Workplace segregation and the structure of American racial earnings inequality *

Clem Aeppli

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Abstract

In the last forty years, one's earnings and wellbeing have increasingly come to depend on where one works. How has this reshaped racial and ethnic earnings disparities? I draw on American employer and employee microdata to trace the history of black and Hispanic workers' concentration in marginal establishments from the 1970s to the present. First, black and Hispanic workers have become increasingly siloed into especially low paying, low revenue firms. Second, about half of this trend has been driven by the movement of blue-collar and service occupations to low-paying establishments; this is consistent with descriptions of workplace fissuring and narrowing. Third, this *de facto* segregation exacerbates the black-white and Hispanic-white pay gaps by 13% and 27%, respectively, in recent years. These results establish that concentration in marginal establishments – though already identified in the 1980s – has become much more significant in an era of widening between-firm inequalities. Workplace segregation is a key motor of racial and ethnic gaps today.

1 Introduction

In 1977, federal investigators found Black hires of a Southern textile mill to be "almost entirely in the blue collar classifications which are the lower paying job titles." (EEOC

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as cited in Minchin 1999, 159). This pattern was repeated across the United States. Even in integrated firms, nonwhite employees had long been relegated to dangerous and poorly-paying jobs with little opportunity for promotion (Honey 1995; Sundstrom 1994, 389; Esch 2018). Yet the picture today looks different. Occupations within establishments have steadily integrated (Ferguson and Koning 2018) and the room for explicit discrimination have diminished (Collins 2003) though is far from gone (e.g., Wingfield and Chavez 2020). A new form of inequality seems to have taken its place: qualitative work documents the concentration of black and Hispanic workers at poorly-paying subcontractors, franchise restaurants, and custodial-service companies (Chatelain 2020; Cranford 2005; Appel 2019). Do these examples reflect a broader shift in the structure of racial economic inequality?

This paper traces the extent, history, and ramifications of this form of racial disparity – a disparity due to access to workplaces rather than hierarchies within workplaces. Across modern economies, the compensation and benefits one receives depend more and more on where one works, as opposed to the rank one holds at work (Barth et al. 2016; Kristal, Cohen, and Navot 2020; Tomaskovic-Devey et al. 2020). This transformation has many causes. Domestic outsourcing has relocated low-wage occupations into low-paying firms (Dube and Kaplan 2010; Ochsenfeld 2018); globalization and new communications technologies have allowed a small number of firms to dominate their sectors, benefiting their own employees (Autor et al. 2020). As a consequence, the position of one's employer in the chain of production carries great significance for compensation, stability, upward mobility, and work conditions (Appelbaum 2017; Wilmers 2018; Bana et al. 2023).

At the same time, workplaces have become more racially uniform (Ferguson and Koning 2018; Hellerstein and Neumark 2008). These trends, together, suggest a clear implication: due to broad shifts in the economy – in particular, the movement of blue-collar and service work into marginal firms – black and Hispanic workers become increasingly concentrated in low-pay, low-revenue workplaces. Because these workplaces have limited access to economic rents, they pay even less (Sørensen 1996); this produces an additional pay penalty for black and Hispanic workers. Despite the clear significance of such a dynamic, it remains undocumented.

I track firms' racial composition, compensation, revenue, and occupational mix since the late 1970s using microdata from the Census Bureau, the Internal Revenue Service, and the Equal Employment Opportunity Commission. I begin by measuring the extent to which black and Hispanic workers have been concentrated at low-paying and low-revenue firms over time. Next, I assess one possible cause: the shift of blue-collar and service work to low-end workplaces. Finally, I use linked employer-employee data to estimate the effect of employer segregation on racial and ethnic pay gaps.

I document a series of patterns. First, black and Hispanic workers are increasingly concentrated at low-paying, low-revenue firms: black workers were employed at firms

paying about 5% less on average in 1978, but 17% less by 2020. Hispanic workers experienced a similar trend. About two fifths of the growing black-white gap in firm pay, and over two thirds of the Hispanic-white gap, is explained by the relocation of blue-collar and service occupations to relatively lower-paying firms. By 2020, linked employer-employee data reveals that this *de facto* workplace segregation produced a pay penalty equal to 13.4% of the black-white gap and over 26% of the Hispanic-white gap.

