

## Does Having More Same-race Subordinates Benefit or Burden Supervisors?

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### **Abstract**

The government has been investing efforts in improving its workforce diversity. Past research on representative bureaucracy has confirmed that increased diversity at both the leadership and lower levels can benefit the public (Ricucci & Van Ryzin, 2017). However, the representation of people of color at the leadership level remains scarce, which can create challenges for leaders from under-represented groups. Leaders from under-represented groups might feel pressures and challenges from tokenism and increased demands and expectations of under-represented subordinates (Kanter, 1977a and 1977b). Utilizing federal employee surveys and the Federal Government's human resources data, we examine the impact of having more same-race subordinates on supervisors' job satisfaction and turnover intention using a two-way fixed effects model. The findings suggest that while having more subordinates from similar demographic backgrounds benefits White supervisors, it burdens supervisors of color, leading to a decrease in their job satisfaction and an increase in turnover intention. This negative consequence is mitigated as minority supervisors obtain a higher share in their agency and reverse positively when they occupy more than 35% of the leadership level. Using a product-of-coefficient method, we find that role clarity and supervisor relationships mediate these effects. These results imply that having more same-race subordinates puts managers of color into conflicts between organizational norms and the expectations of their own community.

*Keywords*—representative bureaucracy, critical mass, tokenism, supervisors, FEVS

# 1. Introduction

The leadership of the US Federal Government has long faced criticism for its lack of diversity, particularly regarding the underrepresentation of minorities (Choi, 2011). Despite people of color constituting 47% of entry-level bureaucrats, they occupy only about one-third of senior-level positions and even fewer within the senior executive service (SES) level (Partnership for Public Service, 2021). The Federal Government has been investing efforts to enhance diversity and equity in the workplace as research suggests that diversity management contributes to improved work performance and satisfaction (Ordu, 2016; Pitts, 2009; Vanderschuere & Birdsall, 2019). Furthermore, previous empirical evidence indicates that representativeness at the management level improves ordinary employees' job satisfaction and lowers their turnover rates (Grissom et al., 2012; Grissom & Keiser, 2011; Moon, 2018), although diversity within organizations can also create challenges (see Ding and Riccucci (2023) for a comprehensive review of the effects of diversity on organizational performance).

However, while previous research has explored how supervisors' demographic makeup influences the attitudes and well-being of their subordinates, relatively little attention has been given to understanding the impact on the supervisors themselves. Although extended literature has investigated the job satisfaction of ordinary employees, only a few studies have focused on the leadership level (e.g., DeSantis et al., 1992; Kumar et al., 1981; Zhang et al., 2011). Yet, the satisfaction of managers and leaders in organizations is crucial as they possess substantial decision-making power and can guide the organization to achieve its goals. Studies have also demonstrated a relationship between managers' satisfaction and organizational performance (Budihardjo, 2013; Daddi et al., 2019). Additionally, managers' attitudes toward the organization might impact their subordinates' perceptions. For example, Chen et al. (2014) found that mid-level managers' satisfaction with higher leadership affects the frontline employees' intention to leave. Therefore, it is crucial to study the factors that impact supervisors' job satisfaction.

Moreover, understanding how demographic congruence affects supervisors' work-related attitudes could provide important implications for the literature and practice of diversity management. Promoting people of color to leadership has been viewed as a solution to improve diversity management and benefit employees from minoritized backgrounds (Choi, 2009; Moon & Jung, 2018). This perspective is based on the argument that managers of color can represent people from similar backgrounds. However, it is important to consider how managers of color may

face additional challenges from diversity within their organization. If any additional challenges exist for supervisors, alternative management strategies or support mechanisms must be adopted.

Existing theories provide opposite expectations regarding how subordinates' demographics could affect supervisors' work-related attitudes. On the one hand, relational demography theory suggests that individuals benefit from working with people from similar backgrounds (Tsui et al., 1992). This rationale may also apply to the relationship between supervisors and subordinates, as having subordinates from similar backgrounds can foster smoother cooperation and interaction (Tsui et al., 1992; Tsui & O'Reilly III, 1989) and improve commitment and belongingness of the supervisors themselves (Hennessy & West, 1999; Mueller et al., 1999; Turner, 2010). Nevertheless, there appears to be limited empirical evidence in the public sector regarding this impact.

On the other hand, studies point out that minority bureaucrats encounter challenges and conflicts when they need to balance the expectations from their community and the organizational norm (Carroll et al., 2019; Habyarimana et al., 2007; Herbert, 1974). This tension could also arise when supervisors of color struggle between the expectations from their same-race subordinates and the organization's leadership. Additionally, scholars point out that minoritized leaders tend to experience isolation and pressure in their positions due to a lack of support and overloaded expectations (Kanter, 1977a; 1977b; Cook & Glass, 2015; Moore, 2013). Studies in the private sector have echoed this speculation, suggesting that minority and female managers experience role conflict (Arifeen & Syed, 2019; Miller et al., 2018) and isolation (Kanter, 1977a; 1977b; Moore, 2013; Strohine & Brandl, 2011). Still, the empirical evidence on whether supervisors of color in the public sector face increased burdens by having more same-race subordinates remains scarce.

This paper utilizes data from federal employees to explore whether having more subordinates from similar racial/ethnic backgrounds affects supervisors' job satisfaction and turnover intention given the existing level of support they receive from their organizations. An extended sample period from 2020 to 2023 allows us to control for both the agency fixed effect and year fixed effect to account for any unobserved factors that selected specific people into an environment and the overall trend in improving diversity in the Federal Government. Therefore, we are better able to obtain the effect of having a higher or lower share of same-race/ethnic subordinates using the between-year, within-agency variation. Additionally, we examine whether this relationship varies by supervisors' race/ethnicity and investigate potential mechanisms the government can adopt to mitigate the negative consequence.

## **2. Literature Review and Hypotheses Development**

### **2.1. The Benefits of Working with People from Similar Backgrounds**

Relational demography theory indicates that individuals tend to have more positive experiences when interacting with others from similar demographic backgrounds (Tsui et al., 1992). Specifically, people with similar backgrounds share knowledge and culture. Therefore, they might work together better and be more willing to help each other (Habyarimana et al., 2007; Heine et al., 2009). In addition, as people prefer to interact with those from similar backgrounds, demographical congruence might lead to better communication and cooperation (Tsui et al., 1992; Tsui & O'Reilly III, 1989). For example, Lin (2007) used data from college employees and found that higher coworker congruence leads to a greater likelihood of knowledge sharing. Besides, Mueller et al. (1999) discovered that teachers who work in schools with a higher proportion of same-race coworkers experience a higher level of co-worker support. Previous studies also found that people who encounter a higher proportion of colleagues with similar demographic backgrounds or values are likely to experience a higher level of cohesion, leading to a commitment to the organization (X.-P. Chen et al., 1998; Gonzalez, 2016; Mueller et al., 1999; Paillé, 2013; Popielarz & McPherson, 1995).

This relationship also applies to the interactions between supervisors and subordinates. For example, Bakar and McCann (2014) found that ethnic and gender congruence between supervisors and subordinates in Malaysia improved perceptions of the relationship for both parties. Jackson and Johnson (2012) found that in the US, similarity in self-identity between supervisors and subordinates across various industries led to better relationships, as reported by either supervisors or subordinates. In the education setting, previous studies found that teachers experience higher satisfaction and lower turnover when working in schools with a higher proportion of students from similar demographic backgrounds (Fairchild et al., 2012; Mueller et al., 1999; Renzulli et al., 2011). Overall, we expect that supervisors might benefit from a more positive relationship with their team members with a higher proportion of the same race/ethnicity among employees. This positive relationship could then lead to higher job satisfaction and lower turnover intentions (Avery et al., 2007; Choi, 2017; Hauret & Williams, 2020; Hoppe et al., 2014; Mueller et al., 1999; Nielsen & Madsen, 2017; Stainback & Irvin, 2012; Wang & Brower, 2019). Formally, we hypothesize:

*H1: Supervisors of both minority and nonminority backgrounds tend to have **higher** job satisfaction and **lower** turnover intention when they have a higher proportion of subordinates of the same race/ethnicity.*

## **2.2. The Burdens of Representation**

Despite the benefits of working with people from similar demographical backgrounds, under-represented managers also struggle with the tension between organizational expectations, their racial identity, and the expectations of their same-race subordinates (Arifeen & Syed, 2019; Carroll et al., 2019; Simons et al., 2007). Studies in the public sector have shown that bureaucrats from minority backgrounds often face tensions between organizational goals and the expectations of their own communities (Althaus & O’Faircheallaigh, 2022; Herbert, 1974; Carroll et al., 2019; Feit, 2024; C. M. Watkins-Hayes, 2011). For instance, Watkins-Hayes (2011) interviewed Black and Latino bureaucrats in welfare agencies, revealing that these individuals were caught between conflicting expectations: those of their clients, who expected service delivery in a certain manner based on shared demographic backgrounds, and those of the organization, which demanded adherence to rules and procedures. This tension places minority bureaucrats under significant pressure. Similar concerns may exist for minority supervisors facing tensions between their same-race subordinates and organizational norms. In particular, Carroll et al. (2019) note that as bureaucrats ascend the hierarchy, the tension between organizational norms and racial identity intensifies, as both the community and the organization place higher expectations when the bureaucrats climb up the ladder.

Additionally, literature focusing on the private sector has found that minority and female managers experience role conflict when the mainstream norm diverges from the expectations of their social group (Arifeen & Syed, 2019; Miller et al., 2018). For example, Miller et al. (2018) analyzed data from the private sector and found that minority supervisors with higher racial similarity to their intermediate subordinates experienced more relationship conflict and less trust. A similar pattern is likely to apply to the public sector. Therefore, we hypothesize:

*H2: Supervisors of minority backgrounds tend to have **lower** job satisfaction and **higher** turnover intention when they have a higher proportion of subordinates of the same race/ethnicity.*

Notice that  $H_2$  (supervisors of minority backgrounds burdened from same-race subordinates) partially contradicts  $H_1$  (supervisors of all backgrounds benefit from same-race subordinates). By presenting these two competing hypotheses, this paper specifically tests whether, for supervisors of minority backgrounds, the benefit of having subordinates from similar backgrounds would exceed or be surpassed by the burden of representation.

