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Racial Inequality in Work Environments

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Abstract

This article explores racial stratification in work environments. Inequality scholars have long identified racial disparities in wage and occupational attainment, but workers' careers and well-being are also shaped by elements of their work environment, including firm culture, managerial style, and work-life balance. I theorize two processes that could lead to racial inequality in firms' work environments: (1) employee sorting due to exclusionary practices, and (2) spillover from racial differences in occupation and geographic location. To test this, I gathered a unique firm-level dataset composed of one million employee reviews, covering most large and medium-sized firms in the United States. I show that firms with more Black employees score lower for managerial quality, firm culture, and work-life balance, and firms with more Asian employees score higher on these dimensions. However, Asian employees' advantage disappears when controlling for occupation, industry, and geography, whereas Black employees' disadvantage persists, suggesting that the process of firm-level employee sorting is at work. Consistent with this, I find that Black employees' disadvantage is strongest in areas with more conservative racial attitudes and more prevalent workplace racial discrimination. I then replicated the main findings using two entirely different data sources. Together, these results underscore racial inequality in work environments, an overlooked but important dimension of workplace inequality.

Keywords

inequality, race, discrimination, organizations, sociology of work, culture, job review, job quality, working conditions, job security, work-life balance, managers

Sociologists have long sought to understand the extent of workplace racial inequality. In the past, scholars have mostly focused on gaps in earnings (e.g., Cancio, Evans, and Maume 1996; Carrington, McCue, and Pierce 1996; Grodsky and Pager 2001; Huffman and Cohen 2004; Mandel and Semyonov 2016; McCall 2001; Peoples and Saunders 1993) and occupational attainment (e.g., Kalev, Dobbin, and Kelly 2006; McTague, Stainback, and Tomaskovic-Devey 2009; Skaggs 2009; Tomaskovic-Devey et al. 2006; Zhang 2021, 2022), as these are important determinants of workers' social status and well-being. These studies find that in the United States, racial minorities earn significantly less than White employees; the racial pay gap slightly decreased in the 1970s, but it has largely persisted since then (for a review, see Leicht 2008). Today, Black and Hispanic employees still earn about 30 to 35 percent and 20 to 25 percent less than White employees,

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respectively. The earnings of Asian and White employees are on par with one another in absolute value, but Asian employees earn significantly less than White employees after controlling for occupation and education. When it comes to managerial representation and authority, Black and Hispanic employees are about 50 percent less likely to be a manager than are White employees, and Asian employees are about 10 percent less likely (Zhang 2021).

However, these numbers alone may not capture the true extent of racial inequality in the workplace, as wage and occupational status are not the only important dimensions of job quality. Many less-tangible factors, such as firm culture, managerial quality, and work-life balance, are just as essential to an employee's career and overall well-being (Roscigno, Sauer, and Valet 2018; Storer, Schneider, and Harknett 2019). For example, having a competent manager could increase a worker's motivation and performance, leading to better career outcomes. In contrast, working in an unsupportive culture could be demoralizing, reducing productivity and general happiness. This study aims to theorize and empirically examine racial inequality at work across these less-tangible but essential dimensions.

I use the term *work environment* to describe those less-tangible attributes, which I define more precisely as the setting, psychological climate, and physical conditions in which workers perform their jobs. The *work environment* is made up of elements that can affect workers' day-to-day productivity, including when, where, and how they work. I explicitly exclude pay and benefits from this definition: here, the work environment concerns workplace culture, working hours, managerial style, workers' safety, job security, and advancement opportunities. By definition, the work environment is a firm- and job-level attribute, but it could shape individual motivation, learning, performance, intrinsic reward, and overall satisfaction and well-being.

Two processes could produce racial inequality in work environments. The first is employee sorting due to various exclusion mechanisms. For example, hiring discrimination against Black, Hispanic, and Asian employees remains widespread, especially in lower-paying occupations (Bertrand and Mullainathan 2004; Pager and Shepherd 2008; Pager, Western, and Bonikowski 2009). If most workers prefer firms with a more-favorable work environment, then exclusion processes could result in racial minorities being left with firms with a less-favorable work environment. This exclusionary process on the demand side could, in turn, shape behaviors on the supply side. Workers most vulnerable to discrimination and economic insecurity—such as racial minorities—could prioritize wage and job security over less-tangible dimensions such as culture and managerial relations (Wilmers and Zhang 2022).

Second, forms of racial inequality outside the work environment could spill over to result in racial inequality in the work environment. Firms vary significantly in their amenities and management styles, and much of that variation is correlated with industry, occupational composition, and geography (Kogan et al. 2017; Maestas et al. 2017; Moretti 2012). For instance, firms that value human capital—often professional and service firms with a large proportion of skilled employees—tend to provide employees with more autonomy, job security, promotion opportunity, and other amenities (Maestas et al. 2017). At the same time, due to residential segregation and differences in educational attainment, racial minorities are more likely to be concentrated in certain types of jobs, industries, and cities. These racial differences in occupation, industry, and geography could also lead to an uneven distribution of racial groups across firms with different work environments.

To empirically examine racial inequality in work environments, I collected employee reviews from Indeed (http://www.indeed.com), a career intelligence website that allows users to anonymously evaluate their current or former employers. I gathered ratings by registered users on the Indeed platform about their job's quality on four dimensions related to

work environments: manager quality, firm culture, work-life balance, and job security/opportunity. I then merged these ratings with detailed information on firms' demographic composition, resulting in a dataset of 8,851 U.S. firms, 27,241 firm-year observations, and 932,943 unique employee reviews from 2012 to 2015.

I find evidence of racial inequality in work environments: firms' ratings in manager quality, firm culture, and work-life balance are negatively associated with the proportion of Black employees, but positively associated with the proportion of Asian and Hispanic employees. These patterns are largely unchanged after controlling for firms' wage premium, suggesting that racial inequality in work environments is distinct from racial inequality in wages.

However, Black employees' disadvantage and Asian and Hispanic employees' advantage may come from different sources. For the Black-White gap, occupation and industry explain only about 30 percent of the difference in the work environment, and controlling for geography does not reduce the gap at all, implying that Black employees' disadvantage mostly comes from between-firm employee sorting. Conversely, occupation and industry account for over 40 percent of the Asian-White gap and geography accounts for another 25 percent. A similar story holds for the Hispanic-White gap. After controlling for these factors, Asian and Hispanic employees' advantage in the work environment largely disappears. This result may indicate that Asian and Hispanic employees' advantages are mostly spillovers of racial differences in education, occupational choice, and residential location.

Next, I find that the Black-White gap in work environments is generally concentrated in regions with more conservative racial attitudes and more frequent workplace racial discrimination. The gap is also larger in lower-paying occupations and those with higher unemployment rates. Based on these results, it is possible that the Black-White inequality in work environments is primarily driven by exclusionary processes that sort employees into different firms.

I conducted two supplementary studies using entirely different data sources. First, I use individual-level data from the General Social Survey (GSS) to provide individual-level evidence on racial discrepancies in work environments. Second, I created an alternative measure of work environments using firms' job postings. The results from both analyses were largely consistent with my main findings.

Overall, this study underscores an important yet overlooked dimension of racial inequality. Relationships with managers, workplace culture, working hours, and other aspects of the work environment are the building blocks of our work lives. In the short run, they could affect our work attitude and performance and, in the long run, they could shape the trajectories of our careers, emotional well-being, and even physical health. Scholars have long been studying racial inequality in wage and occupational attainment, but my findings suggest a need to look at work environments to fully understand workplace inequality.

RACIAL INEQUALITY IN WORK ENVIRONMENTS

In studying racial inequality in the labor market, sociologists and economists have traditionally focused on the wage gap (Akee, Jones, and Porter 2019; Bayer and Charles 2018; Cancio et al. 1996; Card and Lemieux 1994; Carrington et al. 1996; Chetty et al. 2020; Grodsky and Pager 2001; Heckman, Lyons, and Todd 2000; Huffman and Cohen 2004; Kristal, Cohen, and Navot 2018; Leonard 1996; Mandel and Semyonov 2016; Manduca 2018; McCall 2001; Neal and Johnson 1996; Peoples and Saunders 1993; Rosenfeld and Kleykamp 2012). These studies find that Black and Hispanic employees earn, on average, about 20 to 40 percent less than White employees, and that this gap has largely persisted since the 1980s. Asian men, after controlling for their education level, earn

about 8 percent less than comparable White men (Kim and Sakamoto 2010). Sociologists have also examined the racial gap in occupational attainment by looking at, for example, the proportion of racial minorities in management (Dobbin, Schrage, and Kalev 2015; Kalev and Dobbin 2006; Kalev et al. 2006; McTague et al. 2009; Sakamoto, Goyette, and Kim 2009; Skaggs 2009; Tomaskovic-Devey et al. 2006; Zhang 2021, 2022). Like studies on wages, these studies find that Black and Hispanic employees are 30 to 50 percent less likely than White employees to be managers, and Asian employees are about 10 percent less likely. Together, these studies show substantial racial inequality in both earnings and occupational attainment.

Another literature suggests that significant racial gaps also exist in job satisfaction (Banerjee and Perrucci 2010; Lundquist 2008; Mukerjee 2014; Tuch and Martin 1991; Weaver 1998; Wilson and Butler 1978). However, the racial gap in job satisfaction differs from that in wages and occupational attainment. As GSS surveys show, Black employees experience significantly less job satisfaction than White employees—with a gap almost twice as large as the difference between college- and non–college-educated employees—but Hispanic and Asian workers do not report lower job satisfaction (Tuch and Martin 1991; see also Table 7). One possibility is that more Black employees are concentrated in blue-collar industries, which could have lower average job satisfaction. However, individual-level survey data of job satisfaction show a large Black-White gap for employees within the same occupation (Sanders 2021); in fact, even after controlling for income, attainment status, and perceived discrimination, the majority of the Black-White gap remains.

