepresents Democrats by 28 percentage points and non-Whites by 15 percentage points. The Department of Correction, in contrast, closely matches NYC's voters in terms of partisanship and even *overrepresents* non-Whites. Similarly, the Department of Education and the Department of Social Services skew more Democratic, non-White, and female than civilians in their jurisdictions.

These pooled results of representativeness mask some interesting trends across hierarchies, location, and time. Figure 2 illustrates that the share of Democrats, non-Whites, and women is generally highest among entry-level positions across agencies. Their representation among supervisory levels is often substantially lower, although some agencies have managed to appoint a larger number of Democrats and women to executive leadership posts. Turning to descriptive representation at the NYPD in more detail, Figure 3 shows that Democrats

Figure 2: Share of Demographics, by Agencies and Ranks
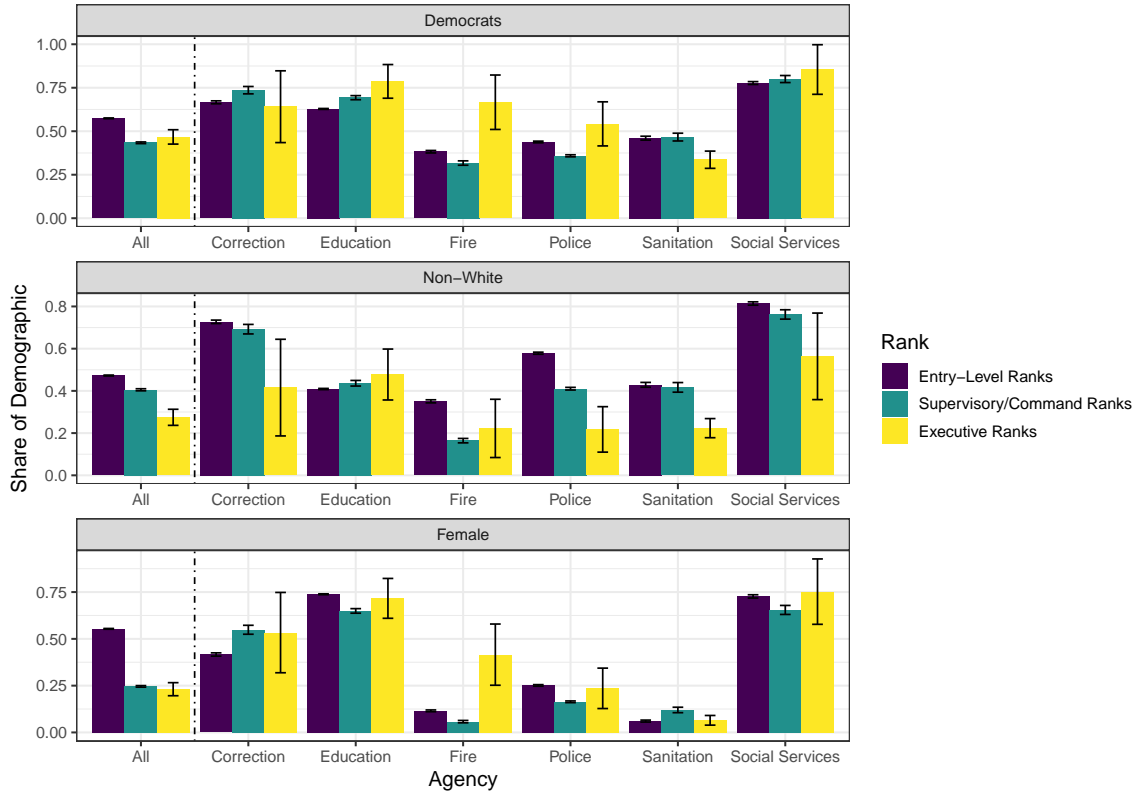
Entry-level ranks: involve direct operational or supportive roles without supervisory or leadership responsibilities; Supervisory/Command ranks: involve some level of oversight, management, or leadership of a team or specific operations; Executive ranks: highest ranks within the agency, often involving strategic leadership and decision-making for the entire organization or large segments of it; Agency estimates are weighted by the posterior probability of matches between agency payrolls and the voter file.

are underrepresented, and Republicans are overrepresented across all NYC boroughs, even in areas where Democrats are a minority among civilians. Yet, gaps between the racial composition of citizens and NYPD officers are particularly stark in majority-Black communities, including the Bronx and Queens, and in areas with higher crime rates (see Figure A8). Yet, considering the trends in the partisan and racial composition of NYPD employees since 2014, Figure A9 indicates that the share of Republicans and White officers declined slightly, thus closing the representational gaps vis-à-vis their constituencies somewhat.

Figure 3: Share of Demographics, Police vs. Registered Voters in NYC
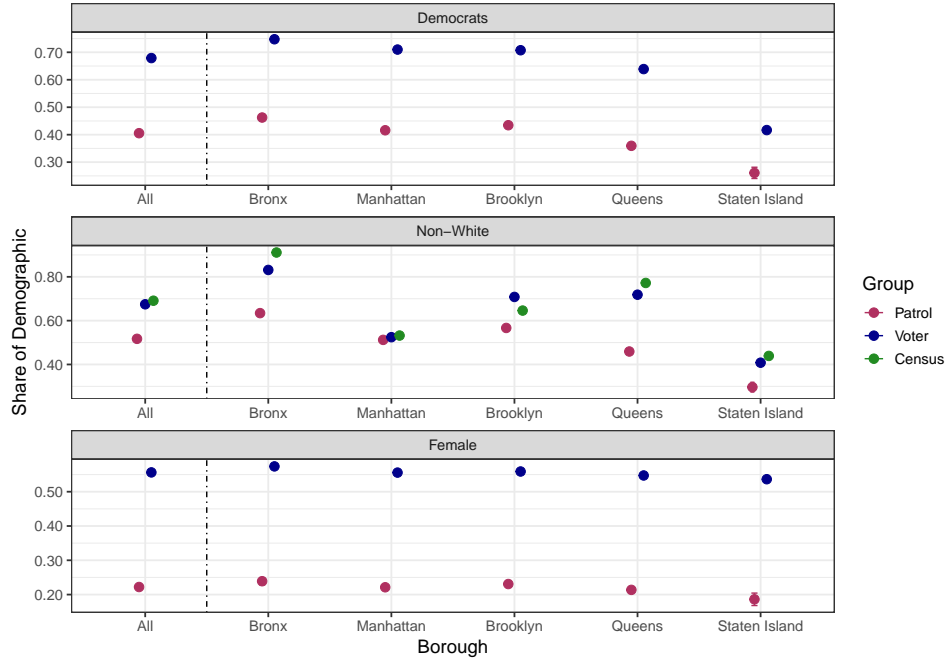
Uniformed police employees and traffic enforcement agents are assigned to boroughs based on their work location in their final year on the payroll. Agency estimates are weighted by the posterior probability of matches between agency payrolls and the voter file.

6 Dynamics of Selection

What drives the dominance of White and Republican employees at NYC's police department? I now unpack the dynamics of descriptive (mis)representation by tracing the types of individuals selecting in and out and the career trajectories of different types of officers at the NYPD. To reiterate, I focus on the selection dynamics among race and partisan groups, but acknowledge that these are bundled categories and the descriptive analyses by no means allow for a causal interpretation of the selection dynamics as a function of these demographics.[12] Particularly, while the regression analyses account for broader institutional-level confounding factors through various fixed effects (e.g., cohort, year and exam-score fixed effects), my data forces me to remain largely agnostic about micro-level differences across

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[12]Unsurprisingly, Figure A7 shows that race, partisanship, and gender are strongly, but not perfectly correlated among NYPD officers in my sample.

groups that may constitute the mechanisms for the disparities I document (e.g., differences in public sector motivation, personal networks, previous experiences).

6.1 Selection Into NYPD

To become a police officer at the NYPD, applicants need to be between 21 and 35 years old, have earned 60 college credits with a minimum GPA of 2.0 or 2 years of military service, must live within NYC or one of the neighboring boroughs, and need to pass a check for "character and satisfactory background," which screens for arrest records, convictions, and discharge of employment. The hiring process entails a multi-stage process. Candidates who satisfy the basic selection criteria first take a written exam offered by the Department of Citywide Administrative Services which covers 9 cognitive abilities. Only candidates with a minimum score of 70% are placed upon an eligible civil service list for appointment, with better performing candidates being placed further up on the list. Once a list number is reached, candidates advance to a medical exam, written and oral psychological exams, the background character investigation, a physical test, and a drug and alcohol screening. These additional examinations are all administered by NYPD directly. After successful completion of this process, candidates are then registered for the 6-month police academy, which constitutes the last prerequisite for their hiring.

To follow the process of recruitment at the NYPD empirically, Figure 4 shows the share of party and racial categories among three different groups: (1) voters in counties eligible for employment at the NYPD[13], (2) all candidates who passed the NYPD entrance exam, and (3) those applicants who were successfully hired and appointed by the NYPD. Considering partisanship first, it is clear that the pool of applicants already underrepresents Democrats compared to the possible pool of voters (57% vs. 48%) and overrepresents Republicans (19% vs. 12%). Yet, this representational gap is even larger between *hired* exam takers and NYC's voters: Democrats make up only 37% of hired candidates, and Republicans account for 29%

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[13]I rely on age and residency information in the L2 voter data. For education, I use Bayesian imputation with census data from the 2019 American Community Survey based on the census tract.

Figure 4: Eligible Citizens, Police Exam Takers, Hired Exam Takers - NYPD
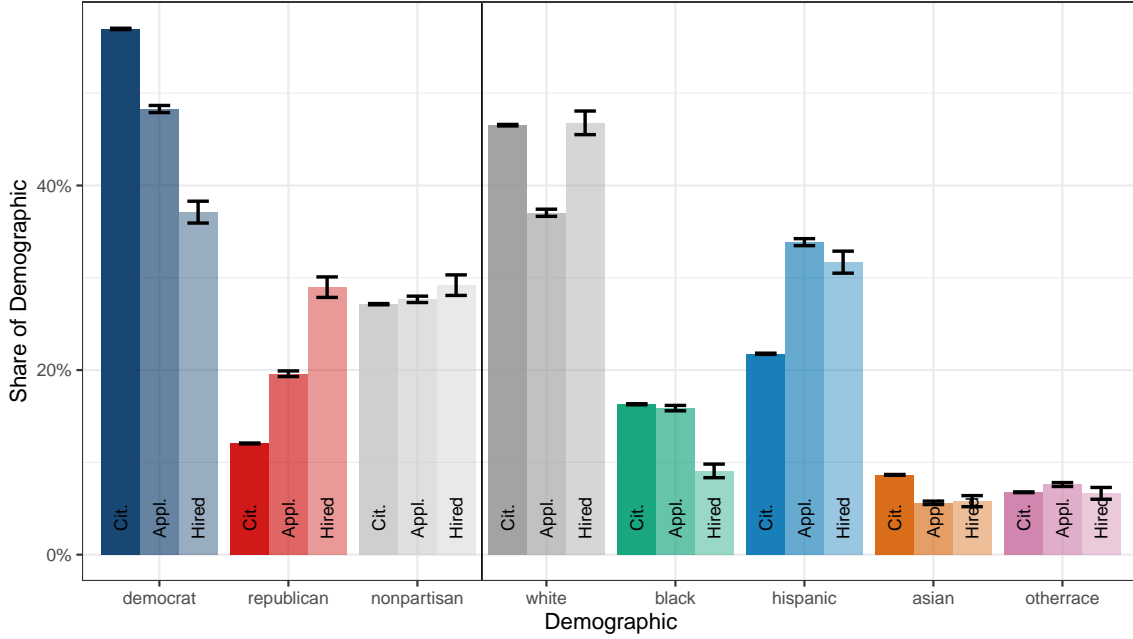
The three bars among each partisan and racial group represent (from left to right) (1) share among NYC voters, (2) share among police exam takers, and (3) share among hired exam takers. Voters and exam takers are matched on age. All estimates are weighted by posterior probability of a match (L2 and exam data).

of successful applicants. Similar trends are observed for race, where the share of Whites increases by 10 percentage points between the application and the hiring stages.[14] These higher hiring probabilities for Republican and White applicants remain after accounting for exam difficulty and exam performance.[15] As Table 1 shows, among candidates of the same exam and similar scores, Republicans and White candidates are five percentage points and two percentage points more likely to be appointed than Democratic and Black applicants, respectively. Figures A11 and A12 further indicate that these gaps persist across exam performance, and that among hired exam-takers, non-Whites and Democrats do not have substantially higher scores. This suggests that these selection dynamics do not necessarily lead to a positive selection of minority and Democratic candidates based on ability.

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[14]One may be concerned that this result is an artifact of a low-quality match between exam takers and appointed individuals (i.e. I am only able to identify 10% of exam takers in the appointments). However, when I compare exam takers to *all* appointed officers in Figure A10, the patterns are very similar or even starker.

[15]Note that White candidates achieve slightly higher scores on the exams (see Table A6).

Table 1: Differences in Hiring By Exam Taker Characteristics

	Model 1	Model 2	Model 3	Model 4
Republican	0.06***		0.05***	0.05***
	(0.00)		(0.00)	(0.00)
Non-Partisan	0.02***		0.02***	0.02***
	(0.00)		(0.00)	(0.00)
Black		−0.04***	−0.02***	−0.02***
		(0.00)	(0.00)	(0.00)
Hispanic		−0.02***	−0.00	−0.00
		(0.00)	(0.00)	(0.00)
Asian		−0.01*	0.00	0.00
		(0.01)	(0.01)	(0.01)
Other Race		−0.02***	−0.00	−0.00
		(0.00)	(0.00)	(0.00)
Examscore (80-90)	0.02***	0.01***	0.01***	
	(0.00)	(0.00)	(0.00)	
Examscore (90-100)	0.03***	0.03***	0.03***	
	(0.00)	(0.00)	(0.00)	
Exam FE	Yes	Yes	Yes	No
Exam*Score Bin FE	No	No	No	Yes
Mean of DV	0.10	0.10	0.10	0.10
Adj. R^2	0.06	0.06	0.06	0.06
Num. obs.	62591	60460	57820	57820

Linear probability regressions, weighted by the posterior probability of a match between exam data and voter file, and between exam data and appointments. HC1 standard errors are in parentheses. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

These trends are particularly striking when comparing them to the corresponding figures for the Department of Corrections, where Democratic and non-White individuals are over-represented at the exam stage and remain largely the same at the hiring stage (see Figure 5).

What could explain these differences in selection into the force *after* applicants have already passed the exam at the NYPD? The recruitment process at the NYPD can be lengthy and uncertain. After a written exam is administered, it generally takes the Civil Service Commission 9-12 months to establish a list from which agencies hire. After an individual is

Figure 5: Eligible Citizens, Police Exam Takers, Hired Exam Takers - DoC
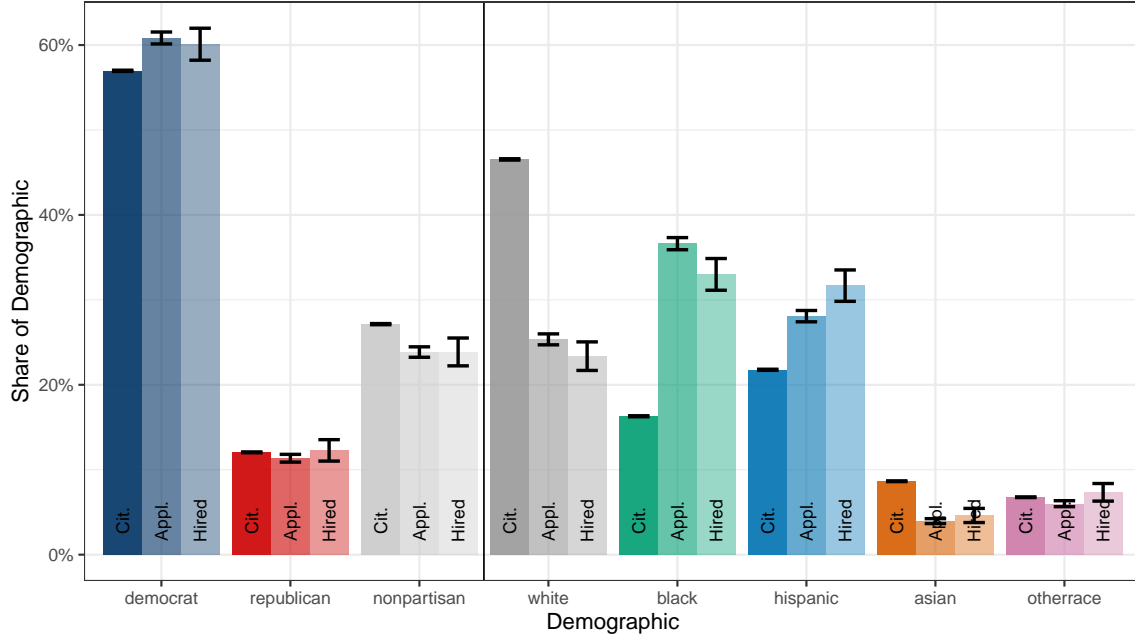
The three bars among each partisan and racial group represent (from left to right) (1) share among NYC voters, (2) share among correction exam takers, and (3) share among hired correction exam takers. Voters and exam takers are matched on age. All estimates are weighted by posterior probability of a match (L2 and exam data).

given a list number, the average time it takes a candidate to be hired is one year, after which applicants must still complete six months of police academy training. As Figure 6 shows, the hiring process at the NYPD is substantially longer than at other agencies, including the Corrections Department. Additionally, compared to other agencies, a substantially larger number of applicants gets disqualified and appeals the decision in the NYPD hiring process, mostly during the psychological and medical examinations, and evaluations of candidates' character (see Figure 7).