### **2.3. From Tokenism to Critical Mass**

Kanter (1977a, 1977b) highlights the importance of numerical distribution within an organization, shaping the status of a minoritized group. She discusses how women in a skewed organization, where females only account for a very small share, suffer from being treated as a “token.” As tokens, these women are viewed more as symbols or representatives of their categories rather than as individuals, leading to a series of negative consequences such as over-pressure, isolation, and encapsulation in stereotypical roles. While Kanter’s original theory focuses on gender effects in private corporations, subsequent studies have also identified similar patterns for gender minorities in the public sector (Choi & Ko, 2024; Gidengil & Vengroff, 1997; Harris, 2013) and for racial/ethnic minorities in various settings (Cook & Glass, 2015; Moore, 2013; Stroshine & Brandl, 2011). The central argument of tokenism theory is that the negative experiences of minority groups in the workplace are not solely due to the social status of their groups but are also attributed to their numerical distribution within the organization. The more skewed the composition, the more likely they are to experience the negative effects of tokenism. For example, Althaus and O’Faircheallaigh (2022) state that pressure on Indigenous bureaucrats results from the overwhelming demand for Indigenous interests falling on very few Indigenous public servants.

However, this adverse situation might be mitigated once the minority group occupies a significant share of the working environment. While studies vary on the threshold for a critical mass, the consensus is that the size of the minority in decision-making positions matters (Cook & Glass, 2015; Fredette & Sessler Bernstein, 2019; Harris, 2013; Li, 2024). For example, Jackson et al. (1995) found that the level of depression and role overload among African Americans in leadership positions decreased once the workplace composition moved from highly skewed (dominated by Whites) to a more balanced environment. Kalbfeld (2019) also finds that the feeling of isolation experienced by minority students is reduced once they obtain a higher share on campus. Therefore, we expect that:

*H3: As the proportion of same-race/ethnicity colleagues at the leadership level increases, the negative effects of the proportion of same-race/ethnicity subordinates would reduce. (The proportion of colleagues of the same race/ethnicity **moderates** H2.)*

## **2.4. The Mechanisms of the Burdens**

While we expect a relationship between the race/ethnicity of supervisors and job satisfaction/turnover intention to be affected by whether they have a higher proportion of subordinates of the same race/ethnicity, existing literature also suggests specific mediating variables that provide a causal mechanism for why this would be the case. We examine two of them that can be tested using the FEVS data.

The racial composition of subordinates can influence supervisors' work-related attitudes through two pathways. The first pathway relates to supervisors' internal tension arising from goal conflict. Studies argue that role incongruence and conflict are major causes of tension faced by minority bureaucrats (Carroll et al., 2019; Habyarimana et al., 2007; Herbert, 1974). Minority managers may feel a personal commitment to their own community and wish to advocate for individuals of their own demographic background. However, organizational procedures and norms may restrict their ability to take meaningful action. This role conflict diminishes minority supervisors' well-being and job-related attitudes. Specifically, as the proportion of same-race subordinates increases, tension due to role conflict may escalate. Role conflict can be operationalization as a lack of role clarity (Hassan, 2013; Jong, 2016); therefore, we expect:

*H4: A higher proportion of subordinates of the same race/ethnicity leads to a **lower** level of role clarity, which in turn **reduces** minority supervisors' job satisfaction and **increases** their turnover intention. (Role clarity **mediates** H2.)*

The second mechanism involves interactions and relationships with their managers at the higher hierarchy or the organization leaders. When minority supervisors seek to advocate for their same-race subordinates, but their values conflict with organizational norms, tension could arise in interactions with the organization's leadership. For instance, Althaus and O'Faircheallaigh (2022) found that Indigenous bureaucrats who advocate for Indigenous groups and challenge agency policies may be labeled as difficult by the organization. Additionally, Herbert (1974) and Carroll et al. (2019) highlight colleague pressure and organizational socialization as crucial sources of

dilemma for minority administrators. Therefore, we expect that, for supervisor of color, as the proportion of same-race subordinates increases, the relationship with their supervisors worsens because they face increased tension between an advocacy role for subordinates and organizational norms, especially when the organization’s leadership is primarily dominated by a “Whiteness” culture (Feit, 2024). This impact would then lead to lower job satisfaction and higher turnover intention. Formally, we hypothesize that:

*H5: A higher proportion of subordinates of the same race/ethnicity leads to a worse quality of supervisor relationships, which in turn reduces minority supervisors’ job satisfaction and increases their turnover intention. (Supervisor relationship mediates H2.)*

### 3. Data and Method

#### 3.1. Data and Sample

Our data comprises the Federal Employee Viewpoint Survey (FEVS) and FedScope (Federal Workforce Data). The sample period spans from 2020 to 2023. The FEVS, conducted by the Office of Personnel Management (OPM), targets permanent full- and part-time federal employees.<sup>1</sup> The survey is distributed to all employees, with response rates ranging from 35% to 44% (OPM, 2023). We also utilize data from the 2015 to 2019 FEVS as a robustness check.

FedScope, managed and released by OPM, offers demographic and human resources data on federal agencies.<sup>2</sup> The dataset provides de-identified individual-level data on age, education level, salary, years of service, supervisor status, employment type, and work unit information. Additionally, FedScope’s online data cubes offer information on employee headcounts by race/ethnicity and gender at the agency level. We utilize this information to construct agency-level variables on average characteristics and demographic composition by supervisor status.<sup>3</sup> Data linkage between FEVS and FedScope is conducted at the agency level.

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<sup>1</sup> The data is available at <https://www.opm.gov/fevs/public-data-file/>.

<sup>2</sup> The data is available at: <https://www.fedscope.opm.gov>.

<sup>3</sup> Due to confidentiality concerns, the FedScope dataset shields any cells with a value below 4. We first calculate the missing data by referring to information from other cells when applicable. When the exact numbers cannot be determined, we randomly assign a number between 0 and the maximum possible values. Of the around 2,300 agency-by-year-by-race-by-supervisor status cells, approximately 1% have missing values and require random imputation.



From 2020 to 2023, the FEVS yielded a total of 2.1 million respondents nested within more than 80 federal agencies. Focusing on supervisors, we retained 455,218 respondents. We define supervisors as respondents who indicate themselves as first-line supervisors, managers, and senior leaders.<sup>4</sup> Due to confidentiality, FEVS only releases agency information for respondents with a minimum count of 300. Additionally, the FEVS also masks the demographic information when the agency-by-supervisor-status-by-gender-by-race cell consists of less than ten respondents. Excluding respondents with no agency or race/ethnicity information, the sample size became 403,135 (a drop of 12%) nested in 32 federal agencies. After dropping observations with missing outcome variables, the final sample size was 376,417 (a drop of 7%).

### **3.2. Variables and Measurement**

#### *Dependent Variables*

Our dependent variables are supervisors' job satisfaction and turnover intention. Following previous studies (Choi, 2013, 2017; Fernandez & Moldogaziev, 2013; Wang & Brower, 2019), we use two measurement items to construct the variable on job satisfaction — “Considering everything, how satisfied are you with your job?” and “Considering everything, how satisfied are you with your organization?” The variable is constructed using exploratory factor analysis (EFA), with details provided in Table A1, Appendix A. In the robustness check, we test the impact on each single item as well as introduce additional variables, and the result remains consistent.

Turnover intention is measured with one questionnaire item from the FEVS survey. The question asks the respondents, “Are you considering leaving your organization within the next year, and if so, why?” We set the turnover intention as 1 if the respondents answer “Yes” and 0 if the respondents answer “No.”<sup>5</sup>

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<sup>4</sup> According to the FEVS questionnaire, a senior leader is defined as “You are the head of a department/agency or a member of the immediate leadership team responsible for directing the policies and priorities of the department/agency. May hold either a political or career appointment, and typically is a member of the Senior Executive Service or equivalent.” A manager is defined as “You are in a management position and supervise one or more supervisors.” A supervisor is defined as “You are a first-line supervisor who is responsible for employees’ performance appraisals and leave approval.” In addition, Team Leader—as defined as “You are not an official supervisor; you provide employees with day-to-day guidance in work projects, but do not have supervisory responsibilities or conduct performance appraisals.”—is not treated as a supervisor.

<sup>5</sup> The choices of answers to the question include: “No,” “Yes, to retire,” “Yes, to take another job within the Federal Government,” “Yes, to take another job outside the Federal Government,” and “Yes, other.” However, the FEVS publicly-released file combines the option of retiring with the option of other reasons. Hence, we cannot separate people indicating that they will retire.

### *Key Independent Variables*

Our primary independent variables are the proportion of subordinates of the same race/ethnicity. Respondents' race/ethnicity is measured with a 5-bin grouping—White, Black, Hispanic, Asian, and Others. For the first four groups, the proportion of same-race subordinates is measured as employees of nonsupervisory status who share the same race/ethnicity in the same agency in a given year. The “Others” group includes Native Hawaiian and Pacific Islander (NHPI), American Indian and Alaska Native (AIAN), and individuals of two or more races. For this group, same-race subordinates are defined as those who also belong to these categories. Although this measurement oversimplifies the heterogeneity of this racial group, they constitute less than 5% of our sample. The robustness check excluding the “Others” group showed consistent results.

Ideally, we should measure the share of same-race/ethnicity subordinates among immediately supervised employees instead of the agency level. However, due to the unavailability of immediate supervising relationships in our dataset, we can only measure these variables as the proportion of same-race/ethnicity nonsupervisory employees over total nonsupervisory employees in the agency. In the robustness check, we test the sensitivity of the results to the level of working unit measurement using data from 2015 to 2019 FEVS, which provides work unit information at one level under the agency, though only a binary measurement of race/ethnicity. We report findings from the 2020–2023 FEVS data in the main text because this period of data provides a more detailed racial/ethnic grouping, which allows us to measure supervisors' race/ethnicity precisely and exactly match the composition of subordinates they represent.