These findings on job satisfaction suggest that to fully understand racial stratification in the labor market, we need to look beyond earnings and occupational attainment (Sanders 2021; Tuch and Martin 1991). Many studies show that workers are concerned not only with extrinsic rewards such as wages and prestige, but also intrinsic rewards such as doing interesting tasks and having autonomy at work (e.g., Johnson and Mortimer 2011; Kalleberg and Marsden 2013; Morgan, Dill, and Kalleberg 2013; Mottaz 1985). Of course, some of these intrinsic rewards could be highly correlated with occupational attainment—jobs with higher status also generally offer more intrinsic rewards—but intrinsic rewards are also shaped by a firm's specific culture and managerial style (Wilmers and Zhang 2022). In fact, surveys of employee preferences consistently show the importance of non-compensation-related job attributes. For example, the Wisconsin Longitudinal Survey asks respondents to rate the importance of 12 attributes when choosing a job. Pay and benefits are only ranked 6 and 8 out of 12, respectively, and job prestige is ranked 7. The most valuable attributes are doing interesting work, freedom at work, job security, and learning and promotion opportunities (Daw and Hardie 2012). Similarly, the General Social Surveys over the years have shown that job security, a sense of accomplishment, and advancement opportunities are almost as important to workers as income (Kalleberg and Marsden 2013). Other surveys and experiments show similar patterns, with respondents valuing attributes such as the relationship with managers, worker autonomy, job security, and advancement opportunities just as much as pay and occupational status (Gallie, Felstead, and Green 2012; de Grip et al. 2022; Johnson and Mortimer 2011).

Thus, although wages and status are undoubtedly important, several less-tangible firm and job attributes could be just as important in shaping career choices and job quality, and are likely to vary significantly across organizations (Storer et al. 2019). An organization's wage information and job ranks are quantifiable and, in many ways, regulated. But attributes such as employee autonomy, managerial style, and firm culture tend to be less measurable, less visible, and less regulated. Therefore, it is possible that these less-tangible job attributes could vary widely across organizations and occupations, making

it more of an imperative to study them as a mechanism of racial inequality.

This study focuses on racial inequality in firms' work environments, which I broadly define as the settings in which employees perform their job, including when, where, and how they work. A firm's work environment includes dimensions such as firm culture, managerial style, work-life balance, co-worker relationships, and physical conditions at work. These are both firm- and job-specific: each firm provides its own work environment, and there could be within-firm heterogeneity across occupations.

Racial disparities in the work environment could arise in two ways. First, members of different racial groups may be systematically sorted into organizations and occupations with different work environments. Second, members of different racial groups may be given different work environments while working in the same occupation within the same organization. In my theorization and in the empirical analysis, I focus mostly on the first scenario: the uneven racial distribution of workers into organizations and occupations with different work environments. Nevertheless, while dimensions of the work environment, such as cultural norms and working hours, are often experienced similarly by individuals in the same occupation in the same organization, there certainly could be situations in which two individuals in the same position in the same organization face different work environments because of their race. Therefore, my approach is a conservative one; it could potentially underestimate the extent of racial disparity in the work environment.

Before I theorize why firms with more racial minorities may have less-favorable work environments, I want to point out the possibility of an opposite scenario. Adam Smith's compensating differential hypothesis suggests that every job amenity has a value for which monetary tradeoffs may be evaluated (Rosen 1986). Workers make tradeoffs when selecting jobs, balancing their preferences for wages against other job amenities. For example, workers may forgo higher-paying jobs in exchange for more meaningful work (Wilmers and Zhang 2022). The extreme version of this economic theory suggests that labor market inequality should be close to zero when all labor force utility is considered. That is, if racial minorities earn less, then they should have higher scores for other amenities, such as easier tasks, less managerial pressure, and more job security (Daw and Hardie 2012). In the United States, racial minorities—including Black, Hispanic, and Asian employees—tend to work in firms that pay lower wage premiums (Kim and Sakamoto 2010; Leicht 2008). Based on the above theory, because firms with more racial minorities have lower wage premiums, they should at least have more-favorable work environments.

> *Hypothesis 1:* Firms with more racial minority employees have more-favorable work environments.

In the following, I argue against this compensating differential hypothesis. In particular, I theorize two processes that could lead to racial inequality in work environments that mostly favor White employees over racial minorities.

Employee Sorting: Exclusionary Practices

The first process is employee sorting: firms' exclusionary practices could sort racial minorities into organizations with less-favorable work environments. Assuming that most people prefer organizations with more-favorable work environments, then the more-advantaged workers in the labor market would have a greater chance of working in those organizations. Several processes favor White workers in labor market queues. In particular, racial discrimination remains widespread (Pager and Shepherd 2008). Such discrimination could come from either employers' taste—such that they prefer to hire and work with White employees—or their perceptions that racial minorities are less qualified than White employees. Discrimination

is especially pronounced in the hiring stage due to the influence of first impressions, the absence of more reliable information on prospective candidates, and minimal legal oversight (Petersen and Saporta 2004; Zhang 2017). Experimental audit studies—in which researchers send out almost identical résumés with racially identifiable names—consistently find strong evidence of hiring racial discrimination against Black, Hispanic, and Asian applicants, with estimates of White preference (measured as the relative call-back rate for job applications) ranging from 50 to 240 percent (Bertrand and Mullainathan 2004; Pager et al. 2009).[1] Such widespread hiring discrimination could play a role in excluding Black, Hispanic, and Asian employees from the most-desirable organizations.

Besides hiring discrimination, organizations could also unintentionally exclude racial minority employees through hiring practices that disadvantage them. For instance, referrals are a common hiring practice that could inadvertently hurt racial minorities. Because many racial minorities are trapped in segregated social networks, they are often less likely to have contacts that could provide a referral (Kanter 1977; Kmec 2007; Pedulla and Pager 2019). Mouw (2002) shows that the use of employee referral in predominantly White firms reduces the likelihood of a Black hire by almost 75 percent compared to the use of newspaper ads, and it increases between-firm racial segregation by about 10 to 30 percent. Other studies similarly show that the use of referrals in predominantly White firms could exclude Hispanic and Asian employees (Battu, Seaman, and Zenou 2011; Fernandez and Fernandez-Mateo 2006). Such practices could advantage White workers in the labor queue, allowing them first access to organizations with more-favorable work environments.

Demand-side exclusions could affect supply-side behavior (Kang et al. 2016; Pager and Pedulla 2015). For instance, Black job applicants are more likely to cast a wider net in their job search in response to discrimination (Pager and Pedulla 2015). In fact, groups most vulnerable to unemployment and economic insecurity—such as less-educated workers and racial minorities—could place higher importance on income and job security (Kalleberg and Marsden 2013; Wilmers and Zhang 2022). An inverse relationship between social class and the valuation of extrinsic rewards is well documented: individuals with better education and from higher socioeconomic classes tend to value personal learning, enjoyment at work, and other intrinsic job rewards more than those from more-disadvantaged backgrounds do (Johnson and Mortimer 2011). Given their more-precarious position in the labor market, it is possible that racial minority employees would place less emphasis on an organization's work environment than White employees do. For example, surveys consistently find that compared to White workers, Black workers tend to prioritize income and security more (Johnson, Sage, and Mortimer 2012; Kalleberg and Marsden 2013; Tuch and Martin 1991). Such differences in workers' preferences could add to the segregation of racial minority and White employees into firms with different work environments.

Spillover from Other Forms of Inequality

The second process involves a spillover: other forms of racial inequality—differences in occupation, industry, and residential location—could shape racial inequality in work environments. First, an organization's managerial style, workplace norms, working hours, and other dimensions of work environment could be associated with its industry and occupational structure. At the occupation level, recent surveys show a striking gap in perceived working conditions between white- and blue-collar employees: workers in white-collar positions tend to report much more positive experiences with supervisors and more freedom at work than do those in blue-collar jobs (Maestas et al. 2017). The more-favorable work environments for white-collar and professional workers are also evident at

the industry level: compared to service and technology firms, manufacturing firms tend to have less-favorable work environments. Many traditional manufacturing firms adopt a command-and-control culture that limits employees' discretion and autonomy. In addition, some studies suggest that manufacturing jobs have become increasingly precarious, with poor job security and few advancement opportunities (e.g., Kalleberg 2011). Taken together, existing evidence suggests significant occupational and industry differences in work environments that favor service and professional firms, which have mostly white-collar positions.

At the same time, racial composition varies across occupation and industry. Black and Hispanic employees are more likely than White employees to be in lower-skilled, blue-collar occupations and many are in manufacturing sectors (U.S. Bureau of Labor Statistics 2020). Much of this gap has been attributed to the racial gap in access to education (e.g., Reardon, Kalogrides, and Shores 2019) and some to labor market discrimination. The less-favorable work environments in these industries and occupations could contribute to a negative association between a firm's proportion of Black and Hispanic employees and the quality of work environments.

In contrast, occupational and industry differences may contribute to more-favorable work environments for Asian employees. Although Asian employees face a notable disadvantage in the U.S. labor market (Kim and Sakamoto 2010; Sakamoto et al. 2009), a much higher proportion of Asian Americans are college-degree holders compared with other racial groups, and so are more likely to work in white-collar industries and higher-skilled professional occupations (Lee and Zhou 2015; Sakamoto et al. 2009).[2] The more-favorable work environments in these high-skilled industries and occupations may contribute to more-favorable work environments for Asian employees.

Second, a firm's work environment may also be correlated with its geographic location. Past research suggests geographic variation in management styles: firms that value human capital are more likely to be in well-populated and wealthy areas with a greater supply of higher-skilled workers, such as Silicon Valley, Boston, and New York (Kogan et al. 2017). Firms in these areas tend to offer higher amenities, including better salary, benefits, and working hours, and more freedom at work. In fact, the same worker doing the same job can get higher pay and better working conditions by moving from one U.S. region to another (Moretti 2012).