Figure 6: Length of Hiring Process
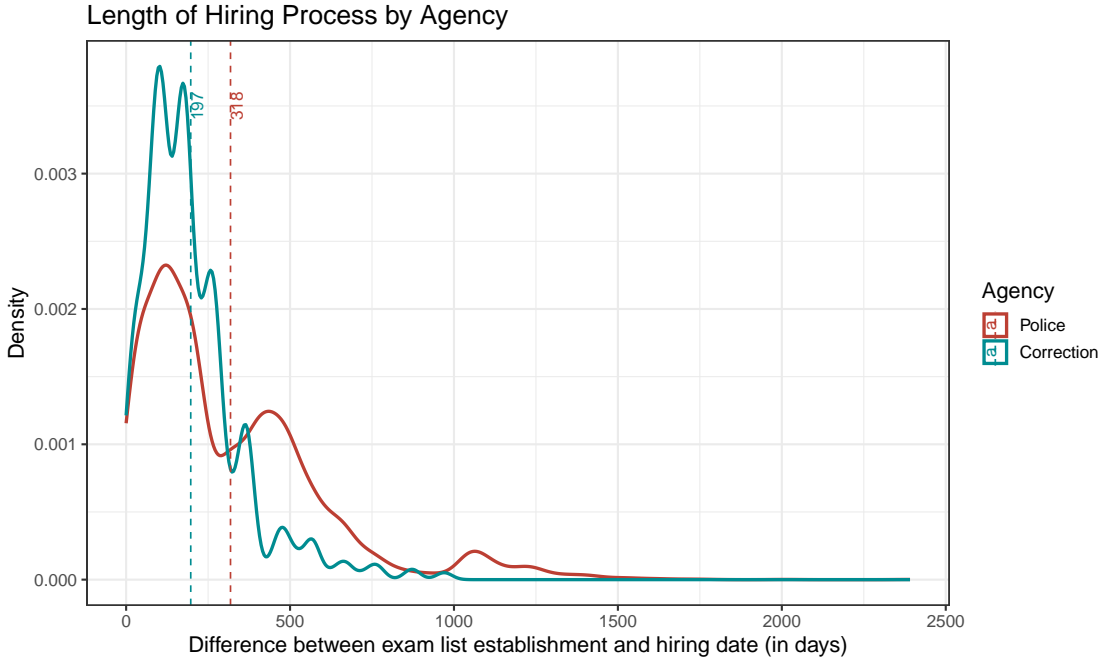
Note: The vertical lines indicate mean length of agency-specific hiring processes.

Figure 7: Disqualification Appeals by Agency
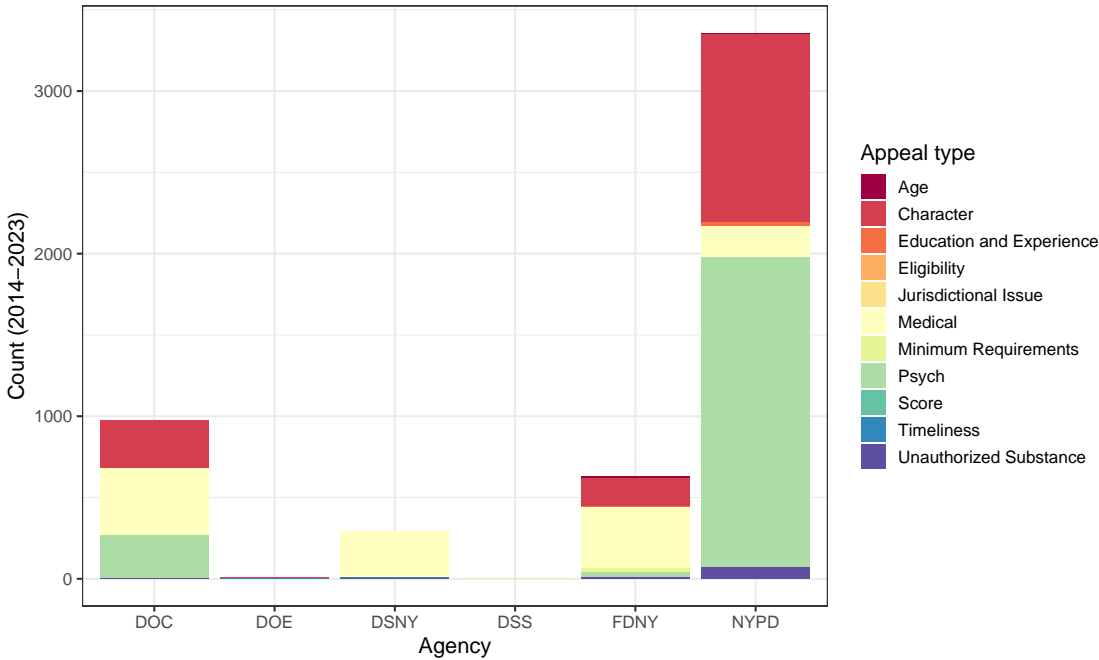
The lengthiness and uncertainty of the NYPD's recruitment process may contribute to

differential attrition across groups of applicants. Republican and White applicants may be more committed to the police profession and face fewer hurdles in the hiring process at the NYPD, both of which reduces their likelihood to reconsider other career options throughout this process. While the data does not allow for a direct test of this conjecture[16], Column 1 of Table 2 indicates that Democratic and non-White candidates are more likely to take another civil service exam within a year, suggesting that relative to Republicans and White applicants, they may see policing as just one viable appointment within the NYC bureaucracy.[17] Column 2 further suggests that these candidates, particularly Blacks and Hispanics, are significantly more likely to be hired in NYC's Department of Corrections.

Additionally, the data suggests that income-based constraints might play a role in the pre-hiring attrition. I obtain information on each exam taker's income based on L2's estimated household income and per capita income matched by census tract from the 2019 American Community Survey. Figure A13 indicates that non-hired exam takers and those taking another civil service exam are clustered among the lower end of the income distribution. Figure 8 further suggests that these tendencies are stronger among non-White and Democratic exam takers, and largely hold when accounting for exam characteristics. Notably, the income differences between *hired* White and Black (Democratic and Republican) exam takers are smaller than between their *non-hired* counterparts, suggesting that these trends lead to a positive selection among Black and Democratic candidates based on income.

Finally, I examine whether personal networks in law enforcement influence hiring outcomes by providing applicants with the necessary knowledge, motivation, and preparedness to endure the hiring process. Using applicants' home address and surnames as proxy measures, I assess whether living in a census tract with higher concentrations of NYPD officers or recent appointees, or sharing a last name with a retired officer, affects hiring probabilities. As Figure 9 reveals that these network measures significantly predict hiring outcomes,

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[16]The NYPD is unwilling or unable to share data on police academy graduates (FOIL-2023-056-02128).

[17]Note that I exclude all candidates who manage to get hired within that year to ensure these results are not just mechanical.

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Table 2: Differences in Alternative Careers

	Model 1	Model 2
	Other Exam	Corrections Hire
Republican	−0.02***	−0.001
	(0.00)	(0.001)
Non-Partisan	−0.01***	−0.001
	(0.00)	(0.001)
Black	0.06***	0.009***
	(0.00)	(0.002)
Hispanic	0.02***	0.007***
	(0.00)	(0.001)
Asian	0.04***	0.002
	(0.01)	(0.002)
OtherRace	0.05***	0.002
	(0.01)	(0.002)
Examscore (80-90)	−0.00	−0.004*
	(0.00)	(0.002)
Examscore (90-100)	0.00	−0.006***
	(0.00)	(0.002)
Exam FE	Yes	Yes
Mean of DV	0.13	0.012
Adj. R^2	0.01	0.030
Num. obs.	53872	52194

Linear probability regressions, weighted by the posterior probability of a match between the respective data sets. Dependent Variables: Taking another civil service exam within a year of NYPD exam (Model 1); Being appointed as corrections officer (Model 2). HC1 standard errors are in parentheses.
***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

with effects varying substantially across demographic groups. The advantages conferred by personal connections are markedly stronger for White and Republican applicants. For these groups, a doubling of the number of current NYPD officers residing in their neighborhood correlates with a 3% increase in hiring probability—a substantial effect considering the average hiring rate is only 10%. In contrast, Democratic and Black applicants show no statistically significant benefit from such neighborhood connections. Conversely, I consider whether applicants from more crime-ridden areas of NYC face a disadvantage at the hiring

Figure 8: Predicted Household Income by Hiring Status and Groups
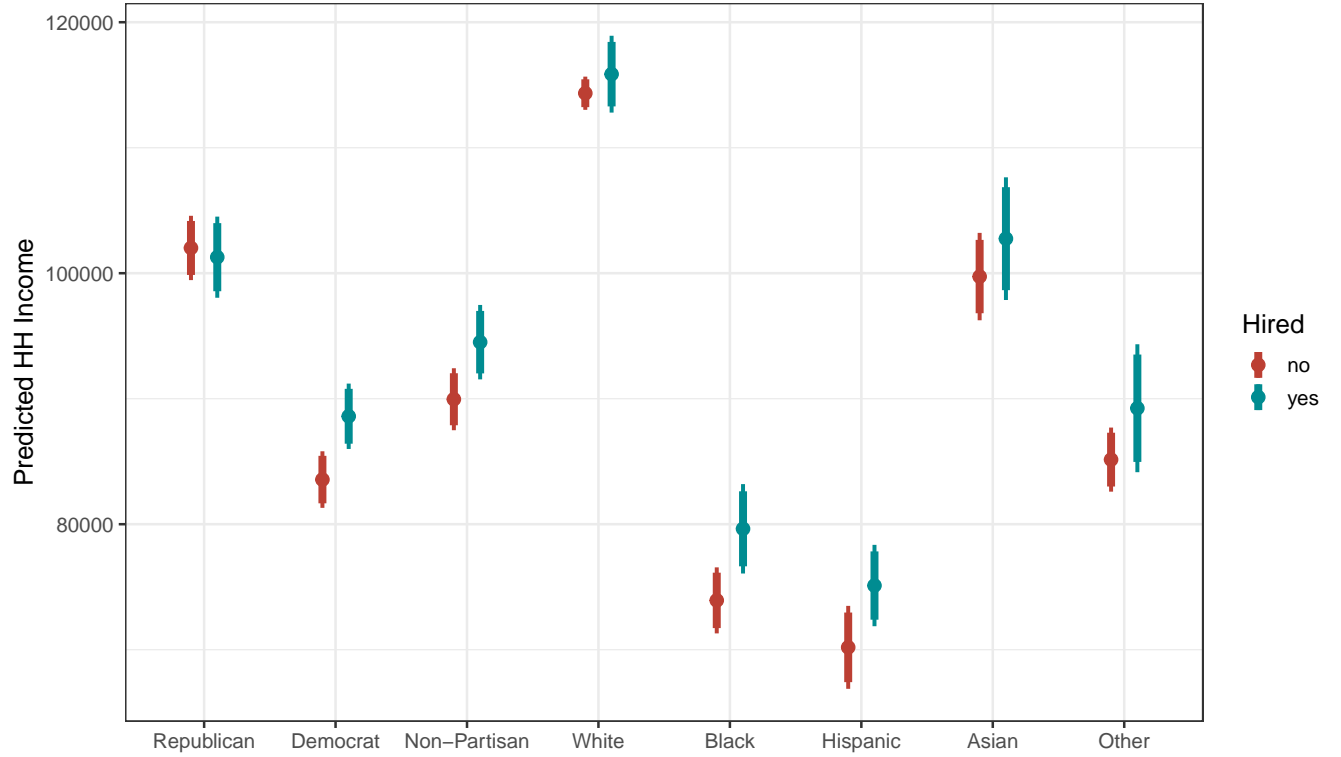
stage. The analysis reveals that Democratic and Black applicants from neighborhoods with higher arrest rates face marginally lower hiring probabilities, while other demographic groups experience no such disadvantage from their residential location. These findings suggest that informal networks may contribute to the observed disparities in who successfully navigates the NYPD hiring process.

Figure 9: Personal Networks and Hiring Probabilities
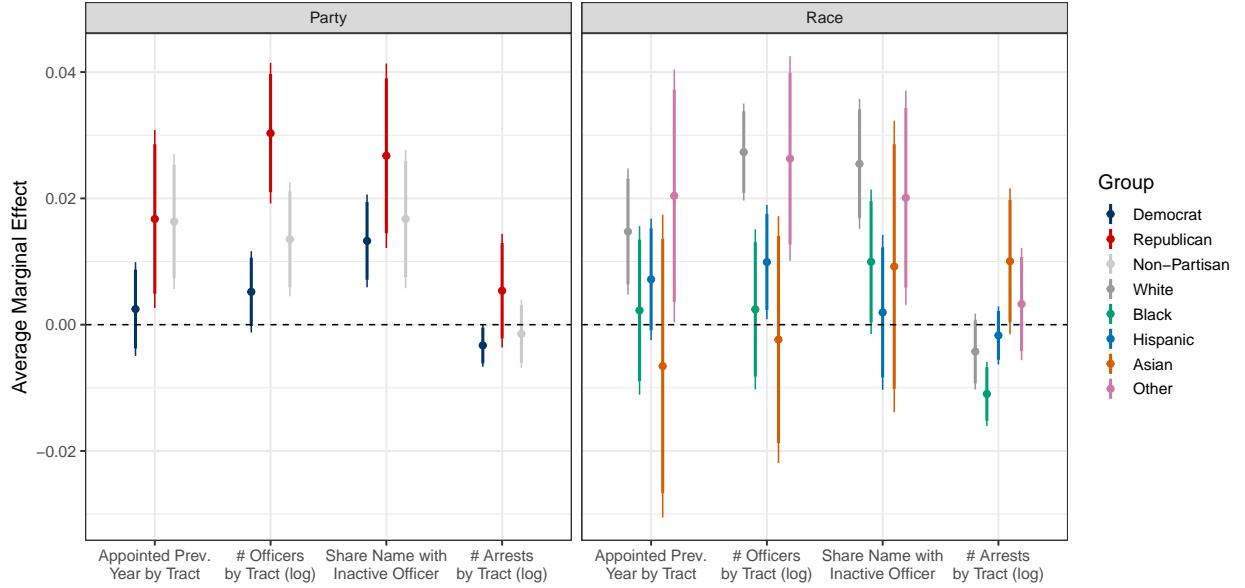
Note: All regressions include exam and score bin fixed effects. Models (1), (2), and (4) further control for the population size per tract. Model (3) controls for name commonality using 2010 census data.

6.2 Career Progression

How do assignment and promotion procedures in law enforcement further exacerbate these partisan and racial disparities in selection? Using data on all uniformed employees and traffic enforcement agents on the NYPD payroll (2014-2021), Figure 10 indicates that Democrats, particularly Black Democrats, are clustered among the lower ranks. For instance, among traffic enforcement agents 33% are Black Democrats, whereas only 6% of Lieutenants or above are Black and Democratic. For White Republicans, in contrast, these figures amount to 2% and 35%, respectively.