These findings point to a large shift in the structure of racial economic inequality. Racial and ethnic disparities produced within organizations have, increasingly, given way to disparities produced between organizations. This transformation gives renewed importance to older theories of a segmented economy (Baron and Bielby 1984), and challenges us to expand the focus of theories of racial and ethnic disparities at work beyond within-organization hierarchies. We must place racial inequality within the economic mesh made up of contracts, markets, and relations between organizations. The resulting interfirm structure of inequality, though on its surface nonracial, has the potential to recreate the segregation, insecurity, and stigma attached to nonwhite labor in the pre-Civil Rights Era.

2 Persistent inequalities

After narrowing from the 1960s to the 1980s, racial and ethnic earnings gaps have stalled and even grown (Derenoncourt and Montialoux 2020; Heathcote et al. 2023). Figure 1 traces these gaps over the last forty years with the CPS ASEC. The unadjusted black-white earnings gap stabilized around 30% in recent years, while the gap between Hispanic and non-Hispanic whites is even higher. This earnings gap is, moreover, rigid: Black and Hispanic workers not only face lower average earnings, but have fewer chances for upward mobility (Akee, Jones, and Porter 2019). How do we make sense of this persistent gap?

Black and Hispanic workers have long been concentrated in low-paying occupations, driven by a mix of discrimination, educational disparities, and other factors (e.g., Drake 1945). Though occupational segregation lessened somewhat in the late 20th century, it still shows no signs of disappearing (Río and Alonso-Villar 2015). Occupational segregation can account for a substantial part of the persistence of racial earnings gaps (Mandel and Semyonov 2016). Gaps in education continue to play a role in sorting Black workers into lower-paying occupations, and rising returns to education form a wedge between more highly educated whites and less educated workers of color (Bayer and Charles 2018).

Recent sociological theory has shown how, exactly, these inequalities play out at work. Wingfield and Alston (2014) argue that workers, both white and nonwhite,

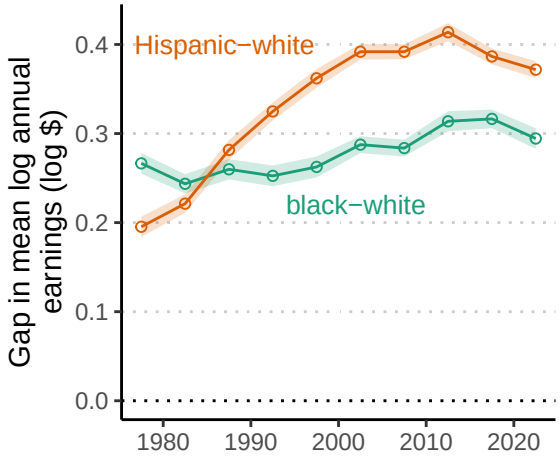


Figure 1: Persistent racial/ethnic disparities in mean log annual earnings between white workers and Hispanic or black workers. Earnings are total wages and salary. Sample is restricted to adults ages 18-60 working at least half-time for half of the year in sectors outside of mining, agriculture, and government. Data: CPS ASEC from IPUMS (Ruggles et al. 2021).

perform "racial tasks" in order to obfuscate and shore up racial hierarchies at work. And as organizations develop, inequalities get baked into wage-setting practices, promotions, and other procedures (Kalev 2014; Ray 2019). Societal racial inequalities accumulate as white workers successfully claim resources at work, repeatedly, across many workplaces (Avent-Holt and Tomaskovic-Devey 2019; Tilly 1998). To reveal these dynamics, theoretical approaches tend to treat workplaces as arenas in which careers are pursued, workers are evaluated, and hierarchies are enforced – in brief, in which resources are allocated.