We also measured the proportion of same-race colleagues in a similar way. For White, Black, Hispanic, and Asian, the variable is constructed as the proportion of same-race/ethnicity employees who also have supervisor status within the same agency in a given year. For the “Others” group, this variable is measured as the composition of colleagues who also belong to the group.

### *Mediation Variables*

We have two mediation variables — role clarity and supervisor relationship. Role clarity refers to the extent to which employees have a clear understanding of their responsibilities and the expectations from their job positions (Jong, 2016; Katz & Kahn, 2015; Verlinden et al., 2023). Role clarity is also related to the clear pathway from the role definitions to the organizational goals (Hassan, 2013; Skogstad et al., 2007). This is especially true when the focus is on people at the

management level, those expected to achieve the agency's goal. Hence, we measure role clarity with two questionnaire items: "I know what is expected of me on the job." And "I know how my work relates to the agency's goals." Both items are measured with a five-point Likert Scale, and the variable is constructed using EFA. Table A1 in Appendix A reports the factor loadings of the measurement items.

A positive experience with supervisors can be conceptualized in different ways. Previous studies that have utilized FEVS also adopt various items in measuring supervisor relationships (Harrington & Lee, 2015; Kim & Ko, 2014; Wang & Brower, 2019). The core argument of this paper concerns the notion that supervisors of color might struggle between different expectations from their subordinates and (higher hierarchy) supervisors. Therefore, we use six questionnaire items that capture the concept of whether the respondents feel support, respect, and trust with their supervisors. Some sample items are: "My supervisor listens to what I have to say" and "I have a high level of respect for my organization's senior leaders." All items are measured with a five-point Likert Scale, and the variable is constructed using EFA. Details of the questionnaire items and factor loadings can be found in Table A1, Appendix A.

### *Control Variables*

Our model includes a varied set of control variables. Individual-level covariates consist of gender, race/ethnicity, age,<sup>6</sup> years of experience in the federal government,<sup>7</sup> and military service experience. Agency-level covariates encompass employee characteristics by supervisor status at the aggregate level. These characteristics include average age, years of education, years of service, log salary, log number of employees, and share of females. The variables are sourced from FedScope, providing objective human resources data. Additionally, we also control for the overall diversity in the agency at both subordinate and supervisor levels, as previous studies suggest workforce diversity affects employees' work-related attitudes (Choi, 2017; Hauret & Williams, 2020; Moon, 2018). Following previous studies (Hur & Strickland, 2015; Moon & Jung, 2018; Pitts, 2005), we use the Blau index of heterogeneity to construct the diversity measurement.<sup>8</sup> In the robustness check, we use alternative measures, and the result remains consistent.

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<sup>6</sup> A binary indicator of whether age is above 40.

<sup>7</sup> The measurement is based on three groups: below ten years, 10–20 years, and above 20 years.

<sup>8</sup> The formula of the Blau index is:  $BI = 1 - \sum(p_i^2)$ , where  $p_i$  stands for the proportion of the race group  $i$  in the measured population. In the case when the composition is dominated by only one racial group, the Blau index would be 0. In the case when all racial groups have an equal share, the Blau index would reach its peak.

### 3.3. Summary Statistics

Table 1 presents the summary statistics. Our sample comprises 69% White non-Hispanic respondents, 12% Black, 9% Hispanic, 5% Asian, and 5% Others. Within the federal government and at the supervisory level, this proportion is 67%, 15%, 10%, 5%, and 4%.<sup>9</sup> Hence, our sample is quite representative of the population of federal supervisors, though perhaps slightly underrepresented of Black.

Considering the comparison across races/ethnicities, a higher proportion of supervisors of color are also female compared to White supervisors. Black supervisors tend to be older and have longer experience in the federal government than other races/ethnicities, and Asian supervisors tend to be less experienced.

Job satisfaction and mediation variables are standardized, with a mean of zero and a standard deviation of one across all samples. The mean and standard deviation of the raw values are available in Table A1 in Appendix A. Black and Asian supervisors tend to report higher job satisfaction, role clarity, and relationships with their supervisors. Conversely, Hispanics and other supervisors tend to report lower values for these variables. Asian supervisors report lower turnover intention, while supervisors of other minority groups have higher turnover intention.

The bottom panel of Table 1 reports the summary statistics for the key independent variables. White supervisors tend to have a higher proportion of same-race subordinates and colleagues, averaging 61% and 68%, respectively. In contrast, supervisors of color have 7% to 19% same-race subordinates and 6% to 16% same-race colleagues. In terms of the across-year and agency variation, the composition of same-race subordinates for supervisors of color ranges from 2% to 40%. And the figure for colleague composition is from 0.7% to 38%.

### 3.4. Method

Identifying the effect of having a higher or lower proportion of same-race subordinates is challenging due to individuals choosing where to work and agencies selecting whom to promote to leadership roles. For example, individuals may intentionally choose agencies with demographically homogeneous environments, while agencies with less diversity might purposefully promote managers of color who are adept at navigating such environments.

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<sup>9</sup> Statistics retrieved from FedScope (<https://www.fedscope.opm.gov/diversity.aspx>).

Table 1: Summary Statistics

	All	White	Black	Hispanic	Asian	Others
Number of Observations	376,417	261,267 (69.4%)	45,219 (12.0%)	35,093 (9.3%)	16,977 (4.5%)	17,861 (4.7%)
<b>Individual Demographics</b>						
Female	0.39 (0.49)	0.36 (0.48)	0.55 (0.50)	0.38 (0.49)	0.42 (0.49)	0.43 (0.50)
Age over 40	0.88 (0.33)	0.87 (0.33)	0.92 (0.27)	0.85 (0.35)	0.89 (0.31)	0.89 (0.31)
Have Military Experience	0.29 (0.45)	0.30 (0.46)	0.33 (0.47)	0.30 (0.46)	0.10 (0.31)	0.30 (0.46)
Years of Experience in Federal Government						
10 or fewer years	0.20 (0.40)	0.19 (0.40)	0.19 (0.39)	0.21 (0.41)	0.26 (0.44)	0.21 (0.40)
10-20 years	0.42 (0.49)	0.43 (0.49)	0.39 (0.49)	0.44 (0.50)	0.44 (0.50)	0.42 (0.49)
20 or more years	0.38 (0.48)	0.38 (0.49)	0.41 (0.49)	0.35 (0.48)	0.30 (0.46)	0.37 (0.48)
<b>Dependent/Mediation Variables</b>						
Job Satisfaction (Standardized)	-0.00 (1.00)	-0.01 (1.01)	0.11 (0.94)	-0.02 (1.03)	0.11 (0.89)	-0.15 (1.03)
Turnover Intention	0.30 (0.46)	0.30 (0.46)	0.30 (0.46)	0.29 (0.45)	0.23 (0.42)	0.35 (0.48)
Role Clarity (Standardized)	-0.00 (1.00)	0.00 (0.99)	0.05 (0.98)	-0.07 (1.07)	0.10 (0.93)	-0.15 (1.05)
Supervisor Relationship (Standardized)	-0.00 (1.00)	-0.01 (1.00)	0.09 (0.95)	-0.04 (1.06)	0.12 (0.91)	-0.13 (1.07)
<b>Independent Variables</b>						
% Same Race Subordinates	0.47 (0.23)	0.61 (0.09)	0.19 (0.07)	0.14 (0.07)	0.08 (0.04)	0.07 (0.05)
% Same Race Colleagues	0.51 (0.27)	0.68 (0.07)	0.16 (0.06)	0.12 (0.06)	0.06 (0.03)	0.06 (0.04)

Note: Standard deviation in parentheses. Job satisfaction, supervisor relationships, and role clarity are standardized values. The summary statistics of raw values are available in Appendix Table A1.

To address these concerns, we utilize a two-way fixed effects (TWFE) model, incorporating agency fixed effects and year fixed effects, to assess the impact of having a higher proportion of same-race subordinates. Given our panel data structure, where we observe the same agencies multiple times over different years, we can directly control for agency-specific effects that account for time-invariant characteristics such as the working environment, the nature of the business, or organizational culture. Additionally, the year fixed effects help adjust for time-related changes across the federal government, such as shifts in diversity awareness. Previous literature indicates that the TWFE model can effectively account for both unobserved unit characteristics and temporal effects, providing a reliable estimate of the treatment effect (Brüderl & Ludwig, 2015; Fernández-Val & Weidner, 2018; Lee & Yu, 2010; Sobel, 2012).

Under the TWFE model, the impact of subordinates' racial composition is identified using the variations within the same agency across time. Specifically, we estimate the following equation:

$$Y_{ijt} = \alpha_0 + \alpha_1 \text{SameRaceSubordinates}_{ijt} + \alpha_2 \text{SameRaceColleagues}_{ijt} + \lambda X_{ijt} + \kappa Z_{jt} + \theta_j + \delta_t + \varepsilon_{ijt} \quad (1)$$

where  $Y_{ijt}$  is the outcomes of interest (job satisfaction and turnover intention) for individual  $i$  in agency  $j$  in year  $t$ .  $\text{SameRaceSubordinates}_{ijt}$  is the proportion of subordinates of same race/ethnicity for respondents  $i$  in work unit  $j$  in year  $t$ .  $\text{SameRaceColleagues}_{ijt}$  is the proportion of colleagues (employees also holding supervisory status) of same race/ethnicity for respondents  $i$  in agency  $j$  in year  $t$ .  $X_{ijt}$  is a vector of individual covariates.  $Z_{jt}$  is a vector of agency covariates.  $\theta_j$  is the agency fixed effect.  $\delta_t$  is the year fixed effect.  $\varepsilon_{ijt}$  is the error component. The primary parameter of interest is  $\alpha_1$ , which identifies the impact of having subordinates of 100% of the same race/ethnicity compared to 0%. For the continuous outcomes, we use an OLS model, while for the turnover intention (binary outcomes), we use a logistic model.