Yet, these distributions only provide a snapshot of the rank distribution and do not account for the fact that older cohorts of officers, who could have higher shares of Republican and White officers, may have achieved higher ranks simply due to their longer tenure. To account for this, Table 3 depicts differences in promotion probabilities across partisanship and race within the same cohorts. Models (1)-(3) only include official promotions that require

Figure 10: Share of Demographics by Police Rank
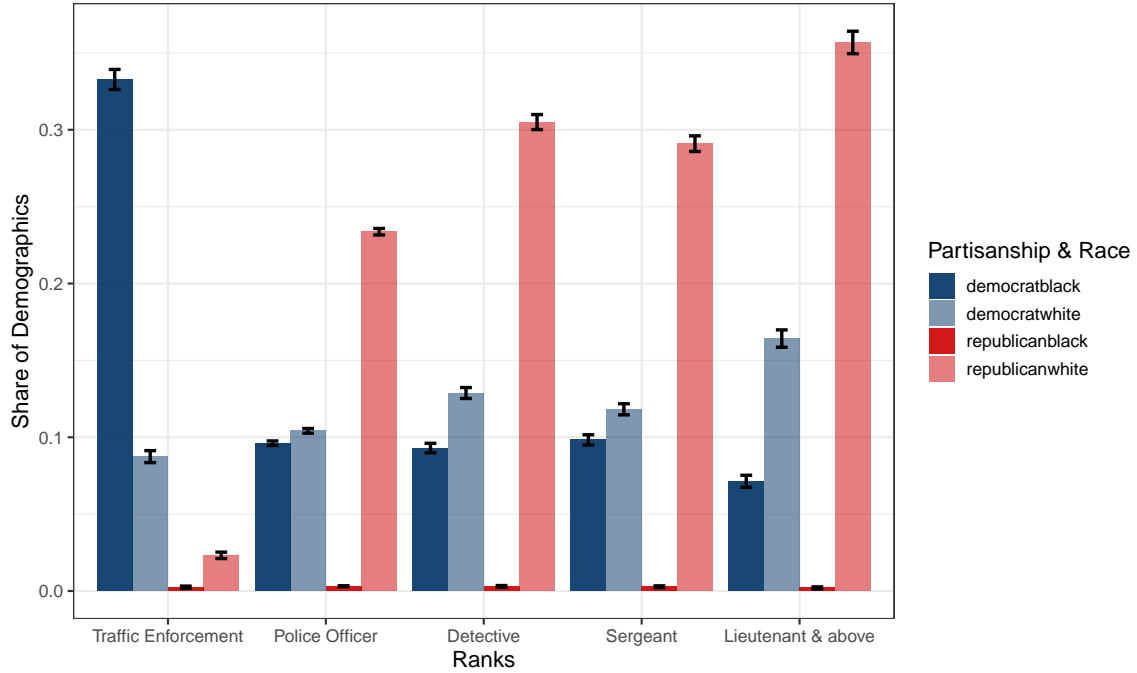
a promotion exam (i.e., sergeant and above), and Models (4)-(6) further include discretionary promotions (e.g., between detective grades). The estimates do not provide clear evidence that Republicans and Whites are significantly more likely to receive *official* promotions than Democratic and non-White officers, respectively. Additionally, Table A8 indicates that scores on the promotion exams are a strong predictor of receiving a promotion, and once we account for exam performance the small promotion gaps subside, suggesting that Republicans and Whites do better on promotion exams. As Table A7 shows, there are also no substantial gaps in promotional aspirations: Republican and White officers are not more likely to take a promotion exam throughout their tenure than Democrats and non-Whites.[18]

However, the partisan and racial gaps in career progressions are substantially larger and significant when incorporating discretionary promotions and grade changes. Republicans and Whites are estimated to be 1% and 3% more likely to be promoted than Democrats and Blacks, respectively. With an overall promotion rate of 17%, these estimates are non-trivial. Supplementary analyses in Tables A9 and A10 indicate that Republican and White officers

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[18]The exception is Asian officers, who are more likely to take promotion exams and receive promotions.

Table 3: Differences in Promotions by Officer Characteristics

|	Official Promotions			Title Changes		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Republican	0.00		−0.00	0.02***		0.01*
	(0.00)		(0.00)	(0.00)		(0.00)
Non-Partisan	0.00		−0.00	0.00		−0.00
	(0.00)		(0.00)	(0.00)		(0.00)
Black		−0.01	−0.01		−0.03***	−0.03***
		(0.00)	(0.00)		(0.00)	(0.01)
Hispanic		−0.01**	−0.01**		−0.02***	−0.02***
		(0.00)	(0.00)		(0.00)	(0.00)
Asian		0.04***	0.04***		−0.01	−0.00
		(0.01)	(0.01)		(0.01)	(0.01)
OtherRace		0.03***	0.03***		−0.01	−0.00
		(0.01)	(0.01)		(0.01)	(0.01)
Cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Exposure time	Yes	Yes	Yes	Yes	Yes	Yes
Mean of DV	0.09	0.09	0.09	0.17	0.17	0.17
Adj. R^2	0.10	0.10	0.10	0.19	0.19	0.19
Num. obs.	49558	48521	45990	49558	48521	45990

Linear probability regressions, weighted by the posterior probability of a payroll and voter file match. Level of observation: Uniformed employee. Outcome: Dummy for whether the employee received a promotion/title change between 2014 and 2021. All models control for the duration an employee is observed on the payroll since 2014 (Exposure time). HC1 standard errors in parentheses. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

are also more likely to receive departmental awards and to be assigned to prestigious elite units, including anti-terrorism and special forces. Additionally, teams headed by non-White (Democratic) leaders have lower shares of lower-ranked White (Republican) members and exhibit higher racial diversity overall (see Tables A11 and A12).[19]

In Figure 11, I further assess whether this partisan and racial seniority gap persists across officers' tenure. Interestingly, the Black-White gap endures and widens over time, whereas Democrats seem to catch up to the ranks of Republicans after 30 years on the force. One may wonder whether this is due to attrition by Black officers with better outside prospects.

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[19]These analyses use a cross-section of active officers (as of October 2021) for whom more detailed information on assignments and awards is available.

Figure 11: Seniority Gap by Years of Experience
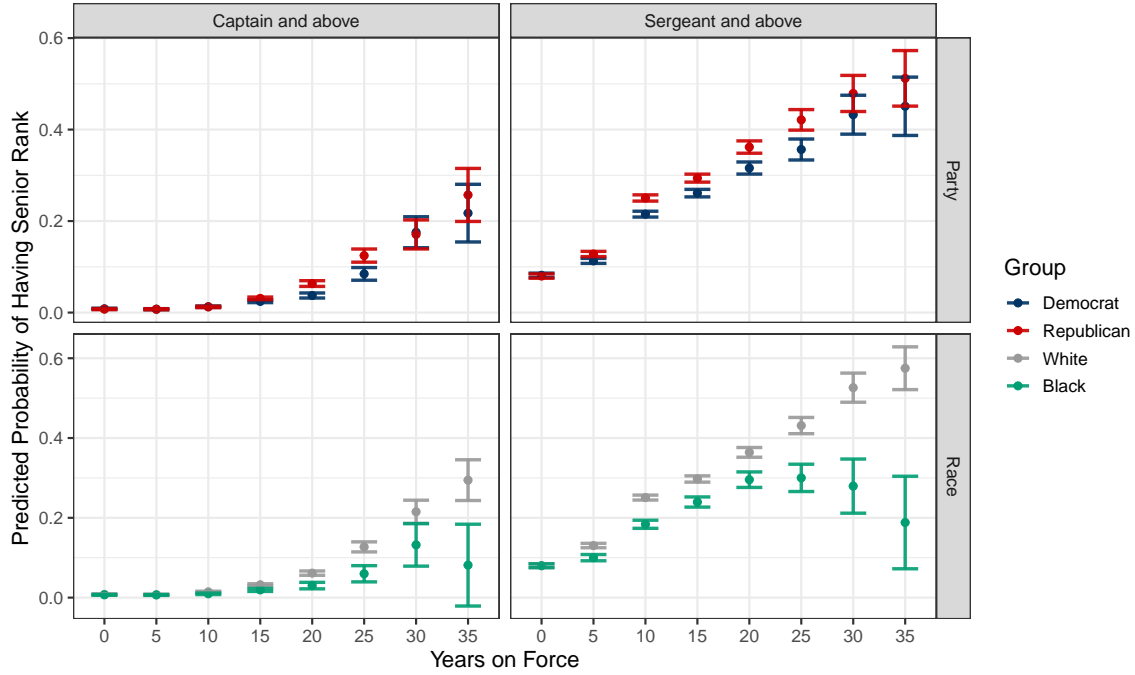
Depicted are predicted probabilities of having a senior rank, with 95% HC1 confidence intervals. All underlying regression models (LPM) include officer cohort fixed effects.

Yet, Figure A14 suggests that there is no widening gap between Black and White officers across tenure in terms of observables that might be weakly correlated with quality (i.e., the number of arrests, awards, and disciplinary records). Taken together, this suggests that Republican and White officers benefit from steeper progress along the career ladder in law enforcement.

6.3 Attrition

How do these differences in career trajectories across types of officers translate into their attrition from the force? Figure 12 depicts the distribution of years on the force at the time officers retire. Evidently, many officers retire around 20 and 25 years of service, when they become eligible for different retirement packages at NYPD. Yet, Republicans and White employees stay on the force slightly longer, often working beyond the retirement age of 20 years on the force. For instance, the median retiring Republican or White officer worked for

22.1 years, compared to 21.3 years for Democratic officers and 21 years for non-White officers. As Table A13 shows, these results hold when accounting for officers' age at appointment.[20] Further, Figure 13 illustrates that Republicans and Whites dominate the payroll, especially among longer tenured members on the force.

Figure 12: Distribution of Years on Force at Retirement
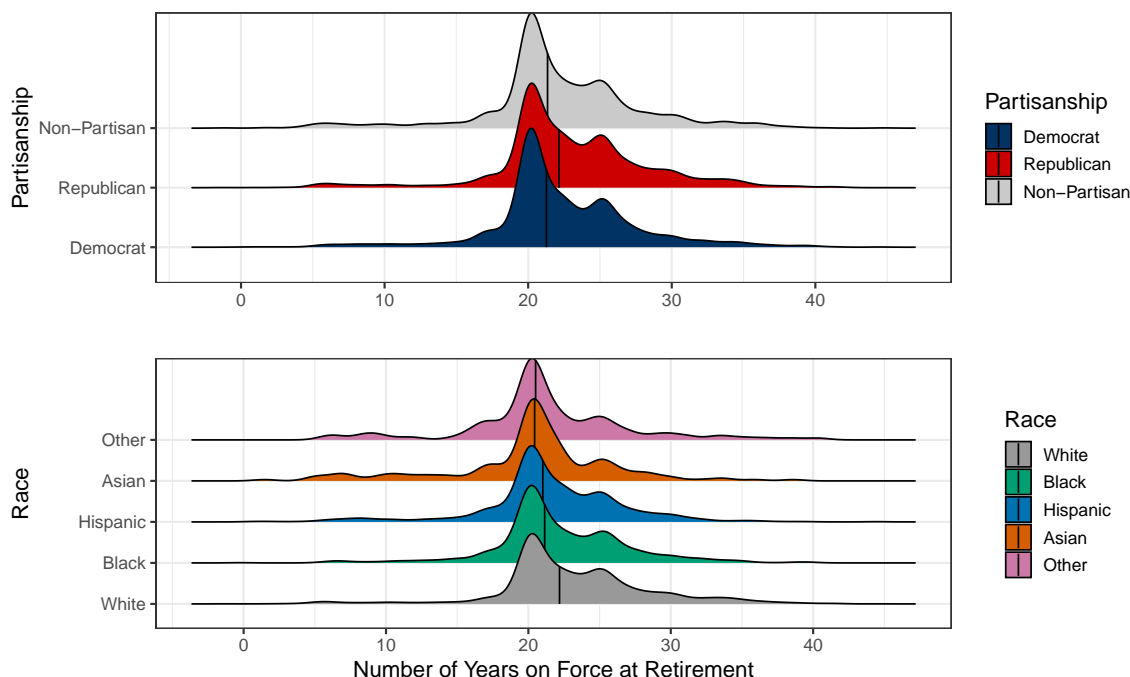
Black lines indicate median years on the force at retirement.

In addition to the timing, the reasons NYPD officers exit the force also seem to differ across partisanship and race. Across all types of officers, retirements and resignations account for the grand majority of exits (see Figure 14). However, involuntary exits (i.e., dismissals and terminations) account for significantly higher shares of exits among Democratic, Black, and Hispanic officers than for Republicans and Whites. Specifically, 2% of exiting Democrats, 3.3% of Blacks, and 2.4% of Hispanics leave involuntarily, whereas only 1.3% of Republicans and 0.9% of White officers leave due to dismissals or termination.[21]

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[20]This is particularly relevant since Republican and White officers on the payroll are on average 1.6 and 1.2 years younger at initial appointment, respectively.

[21]Figures A15 and A16 further indicate that these higher involuntary exit probabilities for Democrats and non-Whites predominantly affect early-career officers.

Figure 13: Predicted Probability of Demographic By Experience
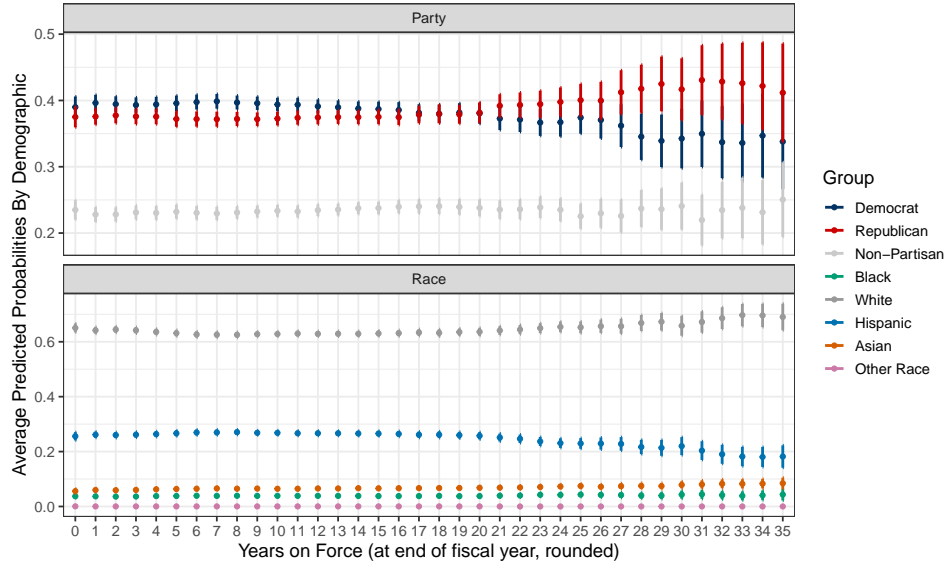
The estimates are predicted probabilities based on regressions of group indicators on experience, cohort FE and fiscal year FE. This accounts for the fact that certain cohorts are skewed in terms of partisanship and race because of their composition at the time of appointment rather than differential attrition. The covariates are fixed at their observed values for the predictions.