But how much is there to allocate within the workplace in the first place? Workplaces are increasingly polarized into low- and high-paying (Song et al. 2018; Barth et al. 2016). White-collar professionals have shifted to highly productive firms, benefiting from economic rents in the forms of higher wages (Autor et al. 2020), while blue-collar and service occupations have increasingly clustered in low-revenue, low-paying establishments at the margins (Weil 2017; Wilmers and Aeppli 2021). Inasmuch as these dynamics align with the racial segregation by workplace documented by Ferguson and Koning (2018) – such that black and Hispanic workers are clustered at low-paying firms – then overall racial earnings inequality should increase.

The question of *access* to workplaces is well known. Employers continue to discriminate in hiring (Quillian et al. 2017; Pager, Bonikowski, and Western 2009), though recent estimates show the difference in call-back rates to be around 2% (Kline,

Rose, and Walters 2022). Relying on social networks to find work may also steer black and Hispanic workers away from higher-paying workplaces (Pedulla and Pager 2019). Some of the effects of this segregation have also been documented: workplaces dominated by black and Hispanic workers not only pay less but are worse work environments and feature poorer scheduling (Catanzarite and Aguilera 2002; Zhang 2023; Storer, Schneider, and Harknett 2020). Yet the full extent and import of this pattern – its history, its effect on earnings, and its relation to the last half-century's economic transformations – remains unknown.

Segmented-economic theory of the 1970s and 1980s offers a precedent for these questions. *De-facto* segregation restricted black and Hispanic workers to a secondary sector, characterized by low wages and little hope of upward mobility (Bonacich 1972; Dickens and Lang 1984). Baron and Bielby (1984) described the types of organizations making up this segmented economy: marginal firms, populated by workers of color, facing greater product-market competition and with little access to economic rents (see also Vallas and Prener 2012). Establishment segregation was a known source of racial earnings inequality in the 1990s, though with smaller impact than occupational and within-job disparities (Petersen and Morgan 1995; Tomaskovic-Devey 1993). Four decades of economic transformation, however, can only have exacerbated its effect.

3 Workplace, pay, and race

Just what were these transformations, and how have they affected racial and ethnic inequality? This section considers these two questions in turn. Low-revenue, low-paying firms have proliferated in recent decades, and typically comprise blue-collar and service work. I argue that this dynamic plays a major role in concentrating black and Hispanic workers at the economic margins.

3.1 Organizational sources of compensation

Widening gaps in pay between workplaces account for two thirds of rising American earnings inequality since the early 1990s (Barth et al. 2016; Song et al. 2018). This transformation has many causes. In recent decades, many industries have been dominated by small numbers of firms that collect the vast majority of the value produced and that pay premiums to their employees (Grullon, Larkin, and Michaely 2019; Autor et al. 2020). The large, vertically integrated firms of the last century have given way to networks of firms that contract with each other (Davis, Diekmann, and Tinsley 1994). Workplace "fissuring" runs the gamut: from security guard and custodial contractors (Dube and Kaplan 2010) to temp agencies (Ochsenfeld 2018) and other employer intermediaries (Kalleberg and Marsden 2005), and from service-sector fran-

chising (Ji and Weil 2015) to the provision of intermediate manufacturing products (Fort 2017). Dominant lead firms can force their contractors to compete on thin margins, lowering wages and conditions for employees (Appelbaum 2017; Wilmers 2018). These trends introduce a new type of hierarchy: one that takes place between, not within, firms.

A key feature of this transformation has been the shift of routine and manual occupations to marginal firms paying low wages (Wilmers and Aeppli 2021). Labor-intensive, low value-added functions, such as custodial work, are split off to poorly-paying subcontractor firms (Handwerker 2023; Bilal and Lhuillier 2025). Modern firms are occupationally narrow and feature fewer levels of hierarchy (Rajan and Wulf 2006; Guadalupe and Wulf 2010), and this narrowness limits the scope for occupational mobility or internal labor markets (Wilmers and Kimball 2021). The finding from labor economics of increased worker-firm 'sorting' (e.g., Abowd, McKinney, and Zhao 2018) may capture this rising occupation-firm alignment.