Residential segregation in the United States means most Black and Hispanic residents are severely segregated from White residents and tend to live in poorer neighborhoods with worse social amenities and limited access to high-skilled jobs. Many of these neighborhoods are near traditional manufacturing hubs (e.g., Detroit and Gary, Indiana). Recent national statistics show that an average Black or Hispanic resident lives in a neighborhood in which only 13 to 16 percent of the population are college-educated, compared to 27 percent for a typical White resident (statistics based on the 2019 American Community Survey). It is therefore possible that Black and Hispanic Americans tend to live further away from high-human-capital firms with more-favorable work environments. This geographic variation could contribute to a negative relationship between a firm's Black and Hispanic employee representation and its work environment quality.

Compared to Black and Hispanic Americans, Asian Americans in the United States experience less residential segregation and are more likely to live in areas with high human capital. The Asian-White dissimilarity index in 2000 was about 35 percent smaller than the Black-White index (Charles 2003),[3] and a typical Asian resident lived in a neighborhood in which 42 percent of the population held a college degree (statistics based on the 2019 American Community Survey). Much of the Asian American population is in cities and suburbs with a large number of high-human-capital firms, such as Silicon Valley, southern California, and the greater

New York and Boston areas (Krivo and Kaufman 2004; Logan, Stults, and Farley 2004). Asian residents' geographic distribution could contribute to a positive association between a firm's Asian employee representation and its work environment quality.

In summary, these two mechanisms—employee sorting due to exclusion and spillover from other forms of inequality—could shape racial disparity in work environments. Both mechanisms suggest that firms with a larger proportion of Black and Hispanic employees provide less-favorable work environments. However, the prediction about firms' Asian employees is mixed: the employee sorting mechanism suggests that firms with more Asian employees would have less-favorable work environments, but the spillover mechanism does not. In fact, Asian employees' high educational achievement and their residential choices imply that firms with more Asian employees could have more-favorable work environments. For simplicity, I formulate separate hypotheses for Asian employees.

Hypothesis 2: Firms with more Black and Hispanic employees have less-favorable work environments.

Hypothesis 3a: Firms with more Asian employees have less-favorable work environments.

Hypothesis 3b: Firms with more Asian employees have more-favorable work environments.

Before introducing a novel dataset to test these hypotheses, I point out a third possible mechanism and explain why it is theoretically unlikely. Besides employee sorting and spillover, firms could choose to provide certain work environments to accommodate their employees' racial composition. However, there is little evidence that a firm's racial demographics shape key organizational practices. Organizational structure and culture are largely shaped by founders' management beliefs, key technology, industry resources and environment, and competitor characteristics (Hsu, Marsh, and Mannari 1983). Moreover, according to the literature on organizational imprinting and inertia, organizational structure and culture are quite stable and difficult to change (Marquis and Tilcsik 2013). For instance, firms exhibit characteristics that reflect their founding environment even many decades later (Stainback, Tomaskovic-Devey, and Skaggs 2010). Although the racial composition of U.S. firms has significantly shifted in the past few decades (Tomaskovic-Devey et al. 2006), it is unlikely firms would have altered their work environments to accommodate this shift. Therefore, there is little theoretical basis for this third mechanism, that a firm's racial composition would drive its work environment.

DATA AND METHOD

Work environments are difficult to observe. Measures based on self-reports (e.g., company description) could be deceptive because organizations have incentives to favorably describe their management and culture. Given these issues, I use a large-scale dataset of anonymous employee reviews to capture firms' work environments.[4] Such reviews offer a way to uncover detailed information on these environments; employees have unique information about their organizations, and most provide honest evaluations due to the benefits associated with contributing to the public good (Green et al. 2019).

I analyze employee reviews from Indeed (http://www.Indeed.com), a career intelligence website that attracts a diverse audience primarily as a job-search platform. As of 2020, it is the largest job site in the world, with over 250 million unique visitors per month. One important function is to provide reviews of organizations: users are encouraged to write reviews of their current or former employers. When employees post company reviews on Indeed, they are first asked "How would you rate this company?" and given six dimensions on which to rate it: overall rating, job work/life balance, compensation/benefits, job security/advancement, management, and job culture. For each

dimension, the user can rate the organization from zero to five stars. Users are then asked to write free-text reviews of the company, including their overall impression and pros and cons of the job. Finally, users are asked for their job title at the organization, job location, and start and end date (for an example, see Figure S1 in the online supplement).

An important feature of these reviews is their anonymity, which makes them less susceptible to bias stemming from fear of retribution by employers. Indeed emphasizes that reviewers' identities are kept confidential and secure and are not shared with the employer under any circumstances, so the platform is a "safe space" for employees to share and assess their workplace experiences. To help prevent company self-promotion, Indeed requires users to go through email verification from an active email address or a valid social networking account. The site administrator also moderates content through a two-step process, using an algorithm to detect fraud and following up with a human team to eliminate invalid reviews.

Sample Selection Issues

One important concern with Indeed's anonymous review data is that the employees providing the review are nonrandom. For example, workers may post reviews more often after a negative or positive event, which could skew the results. I try to ease this selection concern in several ways. First, I checked Indeed reviewers' occupational distribution using data from the Equal Employment Opportunity-1 (EEO-1), a large administrative dataset covering all private-sector firms with more than 100 employees in the United States. (I discuss this dataset in greater detail below.) The EEO-1 data provide information on each firm's broad occupational composition, which I compared with the occupational distribution of each firm based on its Indeed reviewers. As Figure S2 in the online supplement shows, the occupational composition of Indeed reviewers' firms is highly consistent with that shown in the EEO-1 data, suggesting that Indeed's reviewer base is largely representative across occupations at the firm level.

Second, I cross-validated Indeed's review ratings with ratings from the Federal Employee Viewpoint Survey (FEVS), an annual survey sent to all U.S. federal employees. Compared to Indeed reviews, FEVS has a much larger sample size per organization, as it solicits over 10,000 employee reviews per agency. Moreover, it is less subject to sample selection issues because the survey reaches out to all employees in each federal agency and has a nearly 50-percent response rate. With a colleague's help, I identified all federal agencies with reviews on the Indeed platform, resulting in 31 agencies and 145 agency-year observations. Three dimensions of the workplace are rated in both the FEVS survey and the Indeed platform: culture and values, management quality, and work-life balance. They all exhibit a relatively high correlation between Indeed's and FEVS's ratings, as shown in Figure 1, lending further credence to the validity of the Indeed data.

To further deal with selection issues, I conducted a small online survey to understand who is more likely to write a job review on career sites such as Indeed. I collected a sample of about 1,300 currently employed individuals. My sample is nationally representative in terms of age, education, and gender. To ensure an adequate number of racial minorities, I oversampled Black, Hispanic, and Asian respondents. I asked each person whether they have ever written an online job review on platforms such as Indeed or Glassdoor; I also recorded each respondent's demographic information and asked respondents to rate their current work environment in manager quality, culture, work-life balance, and job security/promotion opportunity. As Table S1 in the online supplement shows, there is little evidence that a respondent's race is associated with whether or not they have written a review. In fact, the only variable that consistently predicts writing a job review is college degree: individuals with a college degree are 11 percent more likely to have written such a review than those without.

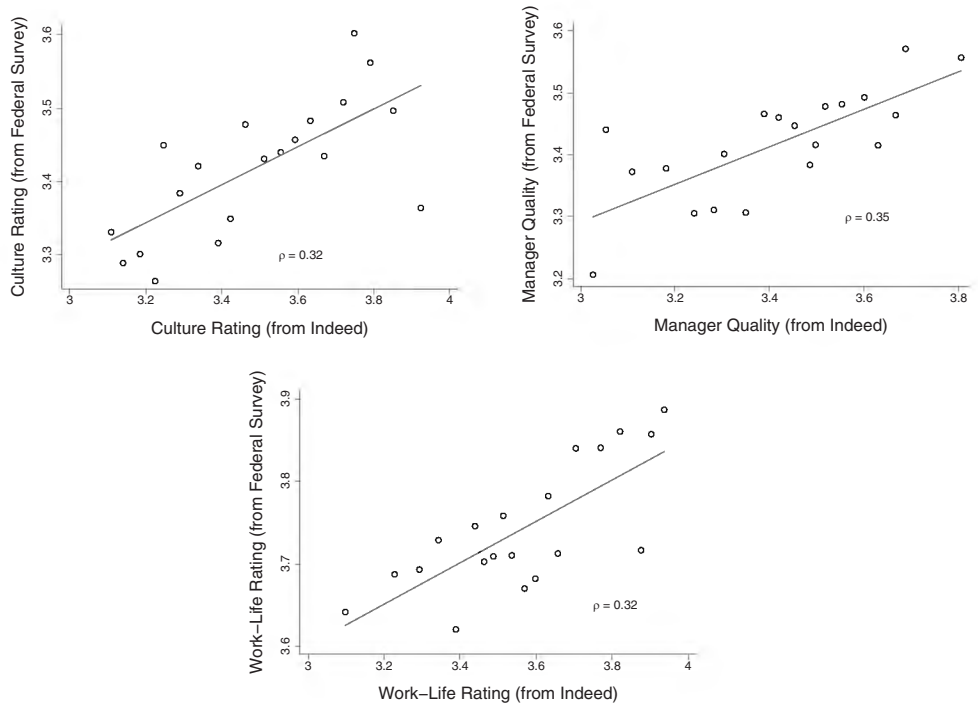

Figure 1. Validating Indeed Data: Comparing Indeed Ratings to Federal Employee Survey Ratings

Note: These graphs compare Indeed ratings to ratings from the U.S. Federal Employee Viewpoint Survey (FEVS), an annual survey sent to all federal employees. I focus on three overlapping dimensions: culture and values, manager quality, and work-life balance. Note that FEVS asks employees to rate their senior managers, whereas Indeed asks employees to rate their managers in general. In addition, FEVS has questions on learning and promotion opportunities, but not on job security. There are 31 agencies covered by both Indeed and FEVS, accounting for 145 agency-year observations. The graphs are binned at 20 equal-size quantile cuts of agency-year observations based on the *x*-axis.