Figure 14: Predicted Probability of Exit Type
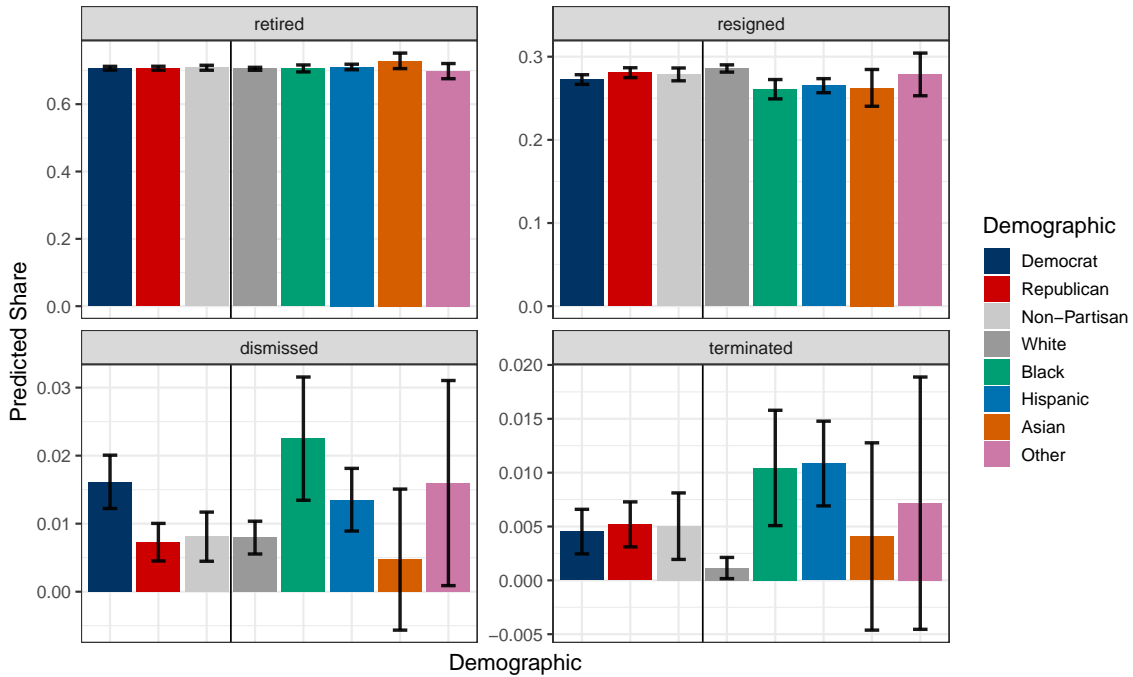
The estimates are obtained from regressions of exit type (conditional on exit) on group demographic, cohort FE and fiscal year FE. The covariates are fixed at their observed values for predictions.

7   Counterfactual Analysis

The analyses so far reveal that disparities in the representation of Democrats and non-Whites within the NYPD emerge at various stages of the selection pipeline. What is the relative impact of each stage—attraction, selection, promotion, and retention—on these representational disparities? To what extent could the NYPD hypothetically mitigate these gaps by adjusting their policies at each stage?

To address these questions, I provide a simple counterfactual analysis in the spirit of Chetty et al. (2023). This analysis estimates the potential increase in the number of Democrats and non-Whites on the NYPD payroll under scenarios where disparities in application rates, hiring rates, career progressions, and retention rates are eliminated. Specifically, I quantify the extent to which the NYPD could reduce representational gaps by equalizing selection rates at each stage, while holding other processes constant. It's important to note that this simulation is not designed to predict actual outcomes of policy interventions, as it does not account for behavioral responses or equilibrium effects that would likely occur in practice. Additionally, this exercise relies on observed differences in rates across groups that may themselves be influenced by confounding factors not captured in the data. The analysis should therefore be interpreted as quantifying the relative importance of each selection stage using observed disparities rather than isolating the causal impact of reforming selection procedures. Utilizing the estimates of application rates, hiring rates, rank assignments, and attrition rates from Section 6, I calculate these counterfactual outcomes in the following way.

Applications and Passing of First Entry Exam. Using Equation (1), I calculate the actual and the counterfactual number of appointments from underrepresented groups u (e.g., Democrats or Blacks). For the counterfactual, I assume that underrepresented members of the NYC public who are eligible to apply and pass the first entry exam would do so at the same rate as over-represented group members o (e.g., Republicans or Whites), while keeping

hiring rates unchanged.

$$\text{Entry}_u = \text{N Eligible}_u \times \text{ApplyRate}_u \times \text{HiringRate}_u \tag{1}$$

$$\text{Counterfactual Entry}_u = \text{N Eligible}_u \times \text{ApplyRate}_o \times \text{HiringRate}_u \tag{2}$$

This analysis is subject to a few important caveats: First, for partisanship, I have to approximate the number of eligible individuals using information on the number of *NYC voters* in each group who satisfy the minimum application requirements at the NYPD (qualifying age, education, residency). For race, I use estimated counts of eligible citizens by group from the 2019 Census Bureau's American Community Survey (ACS).[22] Additionally, due to the nature of my exam data, the variable *ApplyRate* inherently combines both the willingness to apply and the ability to pass the entry exam.

Hiring. Similarly, I calculate the counterfactual number of appointments in the absence of disparities in hiring rates by assuming that each applicant from underrepresented groups u is hired at the same rate as aspirants from overrepresented demographics o.

$$\text{Counterfactual Entry}_u = \text{N Eligible}_u \times \text{ApplyRate}_u \times \text{HiringRate}_o \tag{3}$$

Table 4: Counterfactual Analysis - Entry

	N Eligible	N Applicants	Apply Rate	Apply Rate CF	Hire Rate	Hire Rate CF	Actual Entry	CF Entry Apply	CF Entry Hire
Democrats	1073362	4253	0.004	0.008	0.082	0.132	349	724	562
Blacks (L2)	298594	1399	0.005	0.005	0.079	0.101	111	114	141
Blacks (Census)	354659	1399	0.004	0.003	0.079	0.101	111	84	141

The CF rates for Democrats (Blacks) are taken from Republican (White) applicants. *N Applicants* is the average number of applications across years in my sample (8,808) times the share of the respective demographic from Figure 4. *ApplyRate* is estimated as *N Applicants/N Eligible*. *HireRate* is estimated from predicted hiring probabilities based on Table 1, Column 5.

Table 4 shows the results of this exercise. If trends in applications and hiring remain unchanged, the NYPD is expected to add an average of 349 Democrats and 111 Black as-

pirants to their force annually. By equalizing application rates for Democrats, the NYPD could increase the number of Democratic recruits to 724 (107%). However, since the estimated application rates are slightly higher for Blacks compared to Whites at the NYPD, the representational gaps at the NYPD would *worsen* if eligible Blacks in the NYC population instead applied at similar rates as Whites. In contrast, the NYPD could noticeably increase the number of both Democratic and Black recruits if they hired them at equal rates as their Republican and White counterparts. Particularly, equalizing hiring rates would increase the number of recruits by 213 to 562 (61%) for Democrats and 30 to 141 (27%) for Blacks.

Retention. Following a similar logic, I also estimate how many additional underrepresented officers the NYPD could retain by eliminating differences in career progression and attrition rates, and again compare these quantities to the actual predicted number of retained officers. For this, I use the predicted rate of officers from each group to be assigned to rank r and retained, conditional on officers' years of service (binned) and age.

$$\text{Retention}_u = \text{N Officers}_u \times \sum_r \text{Rank}_{r,u} \times \text{RetentionRate}_{r,u} \tag{4}$$

$$\text{Counterfactual Retention}_u = \text{N Officers}_u \times \sum_r \text{Rank}_{r,o} \times \text{RetentionRate}_{r,u} \tag{5}$$

$$\text{Counterfactual Retention}_u = \text{N Officers}_u \times \sum_r \text{Rank}_{r,u} \times \text{RetentionRate}_{r,o} \tag{6}$$

Table 5: Counterfactual Analysis - Retention

	N Officers	Actual Retention	CF Retention Ranks	CF Retention Rate
Democrats	11996	11401	11404	11386
Blacks	3427	3259	3263	3239

The CF rates for Democrats (Blacks) are taken from Republican (White) officers. *N Officers* is the average number of uniformed employees on the payroll across years in my sample by the respective demographic.

Table 5 shows the corresponding estimates. If the NYPD maintains the stratification of officers across its hierarchy and the corresponding retention rates of its employees, it can retain about 11401 of its 11996 Democratic employees (95%) and 3258 of its 3427 Black offi-

cers (95%) on the annual payroll. The estimates suggest that changing the rank distribution of officers across demographic groups affects the composition of the force only marginally. If the agency manages to equalize the sorting of bureaucrats across ranks between underrepresented and overrepresented groups, it can retain an additional 4 Democratic and 6 Black officers. If the agency instead focuses on retaining Democrats and Blacks at equal rates as Republicans and Whites *without* changing the hierarchical stratification, they retain about 15 fewer Democrats and 20 fewer Black officers annually. This is primarily because Republican and White officers—who make up the large majority of the payroll—are slightly more likely to exit and resign in lower ranks and early on in their career (see Figures A15 and A16).

Overall, this counterfactual exercise illustrates that the most effective lever for enhancing the representativeness of one of America's largest law enforcement agencies is equalizing hiring rates across under- and overrepresented groups.

8   Conclusion

The race and partisanship of street-level bureaucrats are central to issues of representative bureaucracy and crucial determinants of public service provision (Ba et al., 2021, 2025; Donahue, 2023). This article studies the complex selection dynamics of modern civil service systems that determine the political representativeness of city bureaucracies. Whereas previous studies focus on political cycles and the "hidden curriculum" in written exams to explain the partisan and racial composition of bureaucracies, this article highlights how multiple stages of self-selection, recruitment, promotion, and attrition of bureaucrats influence who becomes and remains a bureaucrat.

The findings have important implications for how we think about bureaucratic representation. First, the results help to reassess some conventional wisdom about selection at US law enforcement agencies. At the recruitment stage, for instance, a common perception suggests that the lack of minority hires is due to lower attraction to the profession for non-

White candidates. However, this article indicates that the underrepresentation of minority and Democratic appointments at the NYPD arises at the hiring stage (i.e., *after* potential recruits have already taken the written entrance exam). The argument I presented here suggests that reforms focused solely on examination procedures might have limited success in creating representative bureaucracies. Even when entry exams produce reasonably diverse candidate pools, subsequent institutional mechanisms can potentially undermine these gains through differential attrition, promotion patterns, and career longevity.

Second, the findings reinforce recent calls to study bureaucratic representation as a multi-dimensional concept that explicitly incorporates partisanship (Ba et al., 2025). In a politically polarized society where partisanship has become a central identity marker, this conceptualization provides a richer framework to understand who receives what from the government and why. Moreover, the patterns of bureaucratic stratification documented here suggest that certain groups may systematically capture key positions within government agencies.

Finally, by clarifying the origins of representation, we can better reconcile inconclusive findings in the literature on representative bureaucracy and understand the limited effectiveness of diversification to enhance the quality and equity of public service provision. Calls to diversify police forces represent perhaps the oldest proposed policing reform. However, recent cases of police brutality, including the death of Tyre Nichols at the hand of five Black police officers in Memphis, suggest that demographic diversity in policing does not provide a panacea against police misconduct. This research directly addresses this debate by examining disparities in the careers of different types of officers. The evidence suggests that minority officers who successfully navigate hiring may be those who most closely align with the prevailing organizational culture—essentially conforming to their white and Republican counterparts in backgrounds and attitudes. Additionally, to succeed in a predominantly white and Republican environment, minority officers may feel compelled to mimic majority officers. Simply achieving demographic diversity may be insufficient if the institutional

mechanisms determining career advancement continue to favor those who align with established organizational culture. In essence, to fully theorize about the effects of demographic shifts in police forces, we need to incorporate the mechanisms through which representation arises.[23]

Yet, important issues and open questions remain. Although the large administrative data from NYC allows for a rich picture of partisan and racial selection, the analysis is restricted to only one primary US jurisdiction. It remains to be seen how the results presented here generalize to other city governments, particularly other law enforcement agencies.

Additionally, this article is inherently descriptive and cannot uncover the exact mechanisms that lead to the documented disparities in bureaucrats' partisanship and race. For instance, the fact that Republican and White officers are more likely to receive promotions and desirable assignments could be explained by individual-level factors, such as job satisfaction and motivation to advance in the profession, or institutional-level aspects, including support from superiors and the agency more broadly. Future research may seek to use other data sources and methods, such as surveys of street-level bureaucrats and experimental designs, to further explore the mechanisms at play.

Lastly, this article compares the composition of NYC's bureaucracy to the corresponding *voting* population and does not distinguish between different types of populations, e.g., the entire citizenship or only clients of the relevant bureaucracies. Similarly, this study relies on the implicit assumption common in representative bureaucracy research that achieving "on-par" representation is the ideal. Future research should explore whether this assumption aligns with what the represented populations actually perceive as optimal, and how these perceptions vary depending on the agency's mission.

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[23]An explicit micro-foundation of related selection mechanisms proved fruitful for the study of political selection (Ashworth et al., 2024) and provides an important frontier in the study of bureaucratic representation.

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Appendix: Supporting Information for
Barriers to Representation

A   Merging Procedures and Quality

In this section, I describe the different merging procedures and the quality of the resulting matches.

A.1   Merge Payroll to L2

As described in the main text, I start with a roster of the six largest agencies in NYC. I identify individual employees by unique combinations of appointment date, last name, first name, and middle initial. I then use a probabilistic record linkage algorithm to match demographic information for all employees from the L2 voter file (Enamorado et al., 2019), retaining all matches with a posterior match probability of at least 0.7. For first and last names, I allow for partial string distance matches using the Jaro-Winkler distance methods, while for the middle initial I enforce an exact match.

Since L2 does not include information on appointment dates and I need to rely on name information for these matches only, one might be concerned that this introduces a large amount of duplicates in the list of unique employees. However, note that the combination of first name, last name, and middle initial (i.e., excluding appointment date) already uniquely identifies 95% of all bureaucrats. Table A1 shows that I am able to identify more than 80% of bureaucrats across all agencies, and Figure A1 indicates that the median posterior probability for these matches is more than 0.95. Additionally, Table A1 shows that the true match rate is estimated to be at least 69% across the agencies, and with low false discovery rates (FDR) and high false negative rates (FNR) the algorithm clearly errs on the side of not identifying a bureaucrat in the voter file rather than matching the wrong voter to a bureaucrat. More importantly, the FDR is relatively similar across race and party groups, albeit somewhat lower for Republicans, Whites and male bureaucrats across the agencies.[1] It's important to note that I weight by the posterior probability of matches in all analyses to quantify the uncertainty inherent in my merge procedures, and to calibrate and account for the amount of false positives and false negatives across demographic groups in my data.

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[1]Unfortunately, the FNR is computationally impossible to calculate by race or partisanship, since this would require retaining matches for *all* pairs across the two data sets, i.e. $N_{bureaucrats} \times N_{voters} \geq 168,577,197,264$.

Table A1: Merging of NYC Payroll (2014-2021) to 2021 L2 Voter File (N=7,940,144)

	NYPD (N=91,975)	Sanitation (N=32,468)	FDNY (N=28,016)	Social Services (N=22,386)	Corrections (N=21,231)	Education (N=189,772)
Number of matches	80,661 (88%)	26,618 (82%)	26,172 (93%)	18,909 (85%)	18,345 (87%)	85,798 (45%)
True match rate[a]	78%	73%	87%	69%	74%	
False negative rate (FNR)[b]	94%	95%	96%	92%	93%	
False discovery rate (FDR)[c]	11%	11%	7%	18%	15%	
FDR by groups						
Non-Partisan	11%	11%	7%	20%	15%	
Democrat	12%	12%	8%	17%	14%	
Republican	9%	11%	6%	21%	15%	
White	9%	10%	6%	18%	14%	
Hispanic	13%	13%	9%	20%	17%	
Black	11%	11%	8%	16%	13%	
Other Race	14%	14%	10%	23%	16%	
Asian	15%	16%	11%	22%	18%	
Female	12%	12%	9%	18%	14%	
Male	10%	11%	7%	18%	15%	

[a] Share of matches weighted by their posterior probability of a match; [b] Probability of wrongfully declaring a non-match given the threshold; [c] Probability of wrongfully declaring a match given the threshold

Figure A1: Boxplots of Posterior Probabilities of Correct Matches across Matching Procedures
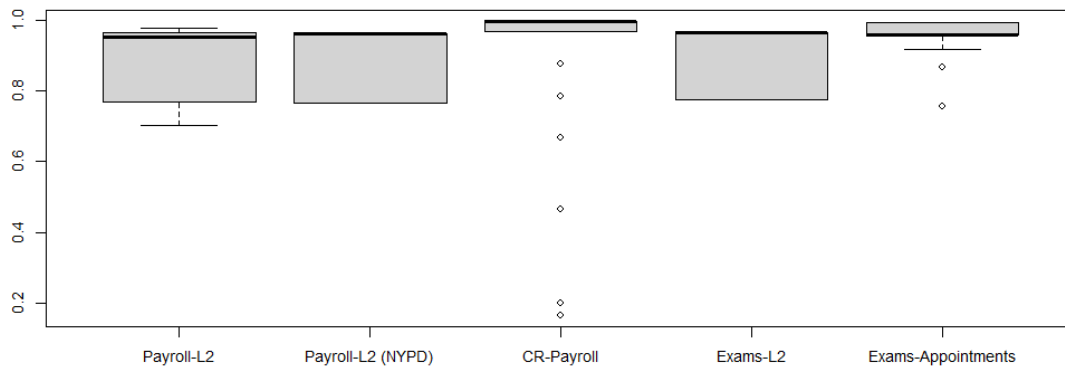
A.2 One-to-Many Matches

An issue when matching administrative records that lack a large number of unique identifiers and matching variables is the possibility of one-to-many matches, i.e., several agency employees match to more than one voter. Table A2 shows that the algorithm achieves a very high rate of one-to-one matches, with the share of unique matches being above 90% across agencies (with the exception of the Department of Education). Further inspecting the remaining one-to-many matches suggests that these are due to a re-appointment of employees (e.g., a traffic enforcement agent becomes appointed as a police officer). Since these types of duplicates are warranted, I maintain one-to-many matches without further adjustments.