When already low-paying occupations are split off to separate organizations, their earnings typically erode further (Appelbaum 2017). Goldschmidt and Schmieder (2017) argue that temp-agency workers are cut off from the "rents" available at the lead employer. This separation from rents leads to lower wages (Sørensen 1996). This dynamic extends beyond temp agencies. For example, powerful buyer firms are able to pressure supplier firms to lower their prices; this reduction in revenue further lowers wages at these subordinate firms (Wilmers 2018). Conversely, the highly-skilled occupations that come to predominate in successful global firms stand to benefit further, as their employers capture a growing share of the market (Autor et al. 2020). In this way, organizational separation follows occupational lines *and* tends to further compound pay penalties or advantages.

3.2 Racial inequality between organizations

During the same period in which earnings came to depend more on workplaces, workplaces also became increasingly racially homogeneous (Hellerstein and Neumark 2008; Ferguson and Koning 2018). The workplace segregation of immigrants has also been a persistent finding in recent years (Andersson et al. 2014). If racial and ethnic segregation trends align with the yawning pay gaps between workplaces, such that black and Hispanic workers are siloed into lower-paying firms, then this will generate racial and ethnic earnings inequality.

The description above suggests a specific mechanism behind this long-term pattern. If black and Hispanic workers were already over-represented in blue-collar and service occupations (Río and Alonso-Villar 2015), then the recent movement of those jobs to marginal workplaces will have concentrated black and Hispanic workers at the industrial margins. This is captured by the "occupation-firm alignment" arrow

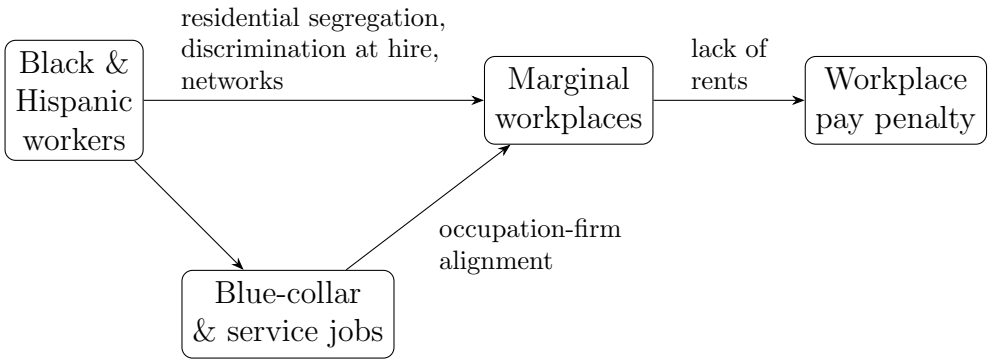


Figure 2: Mechanisms producing additional workplace pay penalties for black and Hispanic workers.

in the simple schematic Figure 2. Employment in these marginal firms with limited economic rents translates into even lower pay (Sørensen 1996). Thus, workers of color are not simply shifted to separate organizations but experience an extra pay penalty – marked by the rightmost arrow of Figure 2. The result is increased racial earnings inequality.

Occupational alignment does not preclude other well-known forces that funnel black and Hispanic workers into marginal establishments. Hiring discrimination, residential segregation, and social networks likely all play a role, and are included in Figure 2. Some of these dynamics, like discrimination in hiring and neighborhood segregation, are far from new (Minchin 1999; Ruef and Grigoryeva 2020). Yet the shift of blue-collar and service work to marginal workplaces – what I term occupation-firm alignment – has accelerated this pattern.

Historical and ethnographic scholarship shows how this dynamic plays out. López-Sanders's (2024) air-conditioning manufacturer contracts with temp firms and subcontractors to secure undocumented Hispanic laborers while keeping these workers – and any legal liability their status poses – off of direct payroll. Slaughterhouses follow a similar tactic (Ribas 2016; Stuesse 2016). The franchise model of McDonalds has provided many African Americans with the opportunity to own a business; but at the same time, employment at these franchises limits black workers' options for upward mobility and better pay (Chatelain 2020). As transnational oil supply chains split into webs of contracting firms, higher-paying technical jobs are performed by lead firms and engineering contract firms; these are mostly staffed by white workers. Dangerous and poorly-compensated tasks are undertaken by second or third-string subcontractors, staffed exclusively by workers of color (Appel 2019).