To investigate whether the effect is moderated by the proportion of same-race/ethnic colleagues, we estimate:

$$Y_{ijt} = \beta_0 + \gamma_1 \text{SameRaceSubordinates}_{ijt} + \beta_2 \text{SameRaceColleagues}_{ijt} + \beta_3 \text{SameRaceSubordinates}_{ijt} \times \text{SameRaceCoworkers}_{ijt} + \lambda X_{ijt} + \kappa Z_{jt} + \theta_j + \delta_t + \varepsilon_{ijt} \quad (2)$$

This equation introduces an interaction term between the proportions of same-race/ethnicity subordinates and colleagues.  $\beta_1$  denotes the effect of having more same-race/ethnic subordinates when there are 0% same-race/ethnic co-workers at the supervisory level.  $\beta_2$  denotes the effect of having more same-race/ethnic colleagues when there are 0% same-race/ethnic subordinates.  $\beta_3$  is the primary parameter of interest, which denotes the change in the impact of same-race/ethnic subordinates when the proportion of same-race/ethnic colleagues increases. According to the expectation of  $H_3$ , the estimate should be positive.

The paper also examines the mediation roles of supervisor relationships and role clarity. Following Pituch and Stapleton (2008), we apply the product-of-coefficients method<sup>10</sup> to calculate the mediation effect and the bootstrap approach to estimate the standard error of that mediation effect. Previous literature suggests that the bootstrap method might produce a more reliable confidence interval of mediation effect than other methods (MacKinnon et al., 2004).

Specifically, we perform resampling 1,000 times within the agency-by-year cluster. For each bootstrap sample, we estimate two sets of models. The first model examines the effect of the independent variables on the mediation variables. The second model estimates the effect of the mediation variables on the outcome variables. The standard error of the mediation effect is defined as the standard deviation of the 1,000 estimates from the bootstrap samples.

## **4. Results**

### **4.1. The Impact on Supervisors' Job Satisfaction and Turnover Intention**

Table 2 presents the impact of having more subordinates of the same race/ethnicity on job satisfaction and turnover intention. The table only reports coefficients on key variables, and Table A2 in Appendix A demonstrates the estimation of all covariates. Columns (1) and (3) only include the individual and agency level control variables. Overall, all else being equal, Black, Hispanic, and Asian supervisors tend to have higher job satisfaction than White supervisors, and other minorities tend to have lower job satisfaction (see Column (1)).

The overall diversity index of subordinates is negatively associated with supervisors' job satisfaction, while the diversity of supervisors demonstrates a positive relationship (see Column (1)). However, neither of these estimations is significant. On the other hand, both the subordinates and supervisor diversity index are positively associated with turnover intention, but only the subordinate diversity is statistically significant (see Column (3)). As the diversity index increased by one unit, the odds for turnover intention of supervisors became 22 times higher. Previous studies find mixed evidence on whether diversity in the workplace improves overall satisfaction or creates additional challenges (Choi, 2013, 2017; Ding & Riccucci, 2023; Moon, 2018). The estimations revealed in Table 2 also demonstrate some inconsistent patterns depending on the outcomes of interest and whether the diversity is measured at ordinary employees or supervisory levels.

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<sup>10</sup> Specifically, the mediation effect of variable Z is defined as the product of the coefficient of X's impact on Z and the coefficient of Z's impact on Y when controlling for X.

Table 2: The Impact of Same-race/ethnicity Subordinates on Work-related Attitudes

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable:	Job Satisfaction		Turnover Intention (Logistic Regression)			
			Coef.	Odds. Ratio	Coef.	Odds. Ratio
<i>Independent Variable</i>						
% Same Race Subordinates		-0.848*** (0.238)			-0.469 (0.414)	0.626 (0.259)
% Same Race Colleagues		0.793*** (0.237)			0.217 (0.471)	1.242 (0.585)
<i>Individual Level Control</i>						
Race/Ethnicity (ref. grp.: White)						
Black	0.093*** (0.014)	0.150*** (0.038)	0.048* (0.028)	1.050* (0.030)	-0.033 (0.091)	0.968 (0.088)
Hispanic	0.039*** (0.010)	0.081** (0.040)	-0.007 (0.023)	0.993 (0.023)	-0.105 (0.086)	0.900 (0.078)
Asian	0.090*** (0.015)	0.138*** (0.040)	-0.184*** (0.032)	0.832*** (0.027)	-0.294*** (0.099)	0.745*** (0.074)
Others	-0.146*** (0.015)	-0.108** (0.044)	0.257*** (0.021)	1.292*** (0.028)	0.140 (0.100)	1.150 (0.115)
<i>Agency Level Control</i>						
Diversity (Blau Index) of subordinates	-0.658 (1.063)	-1.178 (1.109)	3.109* (1.866)	22.396* (41.794)	2.818 (1.873)	16.751 (31.375)
Diversity (Blau Index) of supervisors	0.948 (1.379)	1.310 (1.422)	0.907 (2.473)	2.477 (6.126)	1.005 (2.411)	2.732 (6.587)
Observations	376,417	376,417	376,417	376,417	376,417	376,417
R-squared	0.034	0.034	0.022	0.022	0.022	0.022

Note: This table reports the coefficients estimated from equation (1). Standard errors clustered at the agency by year level are reported in parentheses. The table only presents the coefficients of selected variables. The results of all covariates are available in Table A2 in Appendix A. All models include individual and agency-level covariates, agency fixed effects, and year fixed effects. \*\*\* $< 0.01$ , \*\* $< 0.05$ , \* $< 0.1$

Columns (2) and (5) further include the variables on subordinates' and colleagues' racial congruency. The result indicates that a higher proportion of same-race/ethnicity subordinates within the agency leads to lower job satisfaction among supervisors (see Column (2)). As the dependent variable is a standardized value, the interpretation of the coefficients would be that an increase in the proportion of same-race/ethnic subordinates by 10 percentage points (pps) corresponds to a decrease in job satisfaction by 0.085 standard deviations ( $p < 0.01$ ). The overall impact on turnover intention is non-significant (see Column (5)).

To formally test our hypothesis regarding the heterogeneous effects by race/ethnicity, we interact the race/ethnicity variables with the independent variable. Figure 1 reports the marginal effect for each racial group. For White supervisors, having 10 pps more same-race subordinates leads to a 0.18 standard deviation increase in job satisfaction ( $p < 0.01$ ) and a 0.08 decrease in the likelihood of turnover ( $p < 0.01$ ). The results indicate that White supervisors benefit from having subordinates of similar backgrounds. The evidence partially supports  $H_1$ .



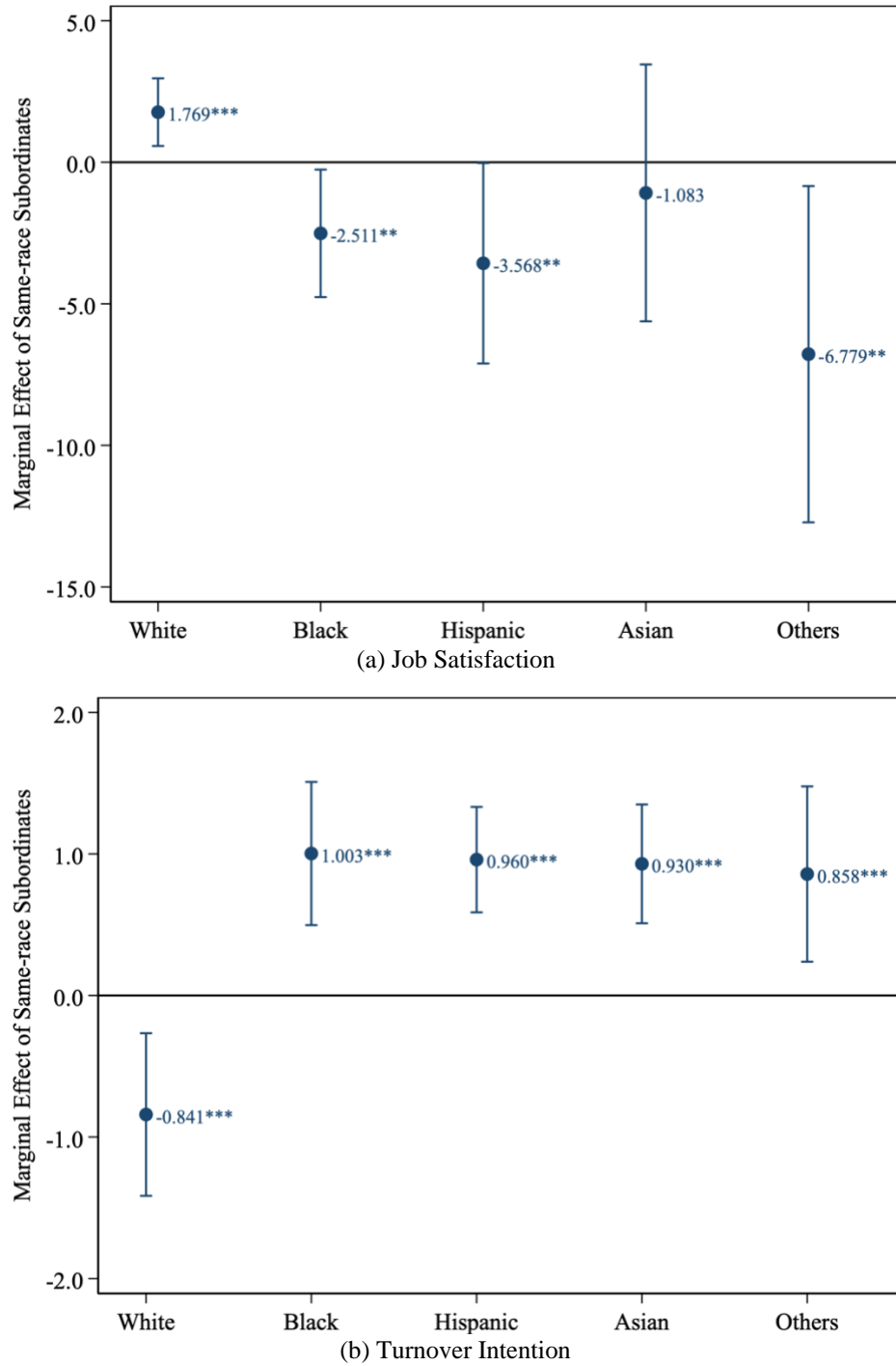


Figure 1: Marginal Effects of Proportion of Same-race Subordinate

Note: This figure reports the coefficients estimated from equation (1) with the interaction of the race variable on the proportion of same-race subordinates. The horizontal axis denotes the respondents' race/ethnicity. The vertical axis denotes the marginal impact of subordinates of the same race/ethnicity. The symbol denotes the point estimate, and the error bar shows the 95% CI, with standard error clusters at the agency by year level.