Table A2: Share of One-to-One Matches: Payroll-L2

	NYPD	Sanitation	FDNY	Social Services	Corrections	Education
Number of matches	80,661 (88%)	26,618 (82%)	26,172 (93%)	18,909 (85%)	18,345 (87%)	85,798 (45%)
Share of one-to-one matches	94.5%	92.8%	92%	96.9%	97.8%	80.1%

Similar levels and reasoning applies to one-to-many matches for the additional merges of NYPD datasets (Table A3). Multiple city records can match the same employee on

the payroll, e.g., if the same employee receives multiple promotions or retires for different positions. Similarly, the same voter may take the entry or promotion exam several times, thus leading to a small share of duplicates in the exam-L2 merges. Exceptions are the exam-appointment and exam-promotion match, where the same exam-taker should only be hired/promoted for the same position once. I account for these one-to-many matches in my matching procedures, as outlined in sections A.5 and A.6.

Table A3: Share of One-to-One Matches: Other NYPD matches

	City Record-Payroll	Entry Exams-L2	Entry Exams-Appointments	Promo Exams-L2	Promo Exams-Promotions
Share of one-to-one matches	90.5%	85.8%	72.2%	85%	98%

A.3 Merge City Records with NYPD Payroll

For my analysis of the selection dynamics at the NYPD, I collected various additional data sets. Particularly, I obtained information on (1) career milestones, including appointments, promotions, and retirements from official records published in the daily City Record newspaper since 2014[2]; (2) unit assignment, awards, and arrest records for a cross-section of about 33,000 active officers (as of October 2021) from NYPD's official officer profiles[3]; (3) civil service exams, both for entry and promotions.[4] I then match these different data sets to the roster of NYPD bureaucrats. The following sections describe these various matches in more detail. Table A4 illustrates the number of successful matches across data sets, and Figures A3 and A4 illustrate the high posterior probability of a match across the procedures together with slight differences across demographic groups.

I link the 65,856 City newspaper records on appointments, promotions, demotions, retirements, resignations, dismissals, and terminations to the roster of NYPD bureaucrats in the following way: To maximize overlap, I restrict the city records to those with effective date between January 1, 2014, and July 1, 2021. I then match on first name, last name, and middle initial, and retain matches with a minimum posterior of 0.7. I do not deduplicate

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[2]https://www.nyc.gov/site/dcas/about/cityrecord-editions.page
[3]https://nypdonline.org/link/2
[4]I carefully combined both active and terminated civil service lists as of July 2022 from https://opendata.cityofnewyork.us/.

matches returned by the algorithm. Instead, I deal with multiple city records that match to the same payroll names in the following way:

- In cases where there is one maximum posterior, we keep the maximum posterior match (equivalent what fastLink enforces as default)

- For cases where there is no unique maximum posterior probability, I use additional information in the data.

- For *appointments*, I identify exact matches using the appointment date provided in both data sets. If there is more than one exact match, I use the maximum posterior probability for these duplicates again and if these maxima are not unique, I retain the payroll entry with the earliest appointment. If there are no exact matches using the appointment date, I retain those with the smallest difference between the appointment date in the payroll and the effective date in the city records. If there is more than one such time distance match, I use the maximum posterior match probability for these duplicates again and if these maximum posteriors are not unique, I retain the payroll entry with the earliest appointment.

- For *attrition*, I again follow the default in fastLink and use the maximum posterior to find the best match in cases of multiple matches based on name. If there are more than one such maximum posterior match, I use the smallest difference between the fiscal year at the date of attrition and the last fiscal year recorded in the payroll. If this still does not give a unique match, I use the employee with the earliest appointment date, i.e. the person who has been on the force the longest before retirement.

- For *promotions*, I use information on changes in job titles on the payroll to adjudicate between multiple maximum-posterior matches. I first retain the maximum posterior among all promotion matches. If there is more than one possible match, I use the year of promotion that matches the promotion in the city records. If this is not the case, I use the minimum difference in the year of the title change on the payroll and the year of promotion in the city records. For the remaining duplicates, I use the employee who was appointed first. For the remaining 4 duplicates, I finally use the first observation in the data.

Overall, I am able to successfully match 65,184 (99%) of 65,856 city records.

A5

A.4 Merge NYPD Payroll to NYPD Online Officer Profiles

I used another iterative process to match the roster of active officers from NYPD online to my payroll roster. I first merge these records based on exact matches using the appointment date, the first name, the last name, and the middle initial. All payroll records I fail to match exactly, I then also match based on a fuzzy name match and extensive manual checks by research assistants.

A.5 Merge Entry Exams to Appointments and L2 Voter File

To match entry-level exams to the roster of NYPD personnel, I collect the information on 96,883 NYC civil service exams for police officer and traffic enforcement agents. I rely on both the active and terminated civil service lists as of July 2022.[5] Following a probabilistic record linkage based on the first name, last name and middle initial, I first retain all matches with a minimum posterior probability of 0.5. I then rely on the following procedure to deduplicate matches of the same exam: First, I restrict matches by enforcing that the position title of the exam (police officer or traffic enforcement agent) corresponds to the title of the employee's appointment. I further deduplicate matches by requiring that the date of the exam needs to be before the date of appointment. I further filter duplicates by retaining the maximum posterior probability match by exam. For the remaining duplicates, I use the minimum distance between the appointment date and the exam date. I also account for duplicates in the appointments for the same exam-taker, e.g., because some hired NYPD employees took the exam more than once before getting hired. I again rely on the maximum posterior match and the exam date relative to the appointment date to identify the successful exam for these individuals. Finally, I also match the entry exams to the L2 voter file, following the same procedure as for the payroll-L2 merging described above. The only difference is that I restrict the eligible voters to those younger than 42 (in 2020) to account for the age restrictions in the NYPD hiring process.

I am only able to match 11% of all exam takers to NYPD appointments and only identify 51% of all appointments between 2014 and 2021 among exam takers. This raises concerns that the exam data is incomplete and my analyses of hiring rates across groups of officers are biased due to a skewed sample. To address such concerns, I conduct various quality checks:

1. **Concern: Exam takers are removed from lists once they are hired**
   Since NYC updates the active civil service lists daily, it could be that hired applicants

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[5]https://data.cityofnewyork.us/City-Government/Civil-Service-List-Active-/vx8i-nprf/about_data; https://data.cityofnewyork.us/City-Government/Civil-Service-List-Terminated-/qu8g-sxqf/about_data

are taken off the list, thus leading to a significant underestimation of hiring rates of the 96,883 listed applicants in my data. Two checks suggest that this is unlikely to be the case. First, if this was true, we would expect the matching rates of the 17,153 appointments to exams to be substantially lower than 51%. Second, I use a previous release of the active civil service list (April 2021) and match these exams to the active civil list of July 2022. Note that between April and July 2021 alone, the NYPD appointed 562 new officers and traffic enforcement personnel. If hired exam takers are taken off the list, we would expect a large number of the April 2021 list fail to be matched to the July 2022 list. However, I am able to match 99.7% of the 77,013 exam takers on the April 2021 list. Examining the small number of unmatched individuals in more detail (N=269), it is evident that these matching difficulties are explained by slight changes in name spelling across exam list publications or adjustments of list numbers. Hence, it is unlikely that exam takers are removed from lists once hired.

2. **Concern: Since I rely on snapshots of civil service lists, I miss exam lists published before July 2022**
   Again, a few facts alleviate this concern. First, a civil list gets terminated after four years post establishment, unless it is extended at the Commissioner's discretion. Fortunately, NYC makes terminated lists available, thus allowing me to supplement active lists with older terminated lists. Yet, I cannot fully rule out that I miss earlier lists. As a robustness check, I therefore also re-estimate results where I exclude all exam lists established in 2014 as well as those established after 2019. The latter ensures that I account for exam takers who have not yet reached the end of the hiring process, which lowers the hiring rate in my sample. Reassuringly, the results remain virtually unchanged with this restricted sample of exams (available upon request).

3. **Concern: The inability to match all appointments in the sample indicates biased results**
   While I am likely underestimating the total hiring rate given the data limitations discussed above, my results on the *differential* hiring rates are only biased if the degree of underestimation correlates with partisanship and race. To assess this issue, I evaluate whether the appointments I can match differ from those I cannot match to exams in terms of partisanship and race. The results in Figure A2 suggest that the differences between matched and unmatched appointments are small. If anything, my matching procedure leads to an *underestimation* of Republicans and Whites among appointed exam takers. Given these patterns, Figure A10 shows the hiring gaps using *appointments* rather than hired exam takers.

Figure A2: Demographics among Matched and Unmatched Appointments to Exams
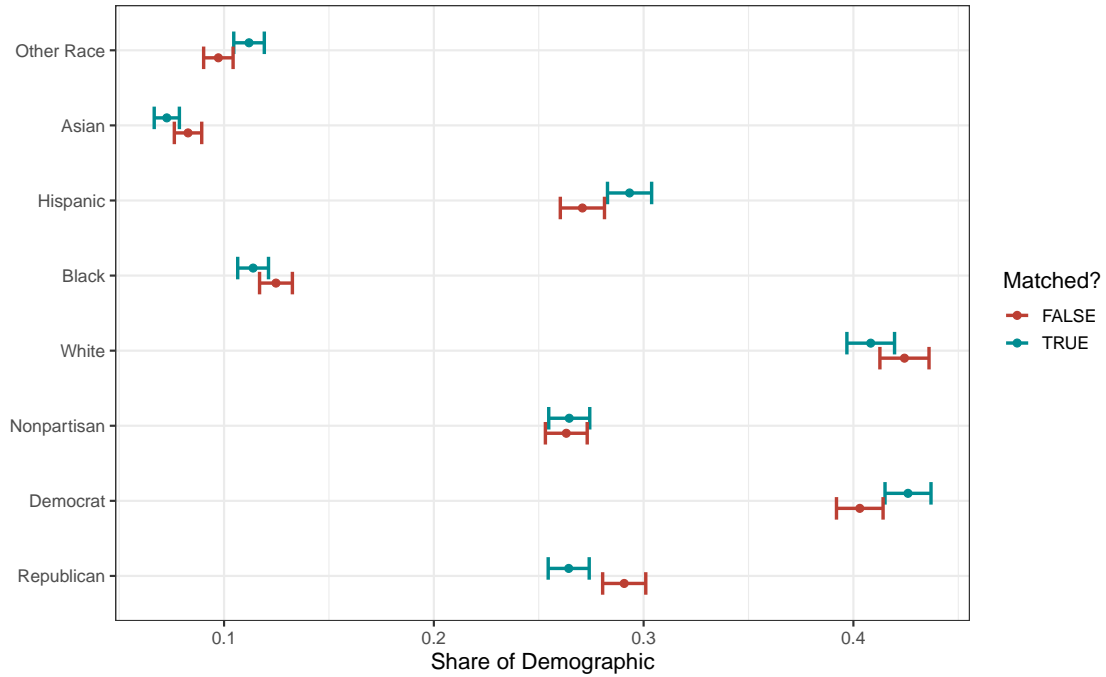
A.6 Merge Promotion Exams to Awarded Promotions and L2 Voter File

Individuals who seek promotions to the ranks of Sergeant, Lieutenant, and Captain need to successfully pass additional civil service exams at the NYPD. I match promotion exams to the promotions recorded in the city records probabilistically based on employee's first name, last name and middle initial. After retaining matches with a minimum posterior match probability of 0.5, I again ensure that exam titles correspond to the titles of the matched promotion records. Similar to the entry exams, I also require that the date of the promotion exam is before the date of the promotion, and use the minimum time difference between the exam date and the promotion date for the remaining duplicates. To ensure that I record only one promotion for a successful exam-taker (i.e., rule out duplicates in promotions for the same exam takers), I follow a similar procedure to the entry exams: I again rely on the maximum posterior match and the exam date relative to the appointment date to identify the successful exam for these individuals. Finally, I also match the promotion exams to the L2 voter file, following exactly the same procedure as for the payroll-L2 merging described above.

Table A4: Merging of NYPD Data Sets

	L2 Voter File, 2020 (N=7,940,144)	City Records, 2014-2021 (N=65,856)	Active Officer Profiles (N=33,072)	Other Civil Service Exams (N=195,308)
NYPD Payroll*, FY2014-2021 (N=91,975)	80,661 (88%, .)	65,184 (., 99%)	32,632 (., 99%)	
Officer/TEA Entry Exams, 2012-2021 (N=96,883)	80,584 (83%, .)	10,385 (11%, 51%[a])		14,950 (15%,.)
Promotion Exams, 2012-2021 (N=5,725)	5,226 (91%,.)	3,501 (61%,.)		

Percentages of matched observations in parentheses (row percentages, colum percentages); * includes both uniformed and civilian personnel; [a] among appointments only (N=17,153)