The phenomenon of concentration into low-end firms is, moreover, self-reinforcing. Many Hispanic janitors in Los Angeles are isolated in custodial-services firms with

poor pay; when friends and family enter the labor market they, too, follow their relations into employment at such firms (Cranford 2005). In this way, concentration in marginal firms can persist or even worsen (as in Pedulla and Pager 2019).

4 Data

The data for this project fall into two parts, depending on whether they will link to records from the Longitudinal Employer-Household Dynamics or from the Equal Employment Opportunity Commission. This section describes each of these parts; more information is available in Appendix A. All the data discussed are available on a restricted-access basis at Census Bureau Research Data Centers.

4.1 Equal Employment Opportunity (EEO) data

To explore racial inequality in access to employers from 1978 to 2022, I use data from the EEO-1 survey. This workplace-level survey collects gender and racial composition by broad occupational classification. Administered by the Equal Employment Opportunity Commission, it covers a census of government contractors and establishments with over 100 employees beginning in 1980, and over 50 employees in prior years. Administration began in 1966. For consistency across years, I omit all workplaces with fewer than 100 employees. The EEO-1 forms record employment on the day of the survey, without regard for the duration of work, hours per week, or multiple job-holding. This differs from the LEHD, decribed below, which captures *any* employment over the entire year – and where I will be able to focus on employees working a "primary job" in consecutive quarters.

Also unlike the LEHD, the EEO-1 form does not collect pay information. I therefore link EEO employers at the firm and firm-by-state level to Census Bureau and IRS records. The Longitudinal Business Database (LBD) includes information on total annual payroll and employment, which can be used to construct average pay per employee. I also use the Standard Statistical Establishment List (SSL) to measure revenue per employee from 1992 to 1996, and the revenue-enhanced version of the LBD built by Haltiwanger et al. (2017) in years since. For both pay and sales information, I trim at the 5th and 95th percentiles to avoid unlikely values.

The EEO-LBD linkage has one major issue: between 2005 and 2013 the identifiers in the EEO files change, so that linking to the LBD becomes much more difficult. I link observations in these years using their name, zip code, and 2-digit industry codes, requiring that matches come from the same state. Fortunately, this period overlaps entirely with the LEHD data.

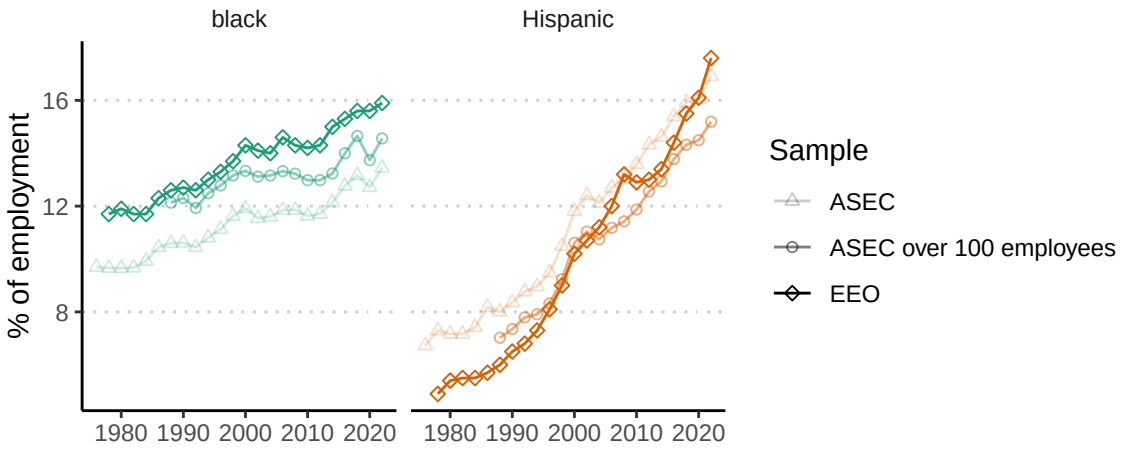


Figure 3: Black and Hispanic composition of the linked EEO-LBD sample (darkest line) compared with two samples based on the CPS-ASEC from IPUMS. Data: EEO-LBD, CPS-ASEC.