\*\*\* $< 0.01$ , \*\* $< 0.05$ , \* $< 0.1$ .

Conversely, supervisors of color experience a reverse effect. When having 10 pps more same-race subordinates, supervisors of color show a 0.1 to 0.7 standard deviation drop in job satisfaction and a 0.08 to 0.1 increase in the likelihood of turnover intention. Most results are significant except for the impact on satisfaction for Asian supervisors. Substantially, for Black supervisors, the impact of having 10 pps more same-race subordinates is a 0.25 standard deviation drop in job satisfaction, equivalent to 2.7 times the mean difference between Black and White supervisors (see Table 2, Column (1)). For Hispanics, the impact is 9 times, 1.2 times for Asians, and 4.6 times for other minorities. Regarding turnover intention, a 10 pps increase in same-race subordinates results in a 0.1 pps rise in turnover intention for Black supervisors, equating to 33% of their average turnover intention (see Table 1). The figures are 33% for Hispanics, 40% for Asians, and 25% for other minorities. The findings align with the expectation from H<sub>2</sub>.

In the above analysis, we use EFA to construct the job satisfaction variable based on overall satisfaction on the job and the organization. See Figure A1 in Appendix A for the impact of having more same-race subordinates on job satisfaction of different dimensions — job, organization, pay, information, recognition, and involvement. Overall, supervisors of color experience a negative impact from same-race subordinates in all measurement items. As demonstrated in Figure A1, the magnitudes of the effect sizes of same-race subordinates are quite comparable across various measurement items of satisfaction. The smallest impact is on overall satisfaction on “job” ( $\beta = -0.732$ ), and the largest impact is on overall satisfaction on “organization” ( $\beta = -0.985$ ).

## 4.2. Moderation Analysis

This section examines the moderating effect of the demographic composition of colleagues with supervisory status. Specifically, we interact variables on subordinates’ racial/ethnic composition with the colleagues’ composition. Table 3 reports the estimated coefficients from equation (2). Column (1) focuses on the impact on job satisfaction. The coefficient for same-race subordinates is negative ( $\beta = -1.128, p < 0.1$ ), indicating that having more same-race subordinates tends to reduce job satisfaction when there are no same-race colleagues at the supervisory level. The coefficient of the interaction term is positive ( $\beta = 3.136, p < 0.01$ ), suggesting that as the proportion of same-race colleagues increases by 10 pps, the negative impact of same-race subordinates diminishes by 0.3 points. When the same-race colleagues reach 36%, the initial negative effect of same-race subordinates shifts to a positive benefit.

Table 3: Moderation Analysis

	(1)	(2)	(3)
	Job Satisfaction	Turnover Intention (Logistic Regression)	
		Coef.	exp(Coef.)
% Same Race Subordinates	-1.128*	3.392	29.713
	(0.659)	(2.311)	(68.678)
% Same Race Colleagues	-0.824	3.173	23.868
	(0.835)	(2.244)	(53.549)
% Same Race Subordinates × % Same Race Colleagues	3.136***	-9.612***	0.00007
	(1.114)	(3.497)	(0.00023)
Turning point	0.360		0.353
Observations	376,417		376,417
R-squared	0.036		0.023

Note: This table reports the coefficients estimated from equation (2). Standard errors clustered at the agency by year level are reported in parentheses. All models include individual and agency-level covariates, agency fixed effects, and year fixed effects. Column (2) reports the coefficient based on logistic regression and reports the coefficient as the log odds. Column (3) reports the exponentiated logistic coefficients, which could be interpreted as the odds ratio for the constituent term and the “ratio of odds ratios” for the interaction term.

\*\*\*< 0.01, \*\*< 0.05, \*< 0.1

Column (2) examines turnover intentions and reveals a similar pattern. Here, the coefficient for same-race subordinates is positive ( $\beta = 3.392, p > 0.1$ ), meaning that a higher share of same-race subordinates increases turnover intentions when there are no same-race colleagues at the supervisory level. The coefficient of the interaction term is negative ( $\beta = -9.612, p < 0.01$ ), indicating that with every 10 pps increase in same-race colleagues, the adverse effect decreases by 0.9 points (in log odds). The negative impact of same-race subordinates eventually reverses when the proportion of same-race colleagues reaches 35.3%. Overall, the evidence supports H<sub>3</sub>.

Figure 2 reports the marginal effects of having a higher proportion of same-race/ethnic subordinates based on the share of same-race/ethnicity colleagues at the supervisory level. When the proportion of same-race colleagues is low (below 35%), a higher share of same-race subordinates leads to a drop in job satisfaction and an increase in turnover intention. However, the relationship reverses when the proportion of same-race colleagues in the leadership reaches 35%.

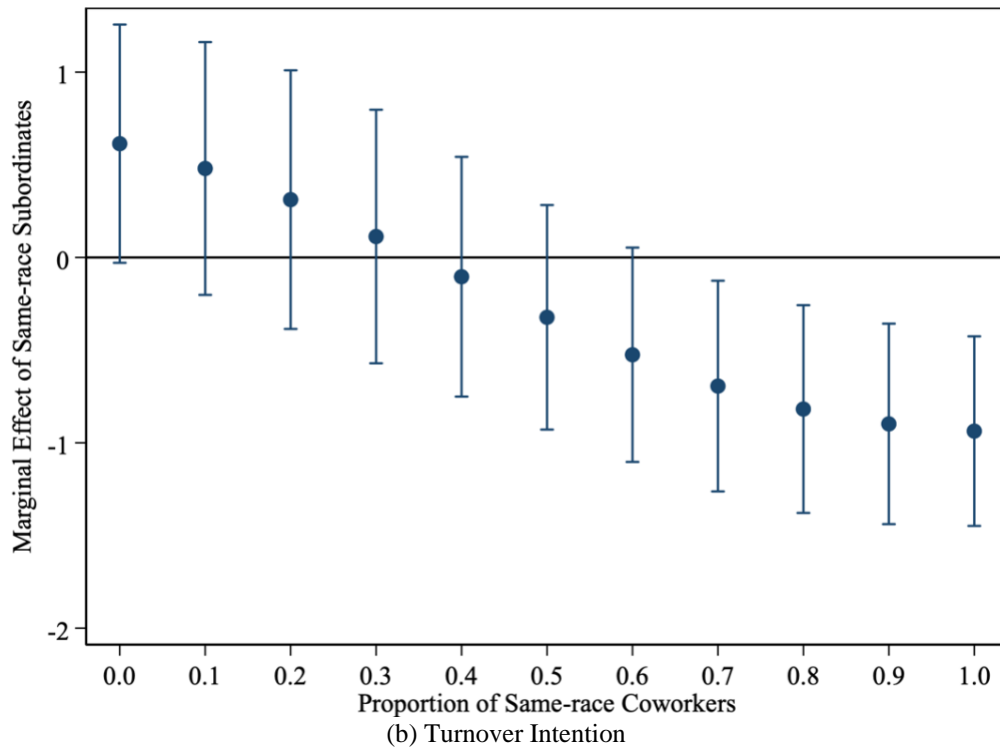
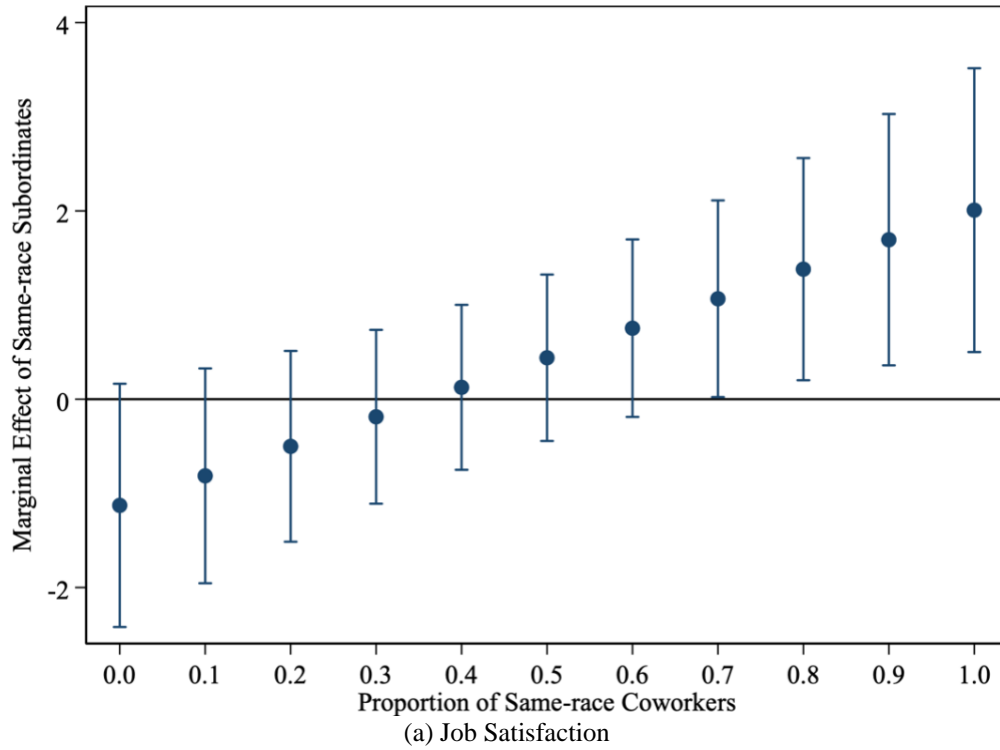


Figure 2: Moderate Effects of Proportion of Same-race Colleagues

Note: This figure reports the marginal effects estimated from equation (2). The horizontal axis denotes the proportion of same-race/ethnicity colleagues (i.e., who are also supervisors in the agency). The vertical axis denotes the marginal impact of same-race/ethnicity subordinates. The symbol denotes the point estimate, and the error bar shows the 95% CI, with standard error clusters at the agency by year level.