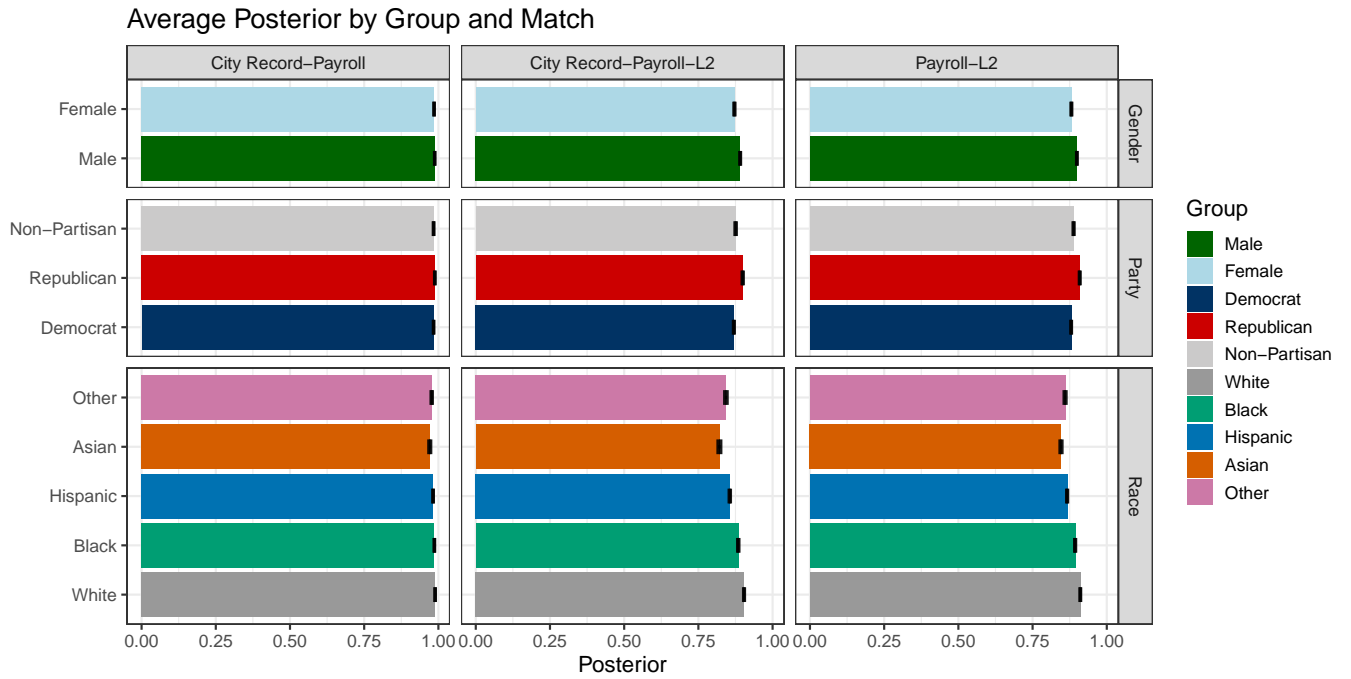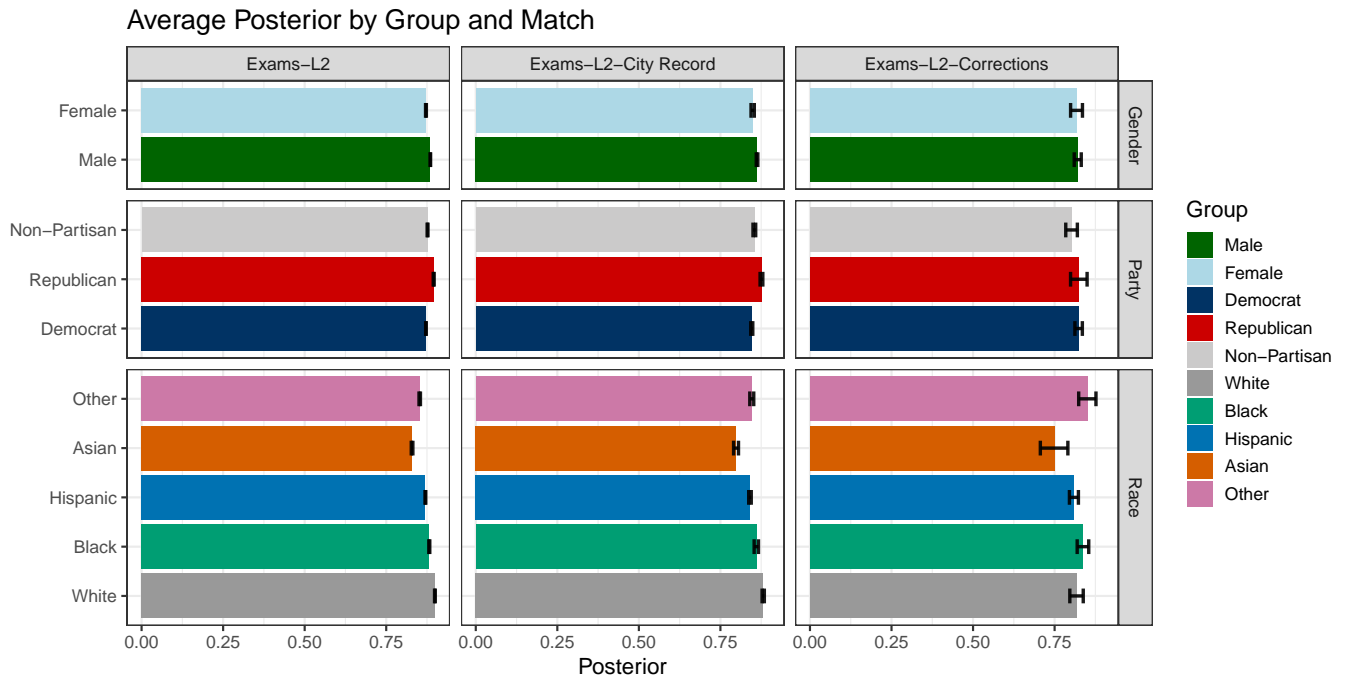Figure A3: Average Posterior Probabilities of Correct Matches By Groups across Matching Procedures - Payroll Data

Average Posterior by Group and Match

A9

Figure A4: Average Posterior Probabilities of Correct Matches By Groups across Matching Procedures - Exam Data


Average Posterior by Group and Match

A.7 Measurement Error in L2 Race/Ethnicity

I assess the validity of the L2 race coding in two ways.

First, the LEMAS survey asks police agencies to report the number of sworn full time employees across different demographic groups (particularly, race and gender). I draw on the answers of the NYPD in the 2020 LEMAS survey to assess the validity of the L2 information on race and gender. Figure A5 depicts the proportion of officers in each racial/ethnic category and by gender as measured by L2 vs. LEMAS. To ensure optimal overlap in the populations used in both data sets, I restrict the payroll to only sworn personnel and weight estimates by the posterior probability of a match. As the figure shows, L2 slightly underrepresents the proportion of White officers, and more so, the share of other minorities. This discrepancy largely stems from the overrepresentation of the "other/unknown" category, which makes up 5% in the L2 data, but essentially 0% in the LEMAS data. The L2 data also slightly overrepresents female officers compared to the LEMAS data.

Figure A5: Comparison of 2020 LEMAS and L2 Measures of Officer Race
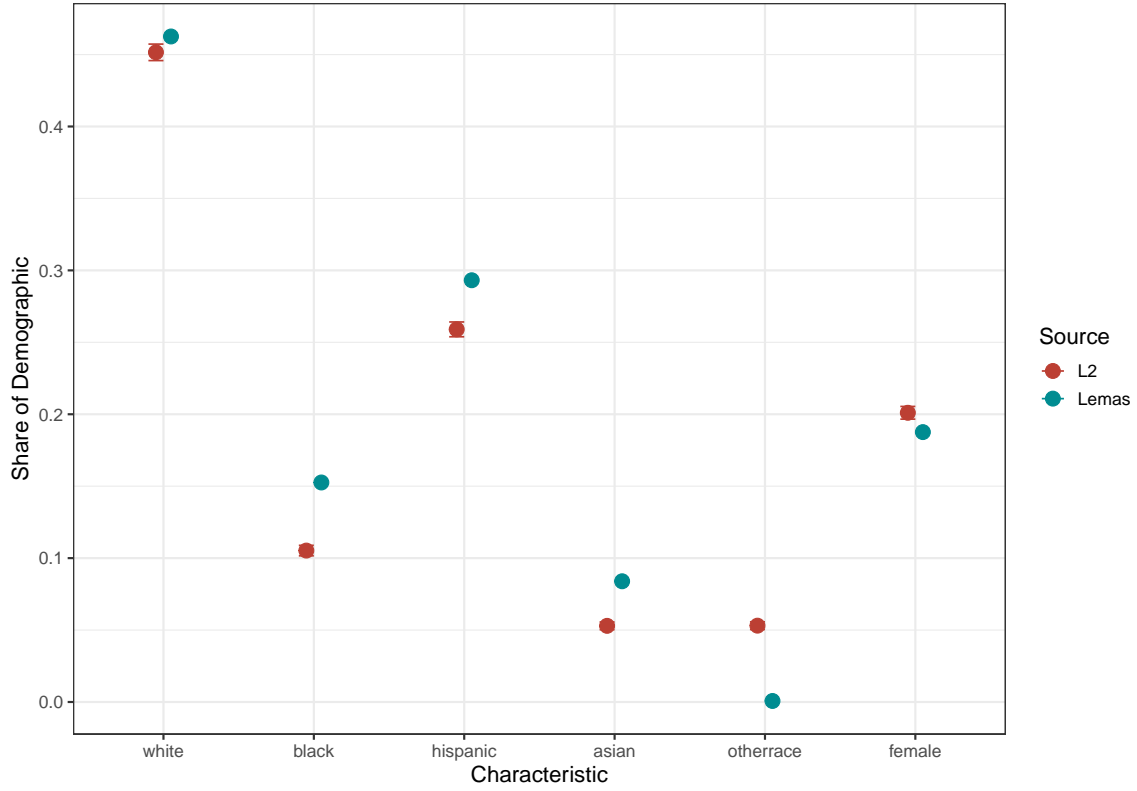
Second, I rely on predictions of individual-level ethnicity of NYC employees using Imai and Khanna (2016). Figure A6 compares the estimated share of non-White employees across agencies by types of measures. Evidently, the share of non-White bureaucrats is estimated to be substantially higher with L2's race measures than alternative predictions across agencies. Taken together, these tests suggest that I *overestimate* the degree of representation for minority groups in NYC's bureaucracy, i.e., the representational gaps may be even starker than I estimate.

Figure A6: Comparison of Bayesian Name Predictions and L2 Measures of Bureaucrat Race
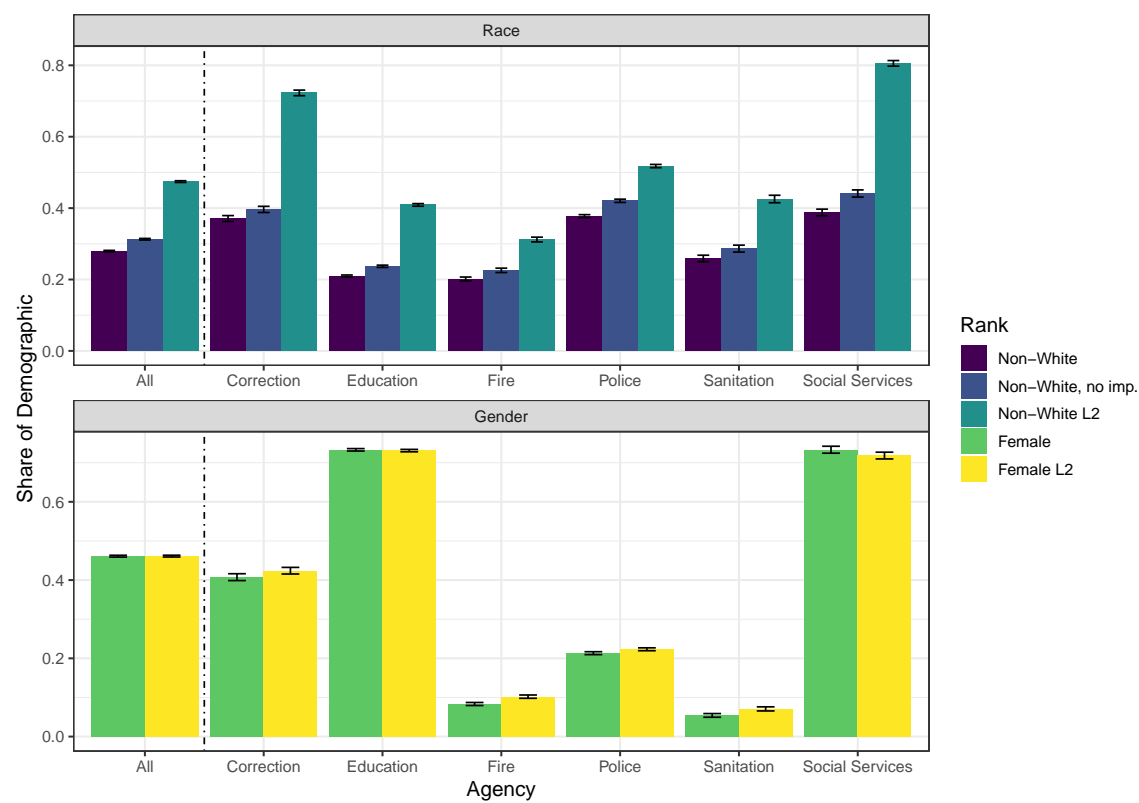
B Tables

Table A5: Income Differences by Exam Taker Characteristics

	L2 Household Income			Census 2019 Per Capita Income		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Hire	3423***	1519	5043***	−196	−566	209
	(676)	(1327)	(1023)	(189)	(333)	(259)
Black	−40069***	−40411***	−40016***	−16943***	−16983***	−16929***
	(952)	(996)	(956)	(278)	(287)	(279)
Hispanic	−43799***	−44153***	−43791***	−15336***	−15424***	−15333***
	(1216)	(1261)	(1217)	(292)	(301)	(292)
Asian	−14436***	−14609***	−14450***	−9039***	−9055***	−9043***
	(1249)	(1436)	(1244)	(374)	(351)	(374)
Other Race	−28901***	−29195***	−28923***	−12702***	−12763***	−12707***
	(894)	(995)	(890)	(229)	(230)	(228)
Republican	17725***	17754***	18455***	1860***	1864***	2058***
	(690)	(694)	(864)	(197)	(196)	(213)
Non-Partisan	6382***	6380***	6401***	515***	514***	510***
	(525)	(527)	(618)	(111)	(111)	(124)
Hire × Black		4184*			335	
		(1999)			(494)	
Hire × Hispanic		3406			871*	
		(1888)			(413)	
Hire × Asian		1501			123	
		(3621)			(996)	
Hire × Other Race		2576			531	
		(3033)			(682)	
Hire × Republican			−5778**			−1555***
			(1819)			(391)
Hire × Non-Partisan			−495			−36
			(1696)			(419)
Exam Score (80-90)	2577***	2576***	2586***	702**	702**	705**
	(751)	(745)	(749)	(231)	(231)	(230)
Exam Score (90-100)	4093***	4093***	4108***	1174***	1175***	1178***
	(977)	(971)	(975)	(274)	(273)	(273)
Exam FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean of DV	88839	88839	88839	36572	36572	36572
Num. obs.	66741	66741	66741	67794	67794	67794
Adj. R^2	0.15	0.15	0.15	0.16	0.16	0.16

Regressions weighted by posterior probability of a match between exam data and voter file. Dependent variable: Estimated HH income (L2, columns 1-3) and Census per capita income (2019 American Community Survey, columns 4-6). Standard errors clustered by exam in parentheses. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

Table A6: Differences in Exam Scores across Demographics

	Model 1	Model 2	Model 3	Model 4
Republican	−0.02	−0.08	−0.13	0.42***
	(0.09)	(0.09)	(0.09)	(0.08)
Non-Partisan	−0.04	−0.11	−0.10	0.21**
	(0.07)	(0.07)	(0.07)	(0.07)
Black	−1.42***	−1.51***	−1.48***	−2.75***
	(0.10)	(0.10)	(0.10)	(0.10)
Hispanic	−0.81***	−0.92***	−0.88***	−2.12***
	(0.08)	(0.08)	(0.07)	(0.07)
Asian	0.46***	0.35**	0.42**	−1.20***
	(0.14)	(0.13)	(0.13)	(0.13)
Other Race	−1.62***	−1.54***	−1.47***	−2.99***
	(0.12)	(0.12)	(0.12)	(0.12)
Veteran Credit		6.35***	6.39***	6.49***
		(0.14)	(0.14)	(0.13)
Parent/Sibling Legacy Credit			10.05***	10.19***
			(0.39)	(0.37)
Residency Credit				4.48***
				(0.06)
Exam FE	Yes	Yes	Yes	Yes
Mean of DV	89.34	89.34	89.34	89.34
Adj. R^2	0.07	0.10	0.11	0.18
Num. obs.	57820	57820	57820	57820

 Regressions weighted by posterior probability of a match between exam data and voter file. Dependent variable: Exam score in entry-level exam (police officer exams only). Veteran credits are awarded for veterans and disabled veterans. Parent and sibling legacy credits are additional credits on the exam score to candidates who lost a parent/sibling as a result of 911. Residency credits are given on exams to candidates who maintain a continuous period of residency in NYC. HC1 standard errors in parentheses. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$.