I also note that Karabarbounis and Pinto (2018) systematically compared the anonymous company review data from Glassdoor (http://www.glassdoor.com)—a site almost identical to Indeed and one of its main competitors—with large, nationally representative administrative and survey data. Focusing on wage information, they found that Glassdoor's listed salary information largely follows the wage patterns within each industry, suggesting these anonymous review data are largely representative within industries.[5] Given the high similarity between the Indeed and Glassdoor populations, the same conclusion could likely be applied to the Indeed sample.

Finally, as a check for my results, I use an additional data source consisting of millions of job postings to create an alternative measure of work environments. This alternative measure does not present the same selection issue as Indeed's review data, although it has other limitations. By showing that results are largely consistent across these measures using entirely different data sources, I can further alleviate concerns about sample selection. I discuss this analysis in greater detail in a later section.

Firm-Level Demographic Data

I used EEO-1 data to understand the annual racial composition of each firm, sorted by broad occupation categories. In 1966, to help monitor compliance with the Civil Rights

Act of 1964, the Equal Employment Opportunity Commission (EEOC) began to collect demographic workforce data on private-sector firms.[6] All private-sector firms with at least 100 employees, as well as firms under federal contract with at least 50 employees, are required to submit EEO-1 forms annually.[7] Each EEO-1 survey form contains a matrix of occupational classifications and race/sex combinations into which employers enter counts of employees. Specifically, it includes five racial groups—White, Black, Asian, Hispanic, and Native American[8]—and nine broad occupational categories—managers, professionals, technicians, sales workers, office and clerical workers, craft workers, operatives, laborers, and service workers.[9] Because most firms have very few Native American employees, I focused on the other four racial groups in the analyses. Past studies that compared the EEO-1 reports to other datasets found their quality to be comparable to that of sources based on the U.S. Census or Current Population Survey (Robinson et al. 2005; Tomaskovic-Devey et al. 2006).

Sample Construction

I collected all Indeed reviews for employers in the EEO-1 dataset from January 2012 to December 2015, which includes most of the medium- and large-sized firms in the United States.[10] With a colleague's help, I manually matched firms in the EEO-1 and the Indeed dataset, using firm names and headquarters locations. My sample has 8,851 firms, accounting for 27,241 firm-year observations and 932,943 unique reviews (a firm has 105 reviews, on average). This sample is largely representative at the national level, as industry distribution matches fairly well with the industry representation shown in census data (see Figure S3 in the online supplement).

Dimensions of Work Environments

To capture work environments, I focused on the four non-wage dimensions that Indeed users numerically rated: manager quality, firm culture, work/life balance, and job security/advancement. Manager quality and firm culture directly determine the setting and climate in which employees work; work/life balance could reflect when and how employees work; and job security/advancement could influence the psychological climate of the workplace.

To validate these dimensions, I applied a keyword extraction algorithm, TextRank, to open-ended job review texts to identify which dimensions of work environments concerned employees the most. In short, TextRank is similar to how Google uses PageRank to rank the importance of webpages returned in a search (Mihalcea and Tarau 2004). The algorithm takes the entire set of review texts as a graph and treats each word or phrase as a node. Two words are connected if they appear within a certain distance in the same sentence. The result of this process is a dense graph representing the entire document. I used the TextRank algorithm to compute the rank of each word (Barrios et al. 2016): the most highly ranked words are the most central words in the document.

Using this method, I found that employees' highest concerns fit well into my four dimensions of work environments (for more details, see Table S2 in the online supplement). The one dimension identified in the text algorithm but not covered in the numerical ratings is interactions with co-workers and customers. However, this omission may not be critical, because co-worker relations are likely associated with firm culture, whereas customer relations only apply to service-oriented positions. Another commonly mentioned dimension not included is doing interesting and meaningful work, which could influence employees' satisfaction and well-being (Daw and Hardie 2012). Nonetheless, I consider this attribute to be more reflective of the work task than of the work environment. Finally, some studies also emphasize flexibility at work, including autonomy in decision-making and flexible work schedules. This dimension is likely captured by a combination of the ratings on firm culture, managerial quality, and work-life balance. In fact, there are reasons to believe

that, despite the broad definition, the various dimensions of work environments are closely connected, and hence the four dimensions should be highly correlated with other dimensions of work environments. For instance, among the four dimensions, all of the pairwise correlations exceed .7. In summary, although these four dimensions have some limitations, they should capture most of the essential dimensions of work environments.

Analytic Strategy and Key Variables

The goal of this study is to understand whether employee race is systematically associated with work environment quality. I treated each review as a unit of analysis. Because Indeed reviews are anonymous, there is no information on the reviewer's race. However, the EEO data provide information on firms' annual racial composition sorted by occupation. So, for each Indeed review, I created three variables to represent the proportion of Black, Hispanic, and Asian employees in that occupation within that firm in that year—*prop. Black employees*, *prop. Hispanic employees*, and *prop. Asian employees*. This approach observes how firms of different racial composition vary in their work environments.

Although Indeed reviews are anonymous, they do provide information on each reviewer's job title and work location. These are entered as free text and, with a colleague's assistance, I converted them into Occupational Information Network (ONET) codes at the occupation level and Federal Information Processing System (FIPS) codes at the county level. From the EEO data, I also gathered information on each firm's primary three-digit Standard Industrial Classification (SIC-3) industry code and the proportion of its employees who are managers and high-skilled professionals. These data allow us to observe how much of the racial gap in the work environment is driven by occupational, industrial, and residential sorting.

I use ordinary least squares (OLS) models with the following model specification:

$$\begin{aligned} WorkEnvironment_{jit} &= a \cdot Black_{it} + b \cdot Hispanic_{it} \\ &+ c \cdot Asian_{it} + d \cdot X_{it} + Occupation \\ &+ Industry + County + Year + Month + \in_{jit}, \end{aligned} \quad (1)$$

where the outcome variable $WorkEnvironment_{jit}$ is employee j's six-point scale rating of work environments for firm-occupation cell i at time t; $Black_{it}$, $Hispanic_{it}$, and $Asian_{it}$ are the proportion of Black, Hispanic, and Asian employees in that firm-occupation cell, respectively; X_{it} are the proportion of managers and professional workers in the firm; *occupation*, *industry*, and *county* are occupation (ONET), industry (SIC3), and county (FIPS) fixed effects, respectively; and *year* and *month* are fixed effects on the year and month of the review.

I used both weighted and unweighted models. The main models do not include weights, largely because the number of Indeed reviewers from a given firm is highly correlated with the actual number of employees in that firm, and because the occupational distribution of reviewers is also highly consistent with that in the actual firm (see Figure S2 in the online supplement). As a robustness check, I used probability weights, with each review weighted by the number of workers in that occupation-firm category divided by the number of reviews in that occupation-firm category. Conclusions are substantively similar with and without weights. In all models, I clustered the sample at the firm level.

MAIN RESULTS

Results show racial disparity in work environments. I find that firms with a higher proportion of Black employees provide less-favorable work environments, and firms with a higher proportion of Asian employees have more-favorable ones. Additionally, firms' Hispanic employee representation is associated with more-favorable work environments in some dimensions but not in others. Occupation, industry, and residential choice largely explain why firms' Asian and Hispanic representation is positively associated with more-favorable work environments, but do not explain why

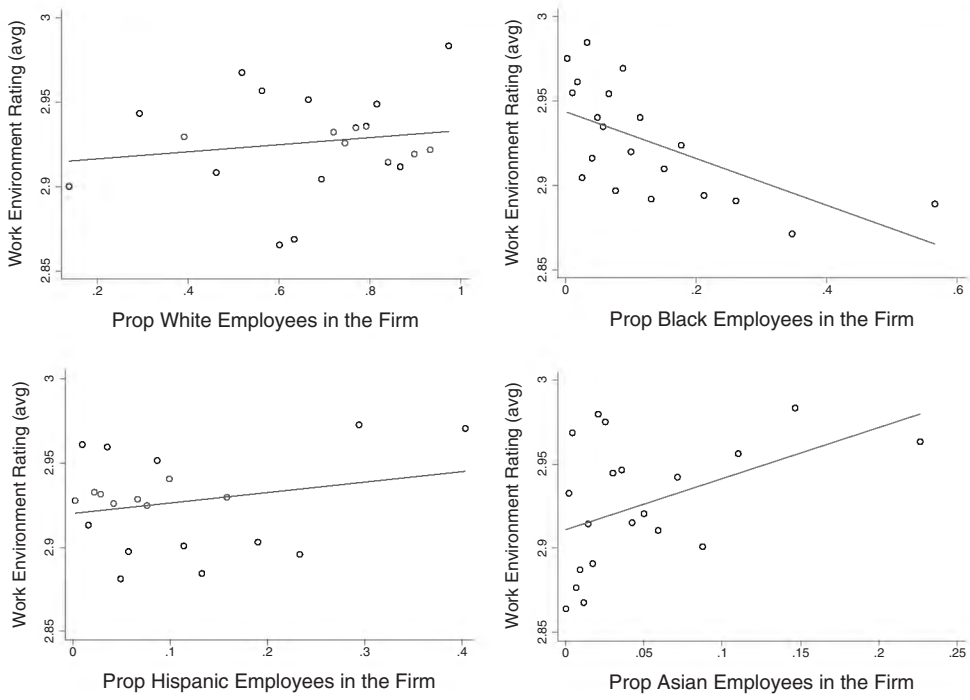

Figure 2. Correlation between Firms' Racial Composition and Work Environment
Note: These graphs plot the correlation between a firm's racial composition and its average work environment, which is the average rating of four dimensions: manager quality, firm culture, work-life balance, and job security and opportunity. These ratings are aggregated at the firm-year level and come from one million employee reviews on Indeed. Firms' demographic information comes from the Equal Employment Opportunity (EEO-1) database. The graphs are binned at 20 equal-size quantile cuts of firm-year observations based on the *x*-axis.

firms with more Black employees have less-favorable work environments. Instead, the Black-White gap is larger in regions with more conservative racial attitudes and more instances of workplace racial discrimination, suggesting that race-based exclusionary practices are responsible for the gap.