### **4.3. Mediation Analysis**

This paper also explores the mechanism of the impact of subordinate composition on supervisors' work-related attitudes. Specifically, we consider the mediation role of role clarity and the quality of supervisor relationships. Table 4 presents the formal analysis of the mediated effects using the product-of-coefficients and bootstrap method. Panel A focuses on job satisfaction. The first column reports the pooled results based on all races/ethnicities. Both variables yield significant mediated effects. In particular, role clarity mediates approximately 34% of the total effect of same-race/ethnicity subordinates on job satisfaction. Supervisor relationships also play an important role, accounting for 23% of the total effects on job satisfaction. Columns (2) and (3) further separate the samples by minority status. The mediation effects exist only for supervisors of color. This pattern aligns with the theoretical prediction that supervisor relationships and role clarity would mediate the negative consequences of having same-race subordinates, particularly for minority managers (see Table 4, Column (3)).

Panel B focuses on turnover intention, analyzed using logistic regression. For easier interpretation, the table reports marginal effects at the mean. Both supervisor relationships and role clarity yield significant mediation impacts, albeit in opposite directions relative to job satisfaction. Specifically, as expected, a higher share of same-race subordinates is associated with a lower level of role clarity and a worse quality of supervisor relationship, leading to reduced job satisfaction and higher turnover intentions. The mediation effects for the level of role clarity and the quality of supervisor relationships are similar in magnitude, consistently supporting H4 and H5.

### **4.4. Robustness Check**

In the main analysis, we include the racial group of "Others," consisting of AIAN, NHPI, and people of two or more races. However, this group is quite heterogeneous, raising the theoretical concern about whether AIAN supervisors could represent NHPI or any other similar combinations. Table A3 in Appendix A conducts a robustness check that excludes this group. The estimated results on overall impact, heterogeneous impacts across race/ethnicity, and moderating analysis remain consistent.

Table 4: Direct and Indirect Effects

	All	White	Non-White
<b>Panel A: Job Satisfaction</b>			
Direct Effect	-0.363*** (0.123)	1.296*** (0.350)	-1.673*** (0.467)
Indirect Effect			
<i>Role Clarity</i>	-0.292*** [0.045]	0.254 [0.195]	-0.745** [0.323]
<i>Supervisor Relationship</i>	-0.194*** [0.042]	0.153 [0.167]	-0.655** [0.295]
Total Effect	-0.848*** (0.238)	1.703*** (0.609)	-3.073*** (0.871)
<b>Panel B: Turnover Intention (Marginal Effect from Logit Regression)</b>			
Direct Effect	-0.183*** (0.068)	-0.720*** (0.224)	0.364*** (0.102)
Indirect Effect			
<i>Role Clarity</i>	0.042*** [0.006]	-0.037 [0.028]	0.107*** [0.047]
<i>Supervisor Relationship</i>	0.040*** [0.009]	-0.031 [0.034]	0.134*** [0.060]
Total Effect	-0.095 (0.084)	-0.749*** (0.258)	0.444*** (0.129)

Note: The coefficients of indirect effects are calculated using the product-of-coefficient method. Standard error cluster at the agency by year level in parentheses. Bootstrapping standard errors retrieved from 1,000 times resampling within the agency-by-year cluster in squared brackets. All models include individual and agency-level covariates, agency fixed effects, and year fixed effects. \*\*\* < 0.01, \*\* < 0.05, \* < 0.1

In the primary results, we control for the agency’s overall diversity using the Blau index at both the subordinate and supervisor levels. While the Blau index is commonly used in the literature (Hur & Strickland, 2015; Moon & Jung, 2018; Pitts, 2005), some studies argue that other measurements—such as the entropy index or the proportion of minorities—might be more appropriate (Choi, 2009, 2013, 2017). Table A4 in Appendix A employs alternative diversity measurements to test for robustness. We consider the case when using the Blau index for the entire agency (instead of subordinates and supervisors separately), the entropy index, and the composition of each race. The results remain robust across these alternative controls.

One key limitation of this paper is that we rely on agency-level subordinate composition. However, people working in the same agency do not necessarily interact frequently. Therefore, we conduct a robustness check using 2015 to 2019 FEVS data. In this sample period, the FEVS reports the work unit of one level below agencies.<sup>11</sup> This data allows us to measure subordinate composition more closely. The limitation of the 2015 to 2019 data, however, is that they only provide a binary indicator of minority status instead of detailed race/ethnicity groups. Hence, we measure the “same-race” subordinates in a binary manner. That is, for a Black supervisor, we treat all the non-White or Hispanic subordinates within the work unit as “same-race.”

Table A5 in Appendix A demonstrates the results. Overall, our findings remain robust in this specification. Defining subordinate composition at one level below the agency and using the binary indicator for minority status, we find that minority supervisors still report lower job satisfaction when having a higher share of same-race subordinates. When considering the moderating effect of colleague (at supervisor status) composition, the results demonstrate that when supervisors work in an environment with more same-race colleagues, the negative burden from same-race subordinates is reduced and eventually turns positive when they obtain a significant proportion. The estimates in this setting have smaller magnitudes than our main results, potentially due to the imprecise measurement of race/ethnicity. Still, our key findings remain valid.

## **5. Discussion and Conclusion**

This study utilizes multi-year data from the US Federal Government to examine the impact of having a greater share of subordinates from the same racial/ethnic backgrounds on supervisors’

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<sup>11</sup> Some examples of this level of organizations are the Bureau of Alcohol, Tobacco, Firearms, and Explosives (under the Department of Justice), the Federal Highway Administration (under the Department of Transportation), and the Centers for Disease Control & Prevention (under the Department of Health and Human Services).

job-related attitudes. We explore contrasting expectations derived from distinct theories. Relational demography theory suggests that supervisors benefit from subordinates with similar backgrounds due to shared values and culture. Conversely, the burden of representation perspective argues that supervisors from underrepresented groups may be burdened by subordinates of the same race due to conflicting role expectations from their community and organizational norms.

Our findings indicate that having more same-race/ethnic subordinates benefits supervisors, but only for supervisors of White non-Hispanic. Specifically, White supervisors tend to have higher job satisfaction and lower turnover intentions when working in an agency with a higher share of White subordinates. This result echoes previous literature suggesting that ordinary employees benefit from having supervisors from similar demographic backgrounds (Grissom et al., 2012; Grissom & Keiser, 2011; Moon, 2018). However, while previous studies find benefits for both White and minority employees from having same-race/ethnicity supervisors, our findings reveal that supervisors of color do not experience the same advantages.

Moreover, we found that having more same-race/ethnic subordinates burdens supervisors of color. Minority supervisors reported lower job satisfaction and higher turnover intentions when they had a greater share of same-race subordinates. These findings resonate with existing research on the burden of representation, which highlights how minority bureaucrats often encounter tensions between the expectations of the clients they represent and the established norms of their organizations (Carroll et al., 2019; Habyarimana et al., 2007; Herbert, 1974). We expand on this understanding by highlighting that supervisors of color also face similar challenges stemming from discrepancies between their subordinates' expectations and those of their organization. Additionally, the magnitude of the burden experienced by minority managers in this study is similar to the size of benefits enjoyed by ordinary employees due to racial congruence between supervisors and subordinates, as estimated by other studies (Grissom & Keiser, 2011; Moon & Jung, 2018).<sup>12</sup>

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<sup>12</sup> For example, Moon and Jung (2018) used FEVS data and found that a 0.1 unit increase in racial representation of management led to a 0.29 standard deviation increase in employees' job satisfaction. Similarly, this paper identifies that a 0.1 unit (i.e., 10 pps) increase in the share of same-race subordinates leads to a 0.11 to 0.68 standard deviation drop in supervisors' job satisfaction. In another context, Grissom and Keiser (2011) found that racial congruence between principals and teachers leads to an increase in job satisfaction equivalent to the baseline racial gap and a decrease in turnover intention that corresponds to 29% of the sample mean. By comparison, this paper finds that a 10 pps increase in the share of same-race subordinates led to a drop in job satisfaction that matched 1.2 to 9 times the baseline racial gap and an increase in turnover intention that corresponds to 25% to 40% of the sample mean.



However, we also find that the racial/ethnic composition of colleagues at the supervisory level moderates these negative effects. Supervisors are most burdened by having same-race subordinates when there are only a few same-race colleagues at the leadership level. Conversely, as the share of same-race colleagues increases, the negative burden is alleviated and eventually reverses to become a benefit when the supervisors' racial groups reach over 35% at the leadership level. This result speaks to tokenism theory, which suggests that minorities are exposed to negative experiences in environments where they are underrepresented (Kanter, 1977a, 1977b; Moore, 2013; Strohine & Brandl, 2011). Previous studies on critical mass also find that these negative experiences, such as pressure or isolation, are reduced once the minority obtains a greater share in the organization (P. B. Jackson et al., 1995; Kalbfeld, 2019). Our findings contribute to this literature by demonstrating that once minorities obtain a greater share of same-level colleagues in the organization, the negative experience due to the burden of representation can be mitigated.