Table A7: Difference in Probability of Taking a Promotion Exam (2014-2021)

	Model 1	Model 2	Model 3
Republican	−0.00		0.00
	(0.00)		(0.00)
Non-Partisan	0.00		−0.00
	(0.00)		(0.00)
Black		−0.00	−0.00
		(0.00)	(0.00)
Hispanic		0.00	0.00
		(0.00)	(0.00)
Asian		0.05***	0.05***
		(0.01)	(0.01)
Other Race		0.04***	0.04***
		(0.01)	(0.01)
Cohort FE	Yes	Yes	Yes
Mean of DV	0.09	0.09	0.09
Adj. R^2	0.12	0.12	0.12
Num. obs.	49558	48521	45990

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

Table A8: Difference in Probability of Receiving Promotion After Promotion Exam (2014-2021)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Republican	0.03	0.01			0.01	0.01
	(0.01)	(0.01)			(0.01)	(0.01)
Non-Partisan	0.04*	0.01			0.01	0.01
	(0.02)	(0.01)			(0.01)	(0.01)
Black			-0.05^*	0.00	0.01	0.01
			(0.02)	(0.02)	(0.02)	(0.02)
Hispanic			-0.02	0.00	0.01	0.01
			(0.02)	(0.01)	(0.01)	(0.01)
Asian			-0.02	-0.03	-0.02	-0.02
			(0.03)	(0.02)	(0.02)	(0.02)
Other Race			0.03	0.01	0.02	0.02
			(0.03)	(0.02)	(0.02)	(0.02)
Examscore (80-90)		0.57***		0.57***	0.57***	
		(0.01)		(0.01)	(0.01)	
Examscore (90-100)		0.73***		0.73***	0.73***	
		(0.01)		(0.02)	(0.02)	
Exam FE	Yes	Yes	Yes	Yes	Yes	Yes
Exam $\times$ Score Bin FE	No	No	No	No	No	Yes
Mean of DV	0.61	0.61	0.60	0.60	0.61	0.61
Adj. R^2	0.14	0.51	0.14	0.51	0.51	0.51
Num. obs.	4963	4963	4790	4790	4549	4549

Linear probability regressions, weighted by the posterior probability of a match between promotion exams and voter file. Level of observation: Promotion exam taker. Outcome: Dummy for whether the exam taker actually received a promotion between 2014 and 2021. HC1 standard errors in parentheses. $^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$

Table A9: Differences in (Log) Number of Awards by Officer Characteristics

	Model 1	Model 2	Model 3
Republican	0.20***		0.13***
	(0.01)		(0.01)
Non-Partisan	0.08***		0.04**
	(0.01)		(0.01)
Black		−0.27***	−0.21***
		(0.02)	(0.02)
Hispanic		−0.16***	−0.12***
		(0.01)	(0.01)
Asian		−0.26***	−0.24***
		(0.02)	(0.02)
Other Race		−0.14***	−0.12***
		(0.02)	(0.02)
Cohort FE	Yes	Yes	Yes
Mean of DV	0.92	0.91	0.91
Adj. R^2	0.21	0.21	0.22
Num. obs.	28422	27609	26222

Regressions weighted by posterior probability of a match between payroll and voter file. The information on awards received is only available for active officers (here as of October 2021). Level of observation: Employee. Outcome: Log number of departmental awards since their appointment date at NYPD. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

Table A10: Differences in Command Assignments for Active Officers (as of 10/20/2021)

	All Elite	Terrorism	Drugs	Special Forces
Republican	0.03***	0.00	0.00	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)
Non-Partisan	0.02***	0.00	0.00	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)
Black	−0.03***	−0.01**	−0.00	−0.01**
	(0.01)	(0.00)	(0.00)	(0.00)
Hispanic	−0.01	−0.00	0.00	−0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Asian	−0.03***	−0.00	−0.01***	−0.01**
	(0.01)	(0.01)	(0.00)	(0.00)
Other Race	−0.02**	−0.00	−0.00	−0.02***
	(0.01)	(0.01)	(0.00)	(0.00)
Cohort FE	Yes	Yes	Yes	Yes
Mean of DV	0.10	0.04	0.02	0.04
Adj. R^2	0.05	0.02	0.01	0.02
Num. obs.	26222	26222	26222	26222

Regressions weighted by posterior probability of a match between payroll data and voter file. The command information is only available for active officers (here as of October 2021). Level of observation: Employee. HC1 standard errors in parentheses. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

Table A11: Correlation of Team Leadership and Team Composition

	Share of Party			Share of Race				
	Republican	Democrat	Non-Partisan	Hispanic	White	Asian	Black	Other
Republican leader	0.05*	−0.04*	−0.01	−0.03	0.02	−0.01	0.01	0.01
	(0.02)	(0.02)	(0.01)	(0.03)	(0.03)	(0.01)	(0.02)	(0.01)
Non-Partisan leader	−0.02	−0.03	0.05**	−0.01	0.01	−0.01	0.00	−0.00
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.01)	(0.02)	(0.01)
Asian leader	0.04	−0.06	0.02	−0.02	−0.07	0.08***	−0.02	0.04*
	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)	(0.01)	(0.02)	(0.02)
Black leader	−0.02	0.04	−0.02	−0.01	−0.13***	0.03*	0.08***	0.03**
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.01)	(0.02)	(0.01)
Hispanic leader	−0.03	0.02	0.00	0.06**	−0.09***	0.01	0.01	0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.01)	(0.01)	(0.01)
Other Race leader	−0.03	0.05	−0.02	0.02	−0.10	0.02	−0.01	0.07***
	(0.05)	(0.05)	(0.03)	(0.04)	(0.05)	(0.02)	(0.03)	(0.02)
Mean DV	0.38	0.39	0.23	0.27	0.52	0.05	0.11	0.05
R^2	0.05	0.03	0.03	0.06	0.11	0.10	0.05	0.05
Adj. R^2	0.03	0.01	0.01	0.04	0.09	0.08	0.03	0.03
Num. obs.	644	644	644	644	644	644	644	644

Cross-sectional OLS; The information on team assignment is only available for active officers (here as of October 2021). Level of observation: Team. Outcome: Share of relevant demographic per team. Regressions also control for 5 bins of team size, precinct team dummy, special operations team dummy and the highest rank of the leader. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

Table A12: Correlation of Team Diversity and Team Leadership

	Gini Coefficient	
	Party	Race
Republican	0.03	0.03
	(0.02)	(0.02)
Non-Partisan	−0.01	0.03
	(0.02)	(0.02)
Asian	−0.03	−0.11***
	(0.04)	(0.03)
Black	0.06*	−0.05*
	(0.03)	(0.02)
Hispanic	0.03	−0.01
	(0.02)	(0.02)
Other Race	0.01	−0.10**
	(0.05)	(0.03)
Adj. R^2	0.13	0.22
Num. obs.	644	644

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$. Regressions also control for 5 bins of team size, precinct team dummy, special operations team dummy and the highest rank of the leader. Level of observation: Team. Dependent variable: Gini index.

Table A13: Differences in Years on Force at Retirement, by Characteristics and Rank

	Model 1	Model 2	Model 3
Republican	0.52***		−0.04
	(0.13)		(0.15)
White		1.48***	1.50***
		(0.13)	(0.14)
Age at appointment	−0.12***	−0.11***	−0.11***
	(0.01)	(0.01)	(0.01)
Mean of DV	22.36	22.35	22.35
Adj. R^2	0.05	0.07	0.07
Num. obs.	6624	6613	6613

OLS, weighted by probability of matches between payroll and voter file and payroll and retirement records. Level of observation: Retiree. Outcome: Time since appointment date at retirement. HC1 standard errors in parentheses. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

C Figures

Figure A7: Pearson Residuals from Chi Square tests of Independence between Officer Demographics
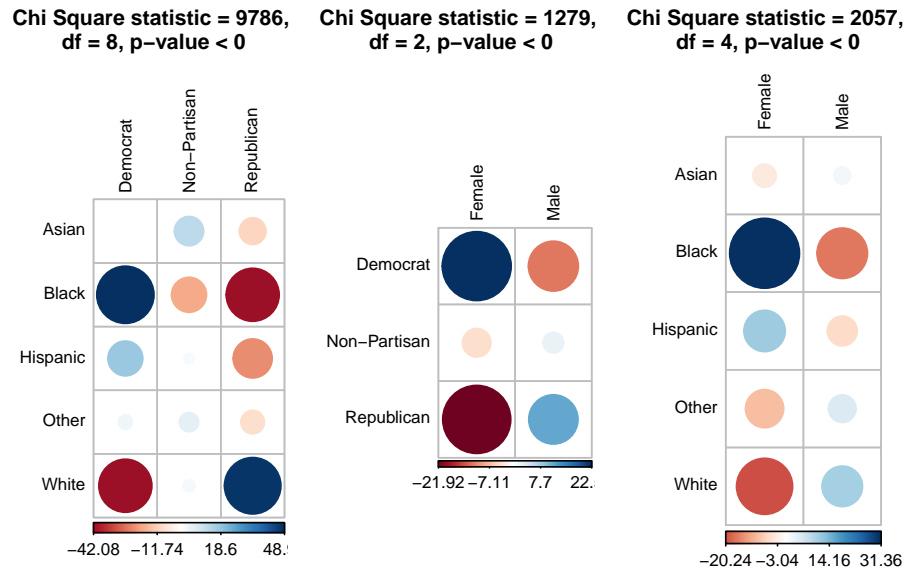
The dots indicate the size and direction of the Pearson residuals (i.e. standardized residuals from Chi-square tests). Cells with highest absolute standardized residuals contribute the most to the total Chi-square score.

Figure A8: Correlation between Precinct Crime Rates and Representation Gaps
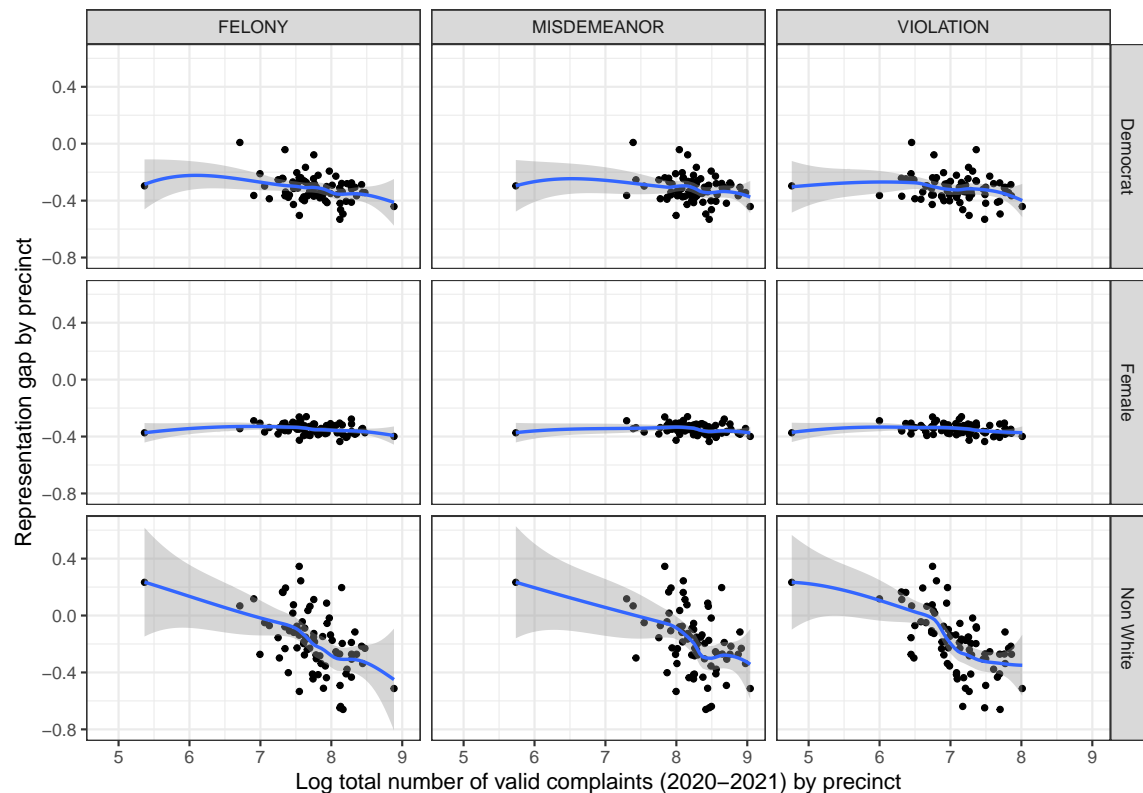
The x-axis shows the log total number of valid complaints by precinct between 01/01/2020 and 30/06/2021. The y-axis is the representation gap by precinct (share of voter - share of officers), where lower values indicate an underrepresentation of the characteristics. The officer data only includes officers that are identifiable in my snapshot of the NYPD online profiles (see Appendix A.4).

Figure A9: Share of Demographics at NYPD
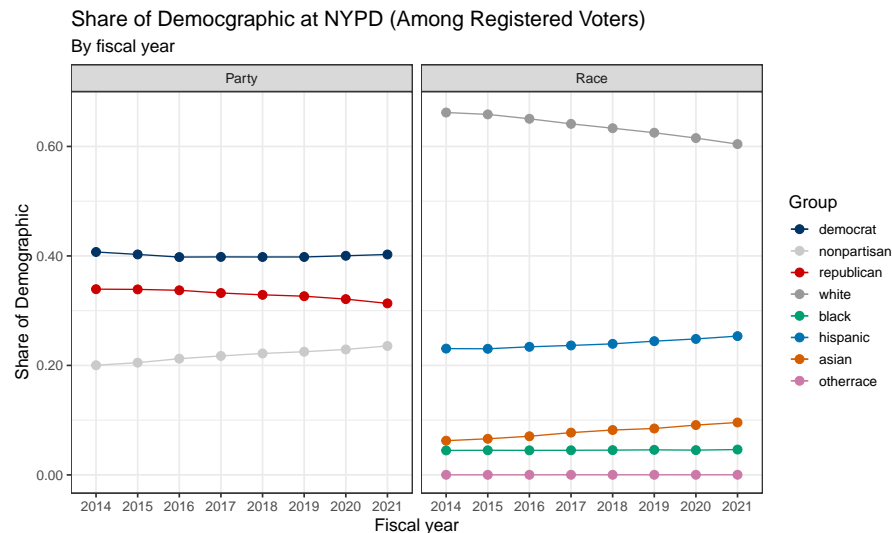
Figure A10: Share of Demographics - Citizens, Police Exam Takers, Appointments
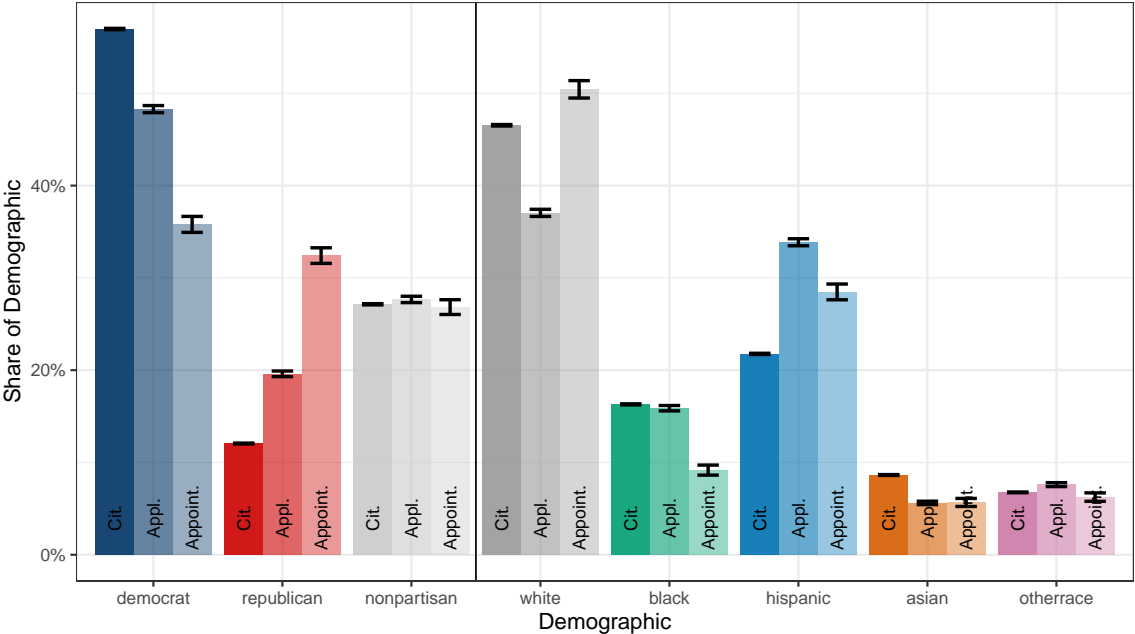
The three bars among each partisan and racial group represent (from left to right) (1) share among NYC voters, (2) share among police exam takers, and (3) share among all appointed officers. Voters and exam takers are matched on age.