First, I examine at the firm level the correlation between racial composition and the average work environment, which is simply the average rating across the four dimensions of work environments and aggregated to the firm level. Figure 2 shows a negative association between a firm's proportion of Black employees and its average rating across the four dimensions of work environments. At the same time, a firm's proportion of Asian employees shows a positive association with its average work environment rating, and its proportion of Hispanic employees has a relatively flat association. These firm-level descriptive trends suggest that firms with a higher proportion of Black employees have less-favorable work environments, and those with a higher proportion of Asian employees have more-favorable work environments.

I next used detailed review data to conduct OLS regressions. Tables 1 and 2 examine racial differences in each dimension of work environment identified. Firms with a higher proportion of Black employees have lower scores in managerial quality, firm culture, and work-life balance, but not in job security/promotion opportunities. Firms with a higher proportion of Hispanic employees have higher scores in managerial quality and job security/promotion opportunities, but not in firm culture and work-life balance. And firms with a higher proportion of Asian employees have higher scores in all four of these dimensions.

Table 1. Predicting Manager Quality and Firm Culture: Evidence from Employee Reviews

	Manager Quality				Firm Culture			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Black Employees (%)	−.188**	−.0999*	−.0877*	−.107*	−.256***	−.183***	−.172***	−.200***
	(.0588)	(.0447)	(.0442)	(.0429)	(.0717)	(.0506)	(.0502)	(.0482)
Hispanic Employees (%)	.147**	.123*	.123*	.0177	.130	.145*	.154*	.0408
	(.0543)	(.0483)	(.0497)	(.0442)	(.0964)	(.0730)	(.0762)	(.0684)
Asian Employees (%)	.295***	.228**	.192**	.110	.453***	.262*	.213*	.120
	(.0836)	(.0738)	(.0693)	(.0641)	(.119)	(.104)	(.0958)	(.0829)
Pct Managers			−.0889	−.0892			−.205*	−.196*
			(.0750)	(.0723)			(.0872)	(.0822)
Pct Professionals			.0718	.0691			.116*	.110*
			(.0409)	(.0400)			(.0538)	(.0515)
Observations	932,943	932,897	928,382	928,178	932,943	932,897	928,382	928,178
R^2	.001	.008	.008	.013	.002	.010	.010	.016
Fixed Effects								
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation (ONET)		Yes	Yes	Yes		Yes	Yes	Yes
Industry (SIC3)		Yes	Yes	Yes		Yes	Yes	Yes
Local County				Yes				Yes

Note: OLS models predicting managerial quality and firm culture. The unit of observation is an employee review, and the dependent variables are six-point ratings gathered from anonymous job reviewers from Indeed. The independent variables for demographic composition are measured at the firm-occupation-year level. The control variables, Pct Managers and Pct Professionals, are measured at the firm-year level. Both independent and control variables come from the Equal Employment Opportunity (EEO-1) database. All models are clustered by firm.
*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests).

Table 2. Predicting Work-Life Balance and Job Security: Evidence from Employee Reviews

	Work-Life Balance				Job Security and Promotion			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Black Employees (%)	−.171**	−.154***	−.139***	−.161***	−.0726	−.0131	−.00806	−.0544
	(.0590)	(.0431)	(.0421)	(.0403)	(.0593)	(.0404)	(.0403)	−.0388
Hispanic Employees (%)	.0337	.0666	.0875	−.0218	.214**	.198**	.190**	.0736
	(.0584)	(.0449)	(.0481)	(.0415)	(.0774)	(.0609)	(.0620)	−.0541
Asian Employees (%)	.494***	.198*	.0973	.0163	.563***	.535***	.545***	.439***
	(.1200)	(.0892)	(.0849)	(.0758)	(.089)	(.0654)	(.0656)	−.0636
Pct Managers			−.179*	−.181*			−.135	−.150*
			(.0844)	(.0801)			(.0757)	(.0726)
Pct Professionals			.181***	.178***			.0168	.00881
			(.0405)	(.0387)			(.0388)	(.0383)
Observations	932,943	932,897	928,382	928,178	932,943	932,897	928,382	928,178
R^2	.004	.014	.014	.020	.001	.011	.011	.016
Fixed Effects								
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation (ONET)		Yes	Yes	Yes		Yes	Yes	Yes
Industry (SIC3)		Yes	Yes	Yes		Yes	Yes	Yes
Local County				Yes				Yes

Note: OLS models predicting work-life balance, job security, and promotion. The unit of observation is an employee review and the dependent variables are six-point ratings gathered from anonymous job reviewers from Indeed. The independent variables for demographic composition are measured at the firm-occupation-year level. The control variables, Pct Managers and Pct Professionals, are measured at the firm-year level. Both independent and control variables come from the Equal Employment Opportunity (EEO-1) database. All models are clustered by firm.
*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests).

The magnitude of these associations is not large. For example, a 20-percentage-point increase in the proportion of Asian employees would predict a .06-point increase in manager quality and about a .1-point increase in firm culture, work-life balance, and job security and promotion. However, these differences are still sizeable. As a point of comparison, the difference in work environments between the firms on *Fortune*'s "Most Admired Companies" list and those not on the list is only .13. Similarly, although professional workers generally have better work environments than blue-collar workers, a 50-percent increase in the proportion of professional workers only predicts a .05- to .1-point increase in work environments. Thus, a workplace's racial composition is a better predictor of its work environment than is its occupational composition.

Spillover Mechanism: Occupation, Industry, and Region

To understand the mechanisms, I first observe how much of the racial gaps are explained by differences in industry, occupation, and geography. If the racial disparity in work environments is largely driven by spillover from racial differences in occupation, industry, and geography, then controlling for these should reduce much of the disparity.

In Tables 1 and 2, I first show models without controlling for occupation, industry, and geography and then add each of these controls into the model. For firms' Black employee representation, accounting for occupation, industry, and geography only reduces its negative association with managerial quality by 30 percent and with firm culture by 20 percent and, in fact, increases its negative association with work-life balance. These results imply that much of the Black-White gap in work environments comes from between-firm sorting: in the same occupation, industry, and region, firms with higher Black employee representation have less-favorable work environments.

In contrast, controlling for occupation and industry reduces the positive association between firms' Asian employee representation and managerial quality by 30 percent, with firm culture by 60 percent, and with work-life balance by as much as 90 percent. Controlling for geographic region reduces the positive association with managerial quality and firm culture by an additional 30 percent each, and with work-life balance by an additional 15 percent. In fact, after controlling for occupation, industry, and geography, the Asian-White gap in work environments becomes quite small and no longer statistically significant in most dimensions. The exception is job security/promotion opportunities, where occupation, industry, and region only account for about 15 percent of the Asian-White gap.

Similarly, the slightly positive association between firms' Hispanic employee representation and their work environments also largely disappears after controlling for occupation, industry, and region. These factors together explain over 90 percent of the Hispanic-White gap in the two dimensions that favor Hispanic employees: managerial quality and job security/promotion opportunities. These results suggest that, in contrast with the results for firms' Black employees, the positive work environments associated with firms' Asian and Hispanic employees may be largely driven by spillover from racial distribution in occupation and residential area.

Employee-Sorting Mechanism: Regional Variation

To further understand the source of the Black-White gap, I examined how this disparity is moderated by racial attitudes and discrimination where firms are located. In the United States, racial dynamics vary considerably across geographic regions: some communities have more conservative racial attitudes than others, which could lead to more race-based exclusion in hiring. The employee sorting mechanism may suggest that the Black-White gap would be the greatest in areas with the most conservative racial attitudes.

I measured racial attitudes and discrimination at the county level using General Social

Surveys from 1994 to 2018. First, I used the question "Are you for or against preferential hiring and promotion of Blacks?" to assess racial attitudes in each county. This question is highly correlated with the other questions on racial attitudes but has a much larger sample size: it is asked consistently across all years in my GSS sample and includes 18,944 respondents. I converted the answers, originally on a four-point scale, to a scale ranging from 0 to 1 and calculated the average value in each county, aggregated across all years of the survey. The resulting variable, *county attitude*, ranges from 0 to 1, with 1 indicating a more-positive attitude toward Black Americans.

I also used data from the yes-or-no question "Do you feel discriminated against at work because of race?" to measure the amount of racial discrimination experienced by respondents in the local labor market. This question was only asked in the GSS from 2002 to 2018 and has a total of 8,449 valid observations. I calculated the proportion of respondents with a "yes" answer in each county, aggregated across all years of the survey.

The advantage of the GSS data is direct information on attitudes and experiences, but the disadvantage is that the small sample size may not accurately represent county-level estimates. I therefore used presidential election voting data as a third measure of county-level racial attitudes. Past research consistently shows that political ideology is strongly associated with racial beliefs: more politically conservative individuals tend to hold more conservative racial attitudes (Zhang 2022). Thus, my third measure of racial attitudes is simply the proportion of people who voted for the Democratic Party presidential candidate in the 2012 election in each county.

Using these three measures, I found that the Black-White racial gap in work environments is higher in communities with more racially conservative attitudes and a higher incidence of reported workplace racial discrimination. The interactions between supportive county-level racial attitudes and the proportion of Black employees have large positive coefficients in predicting work environments across most models (see Models 1, 3, 5, and 7 in Table 3). A similar pattern emerges when using political attitudes in the county as a moderator: the proportion of Black employees is more strongly associated with less-favorable work environments when the firm is in a politically conservative county rather than in a liberal one (see Models 2, 4, 6, and 8 in Table 3). For example, the Black-White gap in work environments is three times higher in a county with 70 percent Republicans than in a county with 40 percent Republicans. These results imply that demand-side exclusion may have played a large part in producing and maintaining the Black-White gap in work environments. In areas with more-conservative racial attitudes, Black workers may encounter greater exclusion in the labor market and, as a result, may only be able to get jobs in organizations with less-favorable work environments.