We further explore the potential causal mechanisms underlying the impact of subordinate composition on supervisors' welfare. The analysis suggests that the negative consequences arising from the burden of representation are mediated by the level of role clarity and the quality of supervisor relationships. In particular, role clarity emerges as the most potent mechanism, indicating that having more same-race/ethnic subordinates leads to role ambiguity, resulting in conflicts arising from misaligned expectations. Supervisor relationships also significantly contribute, as a higher share of same-race/ethnic subordinates leads to worse relationships between the supervisors and their higher-level leaders, reflecting challenges in maintaining good relationships when facing role conflict.

Our findings contribute to the literature and practice on diversity management and management representativeness in government. While past literature has primarily focused on how demographic composition at the leadership level benefits subordinates, our study highlights the importance of considering the impact on supervisors as well. If representativeness benefits both subordinates and supervisors, it can be an ideal strategy to pursue. However, if the benefits to subordinates come at the cost of supervisors, this can threaten the welfare of supervisors and impact organizational performance. Our findings underscore the potential burden placed on managers of color by representing people of the same background and call for more attention to ways to mitigate this negative consequence.

Based on our findings, we propose several suggestions for diversity management in the public sector. First, diversity matters at all levels of the organization, including management. However, our findings highlight the need to go beyond token representation to reduce burdens. Second, role clarity and relationships with supervisors are key mediators of the impact of racial composition on job satisfaction. Therefore, organizations must seek approaches to reduce feelings of role conflict, and leaders should work to improve relationships with mid-level managers from under-represented groups. Although our analysis does not address the effectiveness of different diversity management strategies, existing literature suggests some actions. For example, organizations should avoid imposing unreasonable expectations on minority leaders to be most responsible for addressing racial issues in the organization, as this might place conflicting goals in the interest of their own group and the interest of the organization (Moore, 2013). When promoting minorities to leadership roles, organizations must ensure they provide adequate support, as promoting a few minorities to senior levels may not solve racial disparity problems if these supervisors feel isolated and powerless.

When interpreting the results of this paper, several limitations need to be considered. First, due to data constraints, the current study was unable to measure subordinate composition in the most optimal manner. Ideally, this variable should be measured at the immediate supervisory level. This paper utilizes data from the FEVS from 2020 to 2023, which only provides work unit information at the agency level. However, since employees in the entire agency are more distant than those at the immediate level, any effect detected at this level would likely be less pronounced than at the closer level. Hence, if we are able to detect an effect at the higher aggregate level, we should expect an even stronger effect at the closer level. Empirically, a measurement error in the independent variable would lead to a downward bias in the estimate (Bound et al., 2001). Therefore, if we detect a significant effect with imprecise measurement, we can be more confident in the existence of the true effect. Additionally, using the 2015 to 2019 data as a robustness check (which reports the work unit information one level below the agency but only provides a binary indicator of minority status), we find our results to be robust and consistent. Therefore, although the imprecision of the measurement may affect the estimates, we believe that the key conclusions would persist even with more precise measurements.

Secondly, this paper treats all supervisory-level employees as the same and does not account for the complete dynamics of the hierarchy. The supervisors included in the analysis

consist of senior leaders, managers, and frontline supervisors. However, these individuals might encounter varying levels and patterns of potential tension between their subordinates and the organization's expectations. In particular, this paper finds that supervisors' relationship with their higher hierarchy leaders mediates the negative burden. The pattern suggests that the racial composition of senior-level leaders might play a role in shaping middle-level managers' experience. However, due to data limitations, this paper was not able to further break down the sample by hierarchical levels. Future studies can delve deeper into how the impact varies across different levels of leadership.

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## Appendix A: Additional Results

Table A1: Factor Analysis

	Mean	SD	Factor Loading	Cronbach's $\alpha$
<b>Job Satisfaction</b>				0.899
Considering everything, how satisfied are you with your job?	3.938	1.041	0.862	
Considering everything, how satisfied are you with your organization?	3.805	1.076	0.862	
<b>Role Clarity</b>				0.912
I know what is expected of me on the job.	4.191	0.896	0.700	
I know how my work relates to the agency's goals.	4.326	0.810	0.700	
<b>Supervisor Relationship</b>				0.755
Supervisors in my work unit support employee development.	4.273	0.915	0.763	
My supervisor listens to what I have to say.	4.341	0.926	0.908	
My supervisor treats me with respect.	4.442	0.865	0.899	
I have trust and confidence in my supervisor.	4.239	1.045	0.934	
Overall, how good a job do you feel is being done by your immediate supervisor?	4.290	0.963	0.873	
I have a high level of respect for my organization's senior leaders.	3.763	1.171	0.487	

Note: The factor loadings are retrieved from exploratory factor analysis (EFA).

Table A2: The Impact of Same-race/ethnicity Subordinates on Work-related Attitudes  
(Results on Full Covariates)

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable:	Job Satisfaction		Turnover Intention (Logistic Regression)			
			Coef.	Odds. Ratio	Coef.	Odds. Ratio
<i>Independent Variable</i>						
% Same Race Subordinates		-0.848*** (0.238)			-0.469 (0.414)	0.626 (0.259)
% Same Race Colleagues		0.793*** (0.237)			0.217 (0.471)	1.242 (0.585)
<i>Individual Level Control</i>						
Race/Ethnicity (ref. grp.: White)						
Black	0.093*** (0.014)	0.150*** (0.038)	0.048* (0.028)	1.050* (0.030)	-0.033 (0.091)	0.968 (0.088)
Hispanic	0.039*** (0.010)	0.081** (0.040)	-0.007 (0.023)	0.993 (0.023)	-0.105 (0.086)	0.900 (0.078)
Asian	0.090*** (0.015)	0.138*** (0.040)	-0.184*** (0.032)	0.832*** (0.027)	-0.294*** (0.099)	0.745*** (0.074)
Others	-0.146*** (0.015)	-0.108** (0.044)	0.257*** (0.021)	1.292*** (0.028)	0.140 (0.100)	1.150 (0.115)
Gender (ref. grp.: Male)						
Female	-0.030** (0.012)	-0.029** (0.012)	0.014 (0.016)	1.014 (0.016)	0.015 (0.016)	1.015 (0.016)
Missing	-0.233*** (0.033)	-0.232*** (0.033)	0.196** (0.077)	1.216** (0.093)	0.198** (0.077)	1.218** (0.094)
Age (ref. grp.: Below 40)						
Above 40	0.144*** (0.016)	0.144*** (0.016)	-0.217*** (0.026)	0.805*** (0.021)	-0.218*** (0.026)	0.804*** (0.021)
Missing	0.167* (0.101)	0.155 (0.099)	-0.393 (0.327)	0.675 (0.221)	-0.408 (0.329)	0.665 (0.219)
Experience in the Federal Government (ref. grp.: 10 or fewer years)						
10–20 years	-0.056*** (0.012)	-0.056*** (0.012)	0.009 (0.020)	1.009 (0.021)	0.009 (0.020)	1.009 (0.021)
20 or more years	0.037** (0.016)	0.037** (0.015)	0.207*** (0.020)	1.231*** (0.024)	0.208*** (0.020)	1.231*** (0.024)
Missing	0.024 (0.061)	0.026 (0.060)	-0.087 (0.154)	0.917 (0.141)	-0.085 (0.154)	0.919 (0.141)
Military Experience (ref. grp.: No)						
Yes	-0.010 (0.010)	-0.010 (0.010)	0.278*** (0.015)	1.320*** (0.020)	0.277*** (0.015)	1.320*** (0.020)
Missing	-0.022 (0.078)	-0.025 (0.078)	0.035 (0.233)	1.036 (0.241)	0.033 (0.231)	1.033 (0.239)
<i>Agency Level Control</i>						
Diversity (Blau Index) of subordinates	-0.658 (1.063)	-1.178 (1.109)	3.109* (1.866)	22.396* (41.794)	2.818 (1.873)	16.751 (31.375)
Diversity (Blau Index) of supervisors	0.948 (1.379)	1.310 (1.422)	0.907 (2.473)	2.477 (6.126)	1.005 (2.411)	2.732 (6.587)
Proportion of female employees of subordinates	-2.248*** (0.824)	-2.198*** (0.836)	1.635 (1.489)	5.131 (7.641)	1.669 (1.487)	5.310 (7.893)
Proportion of female employees of supervisors	1.073 (1.084)	1.123 (1.096)	-2.716 (2.372)	0.066 (0.157)	-2.719 (2.360)	0.066 (0.156)
Average age of subordinates	-0.014 (0.035)	-0.014 (0.035)	-0.013 (0.064)	0.987 (0.063)	-0.013 (0.063)	0.987 (0.063)
Average age of supervisors	-0.007 (0.037)	-0.006 (0.038)	0.013 (0.059)	1.013 (0.059)	0.013 (0.058)	1.013 (0.059)
Average year of education of subordinates	-0.103* (0.054)	-0.103* (0.055)	-0.006 (0.090)	0.994 (0.089)	-0.003 (0.089)	0.997 (0.089)
Average year of education of supervisors	-0.043 (0.038)	-0.042 (0.039)	0.131 (0.096)	1.140 (0.109)	0.130 (0.095)	1.139 (0.109)
Average length of service of subordinates	0.026 (0.031)	0.025 (0.031)	-0.037 (0.062)	0.964 (0.060)	-0.036 (0.062)	0.965 (0.060)
Average length of service of supervisors	0.049* (0.027)	0.048* (0.027)	-0.018 (0.039)	0.982 (0.039)	-0.019 (0.039)	0.981 (0.039)
Proportion of full-time employees of subordinates	1.122*** (0.372)	1.116*** (0.377)	-1.269* (0.715)	0.281* (0.201)	-1.295* (0.713)	0.274* (0.195)
Proportion of full-time employees of supervisors	-1.212* (0.614)	-1.172* (0.626)	1.145 (1.112)	3.142 (3.494)	1.191 (1.105)	3.291 (3.637)
Log average salary of subordinates	-0.702 (0.567)	-0.677 (0.575)	0.680 (1.093)	1.974 (2.159)	0.685 (1.083)	1.983 (2.148)
Log average salary of supervisors	0.428 (0.902)	0.417 (0.911)	-0.235 (1.666)	0.790 (1.317)	-0.261 (1.657)	0.770 (1.276)
Log number of employees of subordinates	0.415** (0.207)	0.394* (0.210)	-0.258 (0.379)	0.773 (0.293)	-0.269 (0.379)	0.764 (0.290)
Log number of employees of supervisors	-0.170 (0.262)	-0.156 (0.265)	-0.166 (0.488)	0.847 (0.413)	-0.158 (0.487)	0.854 (0.416)
Constant	2.542 (11.271)	2.502 (11.352)	-4.318 (18.829)	0.013 (0.251)	-3.857 (18.718)	0.021 (0.396)
Observations	376,417	376,417	376,417	376,417	376,417	376,417
R-squared	0.034	0.034	0.022	0.022	0.022	0.022