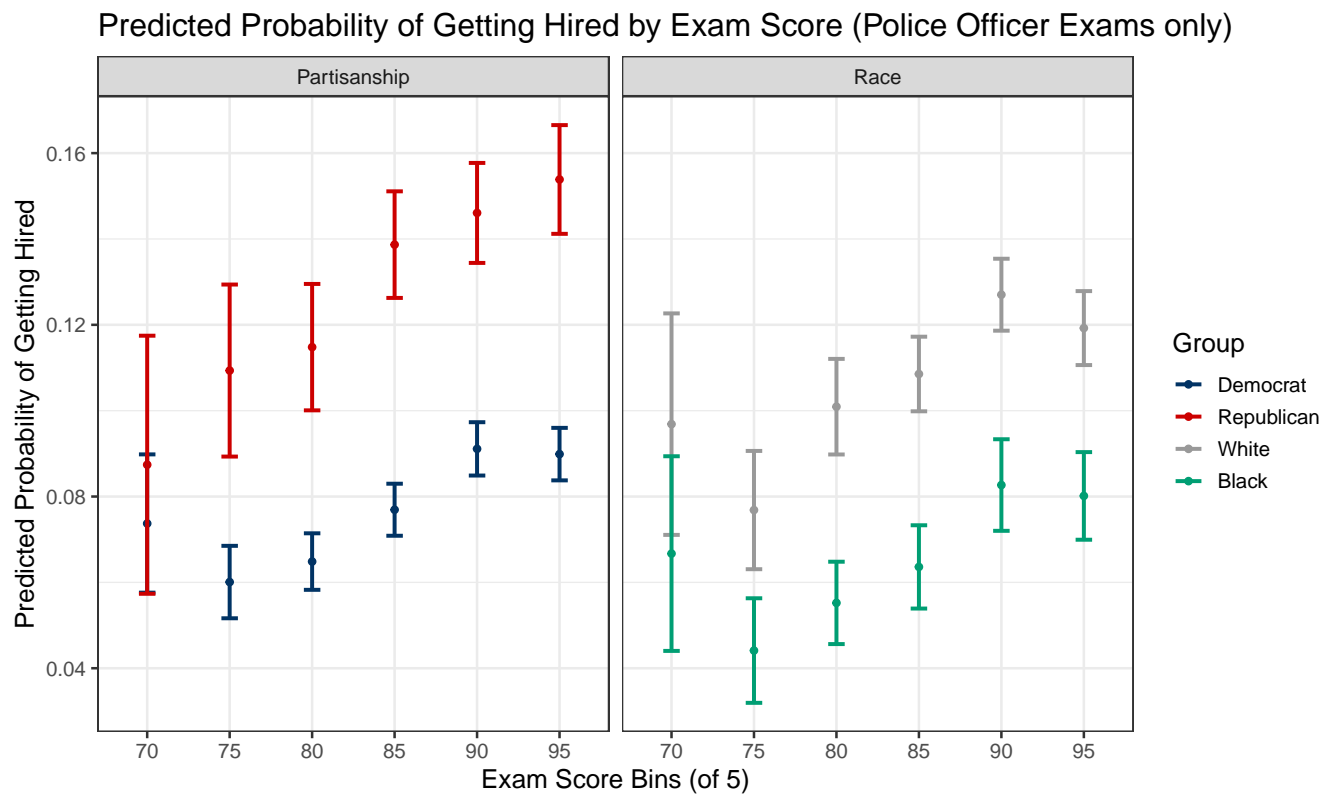Figure A11: Hiring Differences Across Exam Scores

Predicted Probability of Getting Hired by Exam Score (Police Officer Exams only)

Figure A12: Score Differences by Hiring Groups

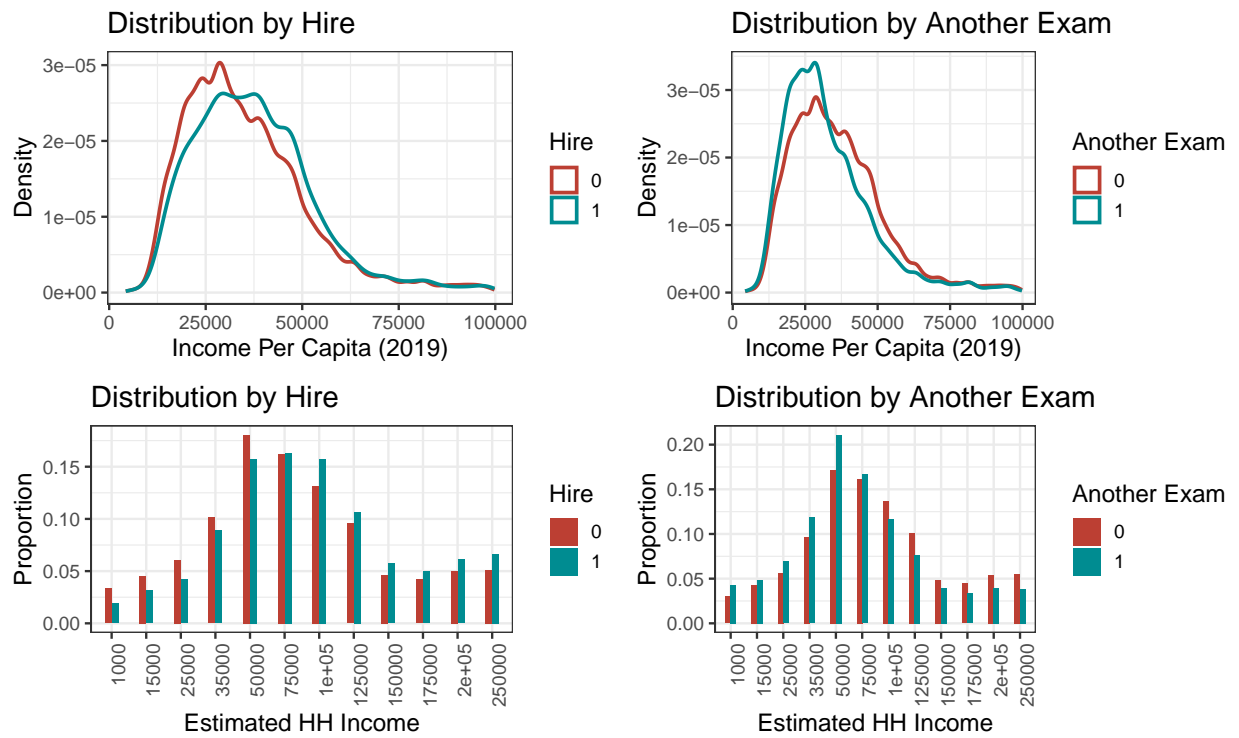Predicted Exam Score (Police Officer Exams only)
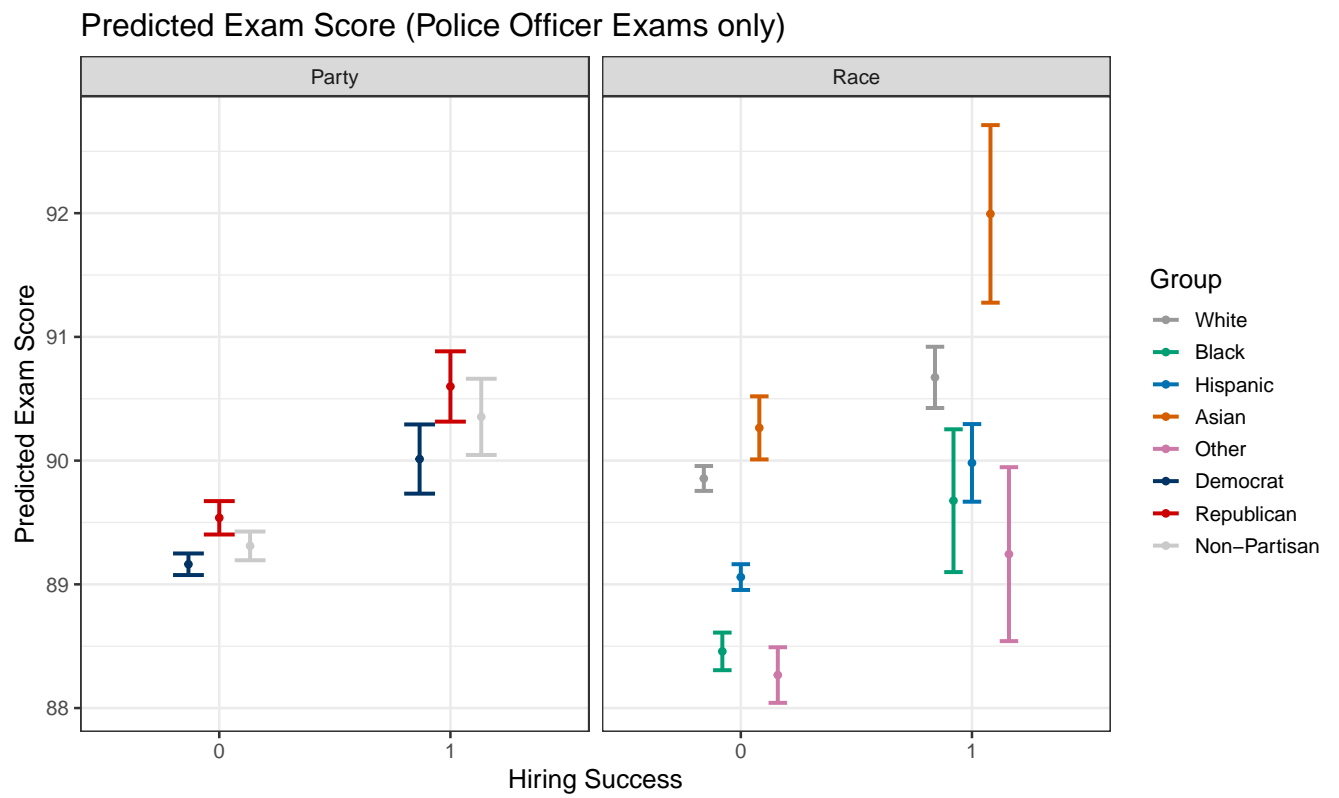
Figure A13: Income Distributions by Exam Taker Type

Note: The top panels use income per capita from the 2019 American Community Survey (matched by census tract), and the bottom panels use L2's estimated household income.

Figure A14: Difference in Behavior on the Job by Demographic and Tenure
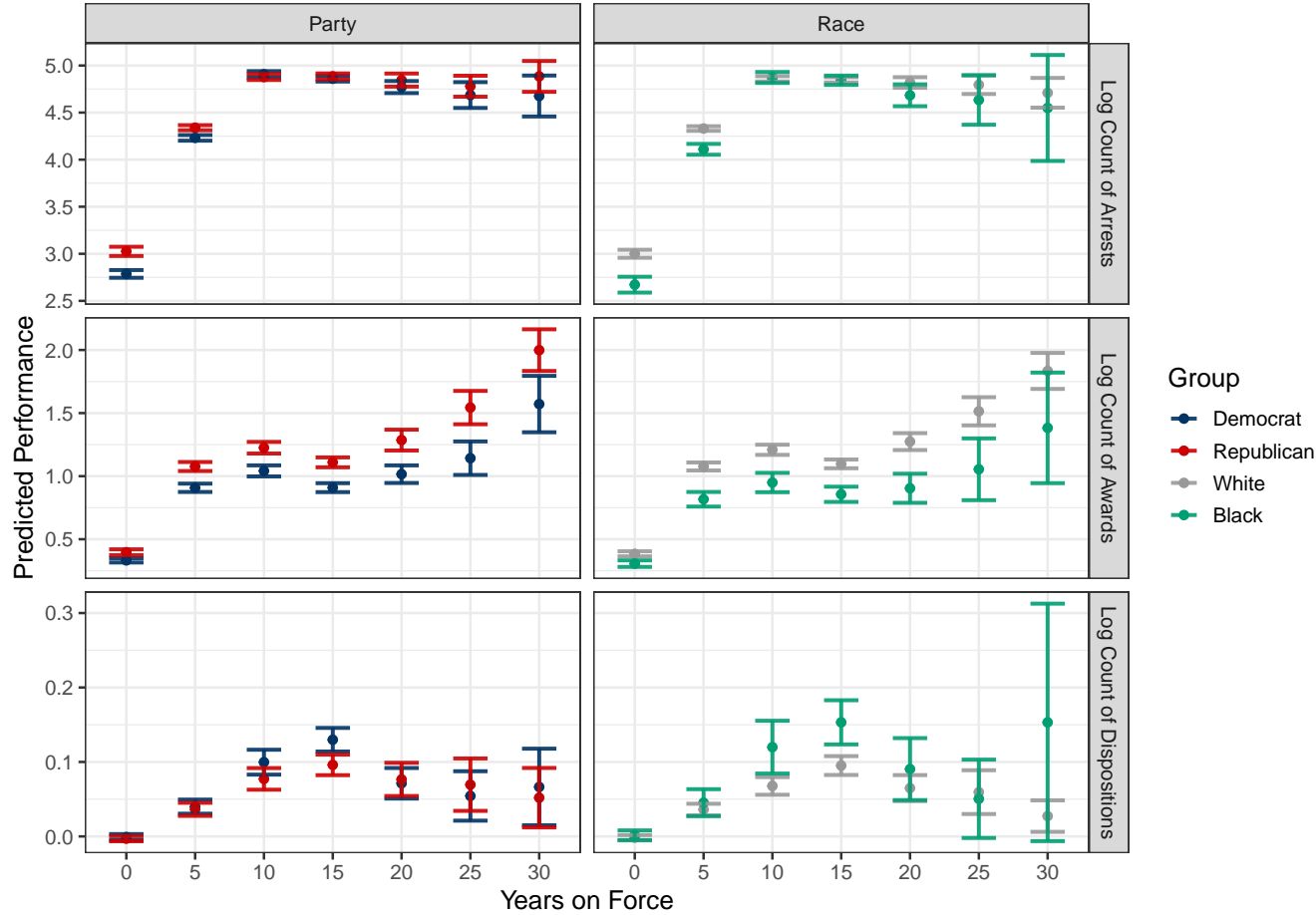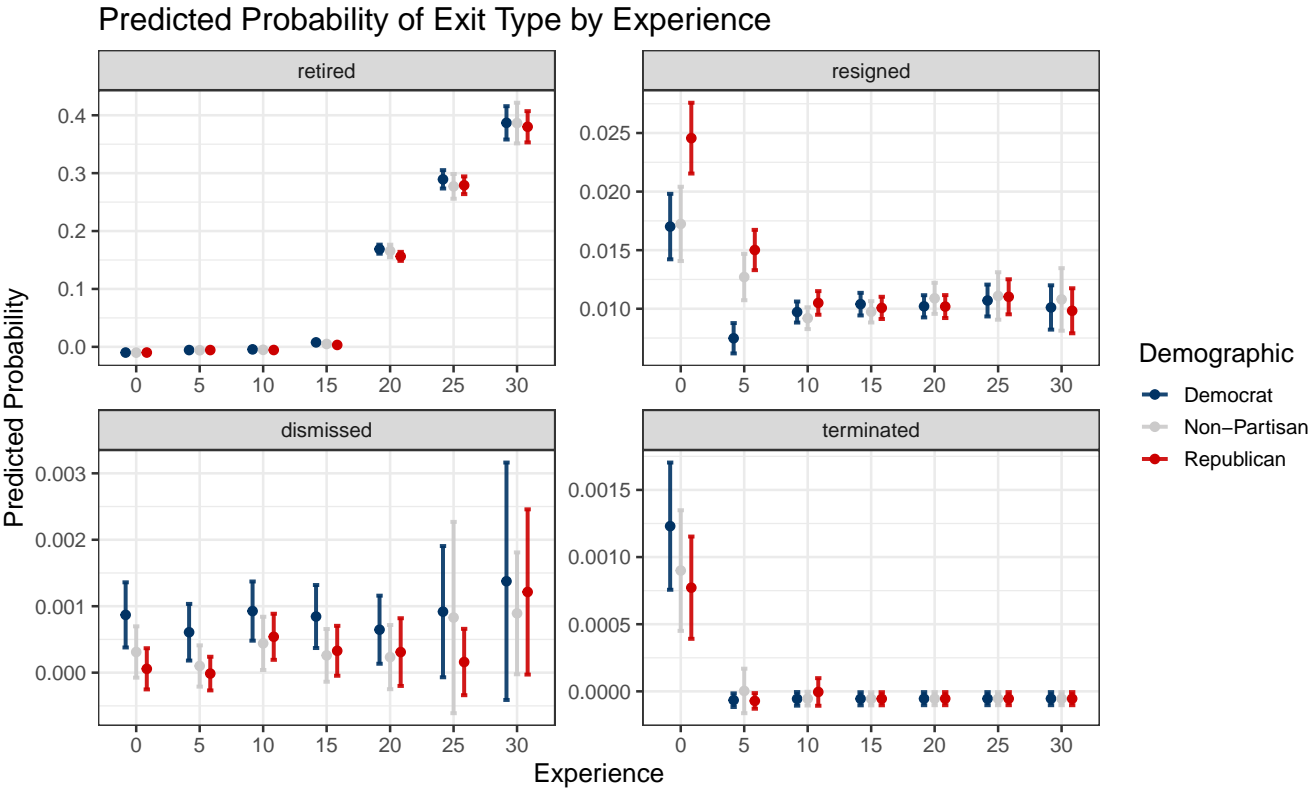
Figure A15

Predicted Probability of Exit Type by Experience

Predicted Probability of Exit Type by Experience