Variation across Occupations

My next analysis examines how the racial gap in work environments varies across occupations. I focus on three characteristics at the occupation level: average wage, perceived prestige, and unemployment rate. These three attributes could provide insights into the intersection between class and race. Is the racial gap mostly concentrated in either the higher-end or lower-end occupations, or is it scattered across occupations of all levels? In these models, data on occupational characteristics come from the American Community Survey, the GSS, or the O*NET database. I included these occupational characteristics in separate models to avoid collinearity.

Table 4 suggests the Black-White gap in work environments is mostly concentrated in lower-end occupations, as both occupational wage and prestige positively interact with the proportion of Black employees (see Models 1, 3, 5, and 7). For example, in professional occupations such as stock analyst, a firm's proportion of Black employees is not

Table 3. Variation across Local Counties: Evidence from Employee Reviews

	Manager Quality		Firm Culture		Work-Life Balance		Job Security and Promotion	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Black Employees (%)	−.366*	−.471***	−.473**	−.735***	−.405**	−.552***	−.240	−.479***
	(.150)	(.130)	(.170)	(.138)	(.148)	(.128)	(.144)	(.113)
Black Employees (%) × County Attitude: Support for Racial Equality	.710		.979*		1.032**		.602	
	(.363)		(.396)		(.369)		(.359)	
Black Employees (%) × County Estimate: Racial Discrim. at Work	−.747*		−1.263***		−.993*		−.733*	
	(.3370)		(.3820)		(.390)		(.358)	
Black Employees (%) × County Political Belief: Prop. Democrats		.495**		.856***		.682***		.683***
		(.188)		(.199)		(.196)		(.174)
Observations	868,671	728,350	868,671	728,350	868,671	728,350	868,671	728,350
R^2	.007	.007	.008	.008	.010	.011	.008	.009
Fixed Effects								
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Local County	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Interaction between Black employee representation and county-level characteristics. County attitude and estimate of discrimination are calculated from combined waves of the General Social Survey. County political belief comes from voting records in the 2012 U.S. presidential election. All models are clustered by firm.
*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests).

Table 4. Variation across Occupations: Evidence from Employee Reviews

	Manager Quality		Firm Culture		Work-Life Balance		Job Security and Promotion	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Black Employees (%)	−.606***	.115	−1.901***	−.0127	−.532***	−.0612	−1.585**	.107
	(.1090)	(.0676)	(.569)	(.0698)	(.107)	(.0717)	(.499)	(.0639)
Black Employees (%) × Occ. Prestige Score	.0130***				.00966***			
	(.0024)				(.0024)			
Black Employees (%) × Avg. Occ. Wage			.168**				.150***	
			(.0560)				(.0494)	
Black Employees (%) × Occ. Unemployment Rate		−2.781***		−2.241***		−1.315*		−2.035***
		(.632)		(.642)		(.654)		(.595)
Observations	804,181	822,165	819,890	822,165	804,181	822,165	819,890	822,165
R^2	.014	.014	.016	.016	.021	.021	.017	.017
Fixed Effects								
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation (ONET)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry (SIC3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Local County	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Interaction between Black employee representation and occupation-level characteristics. Occupation-level variables come from the American Community Survey and the General Social Survey. All models are clustered by firm.
*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests).

associated with lower-quality work environments. But in blue-collar occupations such as machine operator, the Black-White racial gap in work environments is more significant. This result may reflect a greater normative pressure for professional firms to promote diversity and a greater emphasis on diversity in high-skilled, white-collar professional groups.

I also found that the Black-White gap was larger in occupations with a higher unemployment rate (see Models 2, 4, 6, and 8 in Table 4). This result is consistent with the story of demand-side exclusion. When there is a larger surplus of labor, employers may have more leeway to exclude certain individuals, such as racial minorities. When there is a shortage of workers, employers may have little option but to be inclusive in their hiring. Of course, this is only one explanation, since the unemployment rate is also associated with many other factors.

Finally, I consider a set of additional occupational characteristics from the O*NET database, including the required levels of customer-facing skills, engineering and technology skills, and data analysis skills. Customer-facing requirements could help account for the possibility of customer discrimination, and technical skills could indicate whether the racial gap is partly attributable to differences in technical training. However, I did not find any of these occupational attributes to be significantly associated with the level of the Black-White gap in work environments.

Controlling for Firm Wage Premium

I next controlled for each firm's wage premium, showing that the racial gap in work environments is not simply a mirror of the wage gap. For the same job, some firms pay higher wages than others; this difference is commonly referred to as *firm wage premiums*. To calculate them, I collected millions of job postings from Burning Glass Technologies (see the next section for more details) and ran the following regression:

$$LogWage_{jit} = a \cdot FirmYear_{it} + b \cdot X_{jit} + Occupation + Year + \in_{jit}, \quad (2)$$

where X_{jit} is a set of control variables for job post j posted by firm i in year t, including a job's educational degree requirement, whether it is part-time or full-time, and various skill requirements listed in the posting. *Occupation* is O*NET-occupation-code fixed effects. $LogWage_{jit}$ is the logged listed wage on the job posting. I am interested in a, which reflects how much of the offered wage is attributable to a firm-year after controlling for various job-specific and occupational attributes. This measure of firm wage premium is only weakly correlated (correlation less than .1) with my four measures of work environments and, as Table 5 shows, including it as an additional control in my models did not substantively change the results: racial gaps in work environments remain largely unchanged. As a robustness check, I used employees' self-reported ratings on pay and benefits as a control; the results are substantially similar. These findings demonstrate that racial inequality in work environments is distinct from and additive to the racial wage gap.

Alternative Explanation: Co-workers' Racial Composition?

Could the observed association between firm racial composition and work environments be a result of co-workers' racial composition? For example, firms with more Black workers may have similar work environments as those with few Black workers, but White workers simply *perceive* worse work environments with more Black workers. To address this possibility, I analyze the mentions of co-workers in the Indeed review texts. If co-workers' racial composition drives the observed association, then reviews mentioning co-workers should show a stronger correlation between co-workers' racial composition and quality of work environments. However, Table S5 in the online supplement does not show this pattern. Reviews that mention co-workers

Table 5. Controlling for Firm Wage Premium: Evidence from Employee Reviews

	Manager Quality		Firm Culture		Work-Life Balance		Job Security and Promotion	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Black Employees (%)	−.254*	−.158*	−.254*	−.237**	−.166	−.197**	−.0881	−.0593
	(.1060)	(.0667)	(.127)	(.0787)	(.102)	(.0619)	(.092)	(.0577)
Hispanic Employees (%)	.103	−.0234	.0478	−.021	−.00506	−.0481	.206	.0137
	(.0772)	(.0669)	(.1490)	(.0996)	(.0808)	(.0593)	(.1190)	(.0817)
Asian Employees (%)	.419**	.201*	.595***	.260	.687***	.154	.691***	.580***
	(.13)	(.0999)	(.1730)	(.134)	(.149)	(.098)	(.152)	(.108)
Firm Wage Premium	.0180	.00687	.0554	.0193	.034	−.00302	.0788**	.0187
	(.0230)	(.0152)	(.0329)	(.0200)	(.023)	(.0143)	(.0253)	−.0162
Pct Managers		−.0636		−.183		−.219		−.156
		(.0987)		(.1170)		(.1250)		(.1010)
Pct Professionals		−.0241		−.0098		.119*		−.0735
		(.051)		(.063)		(.052)		(.050)
Observations	551,101	547,583	551,101	547,583	551,101	547,583	551,101	547,583
R^2	.001	.017	.002	.019	.004	.023	.002	.019
Fixed Effects								
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation (ONET)		Yes		Yes		Yes		Yes
Industry (SIC3)		Yes		Yes		Yes		Yes
Local County		Yes		Yes		Yes		Yes

Note: The table includes firm wage premium as an additional control in the model. Firm wage premium is calculated using listed wage information from job postings provided by Burning Glass Technologies. All models are clustered by firm.
*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests).

exhibit a pattern similar to those that do not: the interactions between *mention co-workers* and racial composition do not consistently predict the quality of work environments, and their inclusion does not substantively change the main findings. This result suggests the main findings in Tables 1 and 2 are likely not attributable to perceptions based on co-workers' racial composition.

Breaking Down by Gender

To understand variations within each racial group, Table 6 breaks down the racial groups by gender: I examined how a firm's racial gender composition (e.g., percent Black women employees) predicts its work environment. Two notable findings emerge. First, a firm's proportion of Black women is associated with much-less-favorable work environments than is its proportion of Black men. Additional analyses show that Black women's disadvantage in work environments is especially concentrated in regions with more racial discrimination and more conservative racial attitudes. This is consistent with the view that Black women often constitute the most disadvantaged group in the labor market (Browne and Misra 2003). Second, a firm's proportion of Asian women is associated with more-favorable work environments than is its proportion of Asian men. However, we should interpret this result with caution, due to a high correlation between a firm's proportion of Asian women and Asian men (corr. = .5) that could lead to collinearity. In fact, when running models without the proportion of Asian women, a firm's proportion of Asian men also shows a large positive association with its quality of the work environment.

SUPPLEMENTARY ANALYSES

To corroborate the main findings, I conducted two supplementary analyses. First, I used the General Social Survey to provide individual-level evidence. My theory and analysis suggest a significant correlation between a firm's racial composition and its work environment. It is not entirely clear, however, whether this firm-level dynamic would result in individual-level differences. Individual survey data could show how employees of different races perceive their work environments and thus complement the firm-level evidence. Using GSS data, I showed that Black employees perceive significantly less-favorable work environments than do White employees, and that this difference explains as much as 40 percent of the Black-White gap in job satisfaction.