Note: This table reports the coefficients estimated from equation (1). Standard errors clustered at the agency by year level are reported in parentheses. All models include individual and agency-level covariates, agency fixed effects, and year fixed effects. \*\*\*< 0.01, \*\*< 0.05, \*< 0.1

Table A3: Robustness Check: Exclude “Others” Racial Group

	(1)	(2)	(3)
	Job Satisfaction	Turnover Intention (Logistic Regression)	
		Coef.	exp(Coef.)
<b>Panel A: Overall Impact</b>			
% Same Race Subordinates	-0.937*** (0.258)	-0.519 (0.458)	0.595 (0.272)
<b>Panel B: By Minority Status</b>			
% Same-Race Subordinates × White	1.928*** (0.666)	-5.174*** (1.751)	0.006*** (0.010)
% Same-Race Subordinates × Non-White	-3.148*** (0.890)	7.960*** (2.613)	2,864.412*** (7,483.440)
<b>Panel C: Moderation Analysis</b>			
% Same-Race Subordinates	-1.095 (0.707)	4.301* (2.491)	73.781* (183.759)
% Same-Race Colleagues	-0.904 (0.881)	3.925* (2.261)	50.629* (114.478)
% Same-Race Subordinates × % Same-Race Colleagues	3.365*** (1.223)	-11.884*** (3.723)	0.000*** (0.000)
Observations	358,556		

Note: Panel A reports coefficients estimated from equation (1). Panel B reports coefficients estimated from equation (1) and further interacts minority status with the proportion of same-race subordinates. Panel C reports coefficients estimated from equation (2). This table excludes respondents who are NHPI, AIAN, and two or more races. Standard errors clustered at the agency by year level are reported in parentheses. All models include individual and agency-level covariates, agency fixed effects, and year fixed effects. Column (3) reports the exponentiated logistic coefficients, which could be interpreted as the odds ratio for the constituent term and the “ratio of odds ratios” for the interaction term. \*\*\* < 0.01, \*\* < 0.05, \* < 0.1

Table A4: Robustness Check: Alternative Organization Diversity Control

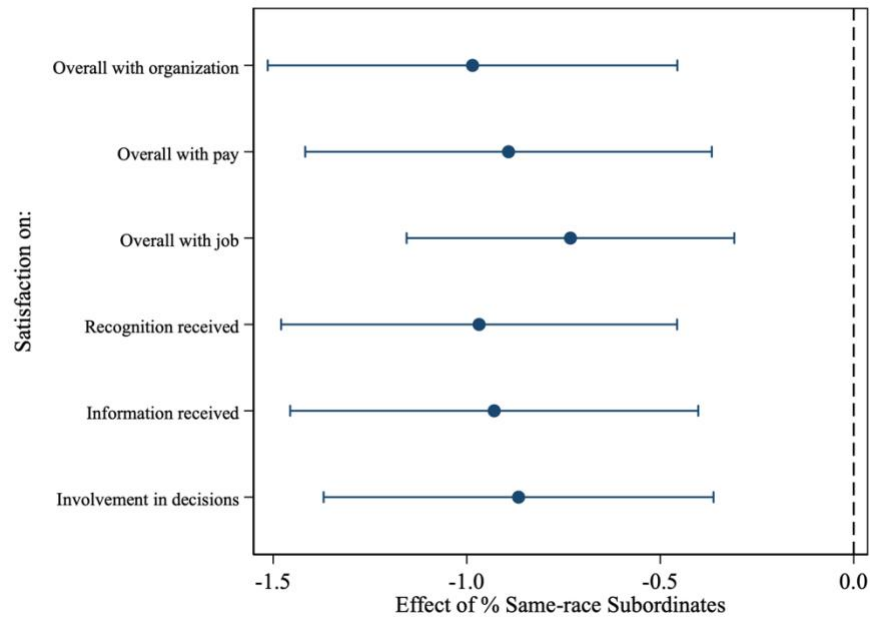
	(1)	(2)	(3)
	Job Satisfaction	Turnover Intention (Logistic Regression)	
		Coef.	exp(Coef.)
<b>Panel A: Control Overall Blau Index</b>			
% Same-Race Subordinates	-0.826*** (0.232)	-0.452 (0.423)	0.636 (0.269)
% Same-Race Colleagues	0.767*** (0.230)	0.199 (0.482)	1.220 (0.588)
<b>Panel B: Control Entropy Index</b>			
% Same-Race Subordinates	-1.008*** (0.313)	0.368 (0.598)	1.445 (0.864)
% Same-Race Colleagues	0.993*** (0.314)	-0.758 (0.665)	0.468 (0.312)
<b>Panel C: Control Share of Each Race/Ethnicity</b>			
% Same-Race Subordinates	-0.841*** (0.235)	-0.466 (0.404)	0.627 (0.254)
% Same-Race Colleagues	0.781*** (0.235)	0.214 (0.458)	1.239 (0.568)
Observations		376,417	

Note: This table reports the coefficients estimated from equation (1) but substitutes the covariates of the agency-level diversity index. Standard errors clustered at the agency by year level are reported in parentheses. All models include individual and agency-level covariates, agency fixed effects, and year fixed effects. Column (3) reports the exponentiated logistic coefficients, which could be interpreted as the odds ratio. \*\*\*< 0.01, \*\*< 0.05, \*< 0.1

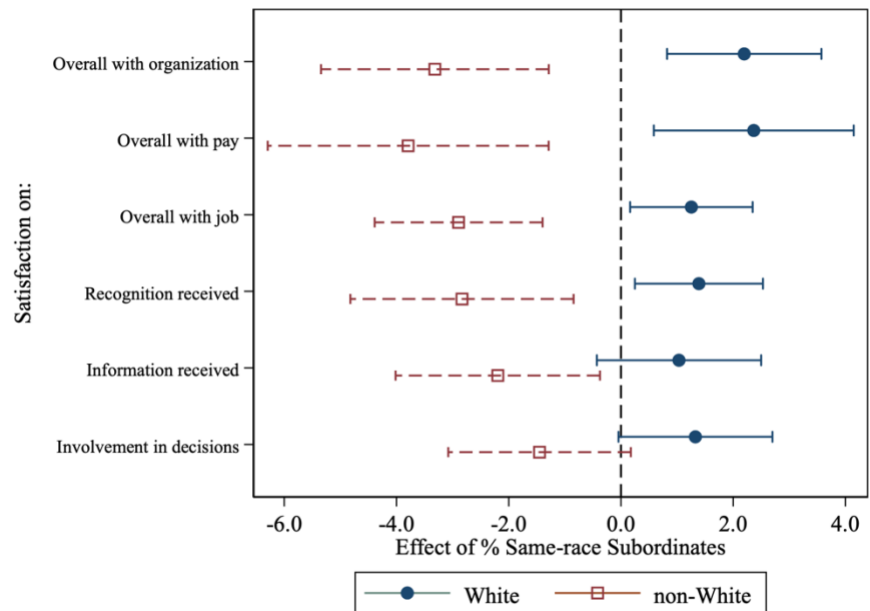
Table A5: Robustness Check: Using 2015 to 2019 Data

	(1)	(2)	(3)
	Job Satisfaction	Turnover Intention (Logistic Regression)	
		Coef.	exp(Coef.)
<b>Panel A: Overall Impact</b>			
% Same-Race Subordinates	-0.261*** (0.057)	-0.077 (0.094)	0.926 (0.087)
<b>Panel B: By Minority Status</b>			
% Same-Race Subordinates × White	0.254*** (0.095)	-0.640*** (0.201)	0.527*** (0.106)
% Same-Race Subordinates × Non-White	-0.455*** (0.103)	0.252 (0.207)	1.287 (0.266)
<b>Panel C: Moderation Analysis</b>			
% Same-Race Subordinates	-1.154 (1.316)	-1.761 (1.966)	0.172 (0.338)
% Same-Race Colleagues	-0.564 (1.209)	-0.286 (1.939)	0.751 (1.457)
% Same-Race Subordinates × % Same-Race Colleagues	1.536 (2.478)	2.201 (3.801)	9.033 (34.337)
Observations	404,099		

Note: This table reports the results based on 2015 to 2019 FEVS and FedScope data. The proportion of same-race subordinates and colleagues is measured at one level below agency and using a binary indicator of minority status (White, non-Hispanic, or otherwise). Panel A reports coefficients estimated from equation (1). Panel B reports coefficients estimated from equation (1) and further interacts minority status with the proportion of same-race subordinates. Panel C reports coefficients estimated from equation (2). Standard errors clustered at the sub-agency by year level are reported in parentheses. All models include individual and sub-agency-level covariates, sub-agency fixed effects, and year fixed effects. Column (3) reports the exponentiated logistic coefficients, which could be interpreted as the odds ratio for the constituent term and the “ratio of odds ratios” for the interaction term. \*\*\*< 0.01, \*\*< 0.05, \*< 0.1



(a) Overall Impact



(a) By Race/Ethnicity

Figure A1: Effects of Same-race Subordinates on Job Satisfaction: By Measurement Items

Note: This figure reports the coefficients estimated from equation (1). The symbol denotes the point estimate, and the error bar shows the 95% CI, with standard error clusters at the agency by year level. The questionnaire wordings of each measurement item are available in Table A1.