Second, I used job-posting data to create an alternative measure of work environments. One limitation of the Indeed data is the subjectivity and possible selection bias among reviewers. Yet, many dimensions of a firm's work environment—such as culture and management style—are highly dependent on its management philosophy. In general, firms that emphasize supervision and control tend to grant employees less autonomy, often resulting in less-favorable work environments, and firms that emphasize mentoring and employee growth tend to have more-favorable work environments (Zhang 2023). Based on this observation, I analyzed each firm's managerial job postings to see how they describe the role of manager—that is, whether a manager is described more as a supervisor or as a mentor—and used that to proxy for work environments. This produced evidence consistent with the main analyses: firms with more Black employees tend to underscore more supervision and less mentoring, and those with more Asian and Hispanic employees tend to emphasize less supervision.

Evidence from the GSS

The GSS is a nationally representative survey conducted biannually. The Quality of Worklife survey module in the GSS asks respondents many questions about their work experience. I used the 2002, 2006, 2010, 2014, and 2018 surveys, which ask detailed questions related to perceived work environment. Consistent with the main

Table 6. Considering the Intersection of Race and Gender: Evidence from Employee Reviews

	Manager Quality		Firm Culture		Work-Life Balance		Job Security and Promotion	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Black Men Employees (%)	−.129	.0278	−.254*	−.0895	−.268*	−.1050	−.00521	−.0239
	(.0884)	(.0592)	(.1040)	(.0709)	(.1050)	(.0625)	(.1150)	(.0676)
Black Women Employees (%)	−.239**	−.209**	−.268*	−.295***	−.104	−.203***	−.138	−.111
	(.0888)	(.0652)	(.106)	(.0736)	(.089)	(.0607)	(.087)	(.0593)
Hispanic Men Employees (%)	.0814	.0502	.121	.1080	−.0116	.00343	.314***	.171*
	(.0718)	(.0579)	(.0931)	(.0755)	(.0806)	(.0596)	(.0791)	(.0676)
Hispanic Women Employees (%)	.209**	−.0457	.119	−.0741	.155	−.0617	.0516	−.0730
	(.0774)	(.0620)	(.1280)	(.0860)	(.0841)	(.0601)	(.1070)	(.0698)
Asian Men Employees (%)	.0375	−.148	.0543	−.263*	.1680	−.302**	.2460	.281**
	(.112)	(.0857)	(.162)	(.106)	(.173)	(.0977)	(.128)	(.0959)
Asian Women Employees (%)	.755***	.553***	1.151***	.770***	1.104***	.566***	1.105***	.694***
	(.173)	(.124)	(.227)	(.148)	(.234)	(.129)	(.271)	(.144)
White Women Employees (%)	.0166	−.0176	.0084	−.0244	.0744	−.00625	−.0399	−.0398
	(.0322)	(.0303)	(.0410)	(.0346)	(.0409)	(.0319)	(.0386)	(.0309)
Pct Managers		−.0984		−.210*		−.181*		−.163*
		(.0729)		(.0824)		(.0809)		(.0734)
Pct Professionals		.0805*		.124*		.188***		.0159
		(.0391)		(.0495)		(.0387)		(.0373)
Observations	917,150	909,752	917,150	909,752	917,150	909,752	917,150	909,752
R^2	.001	.013	.002	.016	.005	.02	.002	.016
Fixed Effects								
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Occupation (ONET)		Yes		Yes		Yes		Yes
Industry (SIC3)		Yes		Yes		Yes		Yes
Local County		Yes		Yes		Yes		Yes

Note: The table uses independent variables that measure racial and gender composition. The independent variables are measured at the firm-occupation-year level and come from the Equal Employment Opportunity (EEO-1) database. All models are clustered by firm.
*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests).

analysis, I categorized these questions into four areas that capture the work environment—manager quality, firm culture, work-life balance, and job security and promotion—and averaged a respondent's scores in each area. The resulting four variables are on a four-point scale, with a higher value indicating a more-favorable work environment (for more details on the questions, see Table S3 in the online supplement). I ran OLS models with survey-year fixed effects to predict respondents' perceived work environments on each of these four dimensions.

Table 7 shows that Black employees perceive much-less-favorable work environments than do White employees across all four dimensions, and Asian and Hispanic employees' perceptions of work environments are not significantly different from those of White employees. In predicting perceived manager quality, work-life balance, and job security/promotion, the White-Black gap is at least as large as the gap between those having a college degree and those without (see Models 1, 3, and 4). In predicting perceived firm culture, the White-Black gap is about half that between college-educated and non–college-educated individuals. The inclusion of occupation, industry, and county fixed effects reduces the White-Black gap across most dimensions, although a substantial gap remains. Along with the firm-level findings in Tables 1 and 2, these individual analyses exhibit a clear Black-White gap in work environments. However, they differ in that occupation, industry, and geography explain more of the gap. Moreover, GSS data do not show a significant Asian-White gap. I discuss some possible explanations of these differences in the Conclusion.

Table 7 also shows the racial gap in job satisfaction and how much of it is due to racial differences in perceived work environments. As shown in Model 5, Black employees report significantly lower job satisfaction than do White employees, a result consistent with previous studies using survey data (Banerjee and Perrucci 2010; Mukerjee 2014; Tuch and Martin 1991). In Model 6, I added the four measures of perceived work environment as additional controls and found that accounting for work environment reduces the Black-White gap in job satisfaction by as much as 43 percent. In contrast, accounting for perceived racial discrimination at work only explains about 31 percent of the gap in job satisfaction.[11] These results suggest that accounting for racial disparity in work environments could explain a significant part of the Black-White gap in job satisfaction.

Evidence from Job Postings

In a second supplementary analysis, I examined the association between a firm's racial composition and its approach to employee management. To observe that approach, I analyzed how each firm describes the managerial role in its job postings. I gathered online job postings from 2007 to 2015, provided by Burning Glass Technologies, and manually matched them with the EEO-1 data, resulting in 1.5 million job postings for managerial positions that represent 3,838 firms and 12,580 firm-years. For each job posting, I created two variables—*supervision* and *mentoring*—to indicate whether or not the job posting asks the manager to supervise employees or to mentor employees. Consistent with our intuition, *supervision* is negatively correlated with the four dimensions of work environments, and *mentoring* is positively correlated. More details on the data and variable construction are in Section S4 in the online supplement.

In Table 8, I conducted the analyses at the job-posting level, using OLS models to predict whether or not a job requires supervision (mentoring). Findings are highly consistent with the main results: a firm's proportion of Black employees is associated with more supervision and less mentoring, and a firm's proportions of Asian and Hispanic employees are associated with less supervision. As Models 1 and 3 show, having 10 percent more Black employees in a firm increases its likelihood of an emphasis on supervision by 24 percent (1.6 percentage points) and decreases the likelihood of mentoring by 22 percent

Table 7. Predicting Perceived Work Environment: Evidence from General Social Surveys 2002 to 2018

	Manager Quality	Firm Culture	Work-Life Balance	Job Security and Promotion	Overall Job Satisfaction	
	(1)	(2)	(3)	(4)	(5)	(6)
Black Employee	−.0723***	−.0422*	−.145***	−.104***	−.118***	−.0672**
	(.0199)	(.0198)	(.0263)	(.0230)	(.0287)	(.0259)
Hispanic Employee	.00985	.0270	.0862**	−.00283	−.00816	−.0173
	(.0224)	(.0221)	(.0295)	(.0259)	(.0321)	(.0288)
Asian Employee	−.0233	−.0173	.0288	−.0953*	−.0902	−.0569
	(.0411)	(.0401)	(.0531)	(.0473)	(.0587)	(.0527)
Woman	.0232	−.0349*	.114***	−.0611***	.0121	.0300
	(.0141)	(.0139)	(.0185)	(.0163)	(.0205)	(.0185)
Associate Degree	.00795	.0301	.0640**	.0516*	.0165	.000564
	(.0185)	(.0184)	(.0244)	(.0214)	(.0270)	(.0243)
College Degree	.0218	.0884***	.135***	.119***	.0286	−.0114
	(.0187)	(.0184)	(.0245)	(.0216)	(.0271)	(.0244)
Graduate Degree	.0276	.175***	.217***	.180***	.152***	.0811**
	(.0218)	(.0213)	(.0283)	(.0253)	(.0317)	(.0287)
Age	−.00859**	.00715*	.0493***	−.0106**	.00349	.00798
	(.0031)	(.0030)	(.0041)	(.0036)	(.0045)	(.0041)
Age Squared	.000140***	−.0000228	−.000596***	.000125**	.0000551	−.00000433
	(.0000)	(.0000332)	(.0000447)	−.0000399	(.000)	(.0000456)
Manager Quality						.267***
						(.0222)
Firm Culture						.128***
						(.0198)
Work-Life Balance						−.00172
						(.0121)
Job Security and Promotion						.248***
						(.0185)
Observations	6,925	7,259	7,182	6,711	5,666	5,666
R^2	.015	.027	.052	.02	.032	.221
Fixed Effects						
GSS Year	Yes	Yes	Yes	Yes	Yes	Yes

Note: OLS models predicting a number of self-rated experiences at work. All variables come from the 2002 to 2018 General Social Survey. The unit of observation is an individual respondent. The dependent variables are on a four-point scale. I combined survey questions to construct the dependent variables (for details, see Table S3 in the online supplement).
*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests).

Table 8. Predicting Managerial Expectation: Evidence from Job Postings

	Supervision		Mentoring	
	(1)	(2)	(3)	(4)
Prop. Black Workers	.156***	.121***	−.0855***	−.0862***
	(.0152)	(.0123)	(.00793)	(.00866)
Prop. Hispanic Workers	−.120***	−.0681***	−.0127	.0129
	(.0123)	(.0105)	(.00897)	(.00858)
Prop. Asian Workers	−.234***	−.130***	.0110	.0146
	(.0119)	(.00961)	(.0115)	(.00994)
Observations	1,514,497	1,514,343	1,514,497	1,514,343
R^2	.013	.08	.003	.017
Fixed Effects				
Year	Yes	Yes	Yes	Yes
Month	Yes	Yes	Yes	Yes
Occupation (ONET)		Yes		Yes
Industry (NAIC3)		Yes		Yes
Local County		Yes		Yes

Note: OLS models predicting whether a managerial job posting requires supervision and mentoring. The dependent variables are coded from managerial job postings provided by Burning Glass Technologies. The unit of observation is an individual job posting. The independent variables, measured at the firm-occupation-year level, come from the Equal Employment Opportunity (EEO-1) database. All models are clustered by firm.
*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests).

(.9 percentage points). In Models 2 and 4, controlling for occupation, industry, and county only reduces the Black-White gap in supervision by 22 percent and does not reduce the gap in mentoring at all. In contrast, having 10 percent more Asian or Hispanic employees in a firm decreases its likelihood of supervision by 35 percent (2.3 percentage points) and 18 percent (1.2 percentage points), respectively. Occupation, industry, and county explain as much as 43 percent of the Asian-White gap in supervision and 44 percent of the Hispanic-White gap. These findings are consistent with the main results based on Indeed reviews.

CONCLUSIONS

This study shows racial inequality in the work environment. Using a novel dataset based on nearly one million employee reviews, I show that firms with a higher proportion of Black employees tend to have less-favorable manager quality, firm culture, and work-life balance. Only a small part of this Black-White gap is explained by occupation, residential area, occupational status, and wage; most of the gap appears to arise from between-firm sorting. This sorting is likely the result of exclusionary practices, as the Black-White gap is larger in areas with more conservative racial attitudes and more reported workplace racial discrimination. I did not, however, find a firm's Hispanic and Asian employee representation to predict less-favorable work environments. In fact, firms with a higher proportion of Asian employees have more favorable work environments. However, unlike the Black-White gap, the Asian-White gap may be driven by differences in occupational and residential choices, as it largely disappears after controlling for these factors. In the supplementary analyses, I replicated these findings using alternative measures of work environment based on job-posting data and showed largely consistent individual-level evidence from GSS surveys. Together, these analyses suggest racial disparity in work environments.

Contribution to the Inequality Literature

These findings underscore an important yet overlooked source of racial inequality. To date, studies of labor market inequality have focused primarily on outcomes related to wages and occupational attainment. These do significantly affect people's living conditions, health, and general well-being, yet they are not the only dimensions that matter. Studies consistently show that employees highly value other dimensions, including workplace culture, relationships with managers and colleagues, and work-life balance. Unfortunately, we know almost nothing about racial gaps across these less-tangible, yet essential, dimensions of work. Do firms with more racial minorities have different types of work environments?

This study theorizes and empirically demonstrates racial stratification in the work environment. Using several unique data sources, I find a racial gap across most dimensions of the work environment, even after controlling for racial differences in wage and occupational attainment. This gap could have direct implications for many other forms of inequality. For instance, managerial quality and firm culture could affect employees' job performance and learning. Work-life balance could influence employees' happiness, mental and physical health, and family dynamics. Job security and promotion opportunities could be associated with occupational attainment. All of these dimensions could, in turn, contribute to patterns in earnings, job satisfaction, and career attainment. Thus, racial gaps in the work environment could be an essential yet overlooked contributor to inequality in other domains.

The work environment gap could contribute to other forms of inequality, but it differs from them in important ways. For example, although Black employees' disadvantage in the work environment is similar to their disadvantage in wage and occupation status, the primary sources are different. In wage and occupational attainment, the larger part of the Black-White gap is attributable to racial disparities in education and residential segregation. In contrast, most of the Black-White gap in the work environment comes from the sorting of Black and White workers into different firms within the same geographic area and occupation, likely a result of exclusionary practices. As another example, Hispanic and White employees tend to have comparable work environments, which contrasts with Hispanic employees' significant disadvantage in wage and occupational attainment. Asian employees, due to their occupational and residential choices, tend to have more-favorable work environments than do White employees. When it comes to wage and occupational attainment, however, Asian employees' position is roughly on par with that of White employees. In short, racial inequality in work environments has a number of important differences from racial inequality in either wages or occupational attainment, underscoring the need to treat it as a distinct topic of study.

As a firm-/job-level construct, work environments are related to but distinct from concepts such as job values, job rewards, and job quality. Job values are "conceptions of what is desirable that individuals hold with respect to their work activity. They are general attitudes that may not be directly linked to one's specific job or organization" (Kalleberg 1977:129). Thus, job value is more of an individual-level attribute. Job rewards generally refer to pay and benefits (which are not included in my definition of work environments), but sometimes include promotion and job security. Job quality is an inclusive term that covers almost every aspect of a job, from extrinsic and intrinsic rewards to interpersonal relationships (Olsen, Kalleberg, and Nesheim 2010). Work environments could be an aspect of job quality. The concept closest to *work environment* is probably "working conditions," defined as "job characteristics and occupational/industrial structural factors that are related to job satisfaction, including union membership, occupation, autonomy, job complexity, ownership, hierarchy of supervision,

and job stability" (Bokemeier and Lacy 1987:191). Prior studies using working conditions as a concept tend to focus on occupation- and industry-wide dynamics, whereas I use work environment mostly to address firm-level attributes. Nonetheless, work environment and working conditions could be regarded as interchangeable concepts.

There are reasons to believe the study of the work environment will continue to be valuable. In recent decades, firms have become increasingly distinct in their approaches to employee management. Some continue to focus on streamlining and on lean management, striving for efficiency and low labor costs. Such a managerial philosophy could lead to less-favorable work environments, such as stricter supervision and longer and less-flexible working hours (Jung 2014; Kalleberg 2011). Other firms have begun to emphasize worker empowerment, opting for less command-and-control and more autonomy and support for workers (Zhang 2023). This approach tends to produce a more collaborative culture, better managerial relations, and improved work-life balance for employees (Ezzamel and Willmott 1998). Thus, these different management philosophies could lead to greater differentiation across firms' work environments, making work environments an increasingly relevant topic in the labor market. The present study takes a step in this direction by documenting patterns of racial inequality in work environments, but it also leaves many questions unanswered. Is this racial disparity growing or declining? Are employees aware of this disparity? Does this happen in other countries? With the advent of many new data sources, future studies could tackle these promising questions.

Understanding Gaps in Job Satisfaction

Past surveys have consistently found that Black workers have significantly lower job satisfaction than do White workers (Banerjee and Perrucci 2010; Lundquist 2008; Mukerjee 2014; Tuch and Martin 1991; Weaver 1998; Wilson and Butler 1978). The causes of this disparity remain unclear: some attribute it to differences in earnings and socioeconomic attainment (Weaver 1998), others to on-the-job discrimination (Hughes and Dodge 1997). However, as I find in the supplementary analyses, education, income, and racial discrimination explain less than half of the Black-White gap in job satisfaction, whereas differences in perceived work environments—especially manager quality and firm culture—explain over 40 percent. After all, interactions with managers, the overall culture of the workplace, and work-life balance are important determinants of our experiences at work. When Black workers are systematically sorted into firms with less-favorable work environments, it is not surprising that they report less job satisfaction.

One interesting finding in the General Social Surveys is that Asian employees do not perceive better work environments or report greater job satisfaction than do White employees, even though my main analyses show that Asian employees tend to work in more-favorable work environments. One explanation is that the GSS simply has too few Asian respondents. However, another explanation is that there is a disconnect between firms' work environments and how individuals perceive them. Asian employees tend to work in firms with more-favorable work environments largely because of their occupational and residential choices. Thus, compared to their peers in nearby firms, Asian employees may not feel they are experiencing better firm culture, managerial relations, or working hours. This fact, coupled with the discrimination they face in the labor market (Oreopoulos 2011), could help explain why Asian employees do not report greater satisfaction despite working in favorable environments. This dynamic is different for Black employees, who tend to work in firms with less-favorable work environments compared to their White peers in the same industry and region. Consequently, Black employees can see that they work in less-favorable environments and report lower job satisfaction. This explanation underscores

that individuals' perceptions of their work environments are influenced not only by the actual quality of the work environments, but also by the sources of disparity among them.

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Notes

1. To give a few examples, Bertrand and Mullainathan's (2004) audit study of 5,000 résumés shows that applicants with White names trigger a callback rate 50-percent higher than that of equally qualified Black applicants; Oreopoulos's (2011) audit study of 6,000 résumés found a 40-percent-higher callback rate for White applicants than for equally qualified Asian applicants; and Pager and colleagues (2009) sent trained testers for 300 positions in the low-skilled labor market and found that White applicants received a 24-percent-higher positive response rate than similarly profiled Hispanic applicants and a 104-percent-higher positive response rate than similarly profiled Black applicants.
2. In 2016 in the United States, 54 percent of Asian individuals had a bachelor's degree, much higher than the 35 percent of White, 21 percent of Black, and 15 percent of Hispanic populations (U.S. Bureau of Labor Statistics 2016).
3. The index of dissimilarity is the proportion of a group that would need to move to create a uniform distribution of population across two groups. It is a commonly used measure of segregation: a higher score indicates a greater level of segregation.
4. Replication materials are available at http://letianzhang.com.
5. Karabarbounis and Pinto (2018) compared self-reported salary information from Glassdoor to the Quarterly Census for Employment and Wages published by the U.S. Census Bureau and to the Panel Study of Income Dynamics conducted by the University of Michigan.
6. Private-sector firms include both publicly traded and private firms.
7. Government contractors are private-sector firms that have more than $50,000 worth of government contracts.
8. Because each employee can only be counted once, this classification scheme effectively makes Hispanic a separate racial category. Such classification differs from that of the U.S. Census, in which respondents can declare a race and also identify as being of Hispanic origin.
9. "Managers" refers to both senior and middle managers.
10. Indeed started to populate employee reviews in 2012, and 2015 is the last year for which I have access to detailed firm-level demographic information.
11. Results are available upon request.

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