Representativeness of the EEO-LBD. The combined EEO-LBD data does not capture the full population of American workers. Differences could arise from the 100-worker cutoff of the EEO sample; unsuccessful linkages between the EEO and the LBD; the overcounting in the EEO of workers who appear at two different workplaces; or other peculiarities of the EEO sample or instrument.

To assess representativeness, Figure 3 compares the racial and ethnic composition of the EEO-LBD data to that of the Annual Social and Economic Supplements of the Current Population Survey (CPS ASEC). The lightest lines (triangular markers) show the racial composition of all ASEC respondents aged 18 to 60 who worked at least 27 weeks of the prior year for at least 20 hours per week on average, and who report earnings at least \$4/hour at half-time for a half year in 2024 real dollars. I additionally require that these respondents have valid occupation codes and are not employed in government, agriculture, or mining. The darker lines (circular markers) restrict this ASEC sample to those who report working at a firm of at least 100 employees. This question, *firmsize*, is only available since 1988.

Figure 3 shows that the EEO over-represents black workers relative to the population at large by about 2 percentage points each year. The 100-employee cutoff can account for almost all of the gap between the EEO and the ASEC in earlier years, though only about half of this gap more recently. This indicates that Black workers are overrepresented in large firms, though less so more recently. Conversely, Hispanic workers are *under*-represented in the EEO relative to the ASEC sample, by about 1 to 2 percentage points. The 100-employee cutoff can account for more than

the entirety of this gap in recent years. Appendix A.1 continues this comparison. I find that imposing the 100-employee cutoff results in a sample with higher average earnings. It also raises the black-white earnings gap and lowers the Hispanic-white earnings gap, albeit by only a small amount.

4.2 Longitudinal Employer-Households Dynamics (LEHD)

The LEHD is drawn primarily from state unemployment insurance data. I use the records of 17 states available since 1998. These records include both pay and demographic information on workers, as well as firm identifiers. This allows me to explore the relations between earnings, race, ethnicity, and place of work. I restrict the sample to primary jobs – those accounting for the largest share of one's earnings in a given year – and focus my analysis on the average of second- and third-quarter compensation. I also restrict the analysis to those earning more than 200 times the effective minimum wage in order to filter out those with limited attachment to the labor market. Appendix A.2 provides more details about the construction and processing of this dataset.

Additionally, I link individuals in the LEHD to the American Community Survey in order study the bias of the LEHD's "found" frame in Appendix A.2. I find that ACS respondents who are successfully linked to the LEHD exhibit somewhat smaller racial and ethnic gaps in log annual earnings – differing by about one tenth.

5 Firm marginality since the 1970s

This section traces the movement of black and Hispanic workers into low-paying, low-revenue workplaces from 1978 to 2020. I use the EEO and the LBD to measure the over-representation of black and Hispanic workers in low-paying firms since the late 1970s, before extending this analysis to measures of revenue per employee.

Low-paying firms. To measure the between-firm component of racial earnings inequality, I introduce the following notation: individual i works at firm $f(i,t)$ in year t, where the average salary and wages per employee is $\mu_{f(i,t)}$. I measure the unadjusted between-firm gap as

$$\Delta_{\mu}^{t} := \mathbb{E}[\mu_{f(i,t)}^{t} \mid i \text{ white}, t] - \mathbb{E}[\mu_{f(i,t)}^{t} \mid i \text{ black}, t]. \tag{1}$$

Values of Δ_{μ}^{t} greater than zero indicate that black workers are over-represented at firms that pay less on average. I expect that Δ_{μ}^{t} has increased since the 1970s.

Figure 4 reports the unadjusted between-firm gaps from 1978 to 2020, comparing black and Hispanic workers to non-Hispanic white workers. They show that black

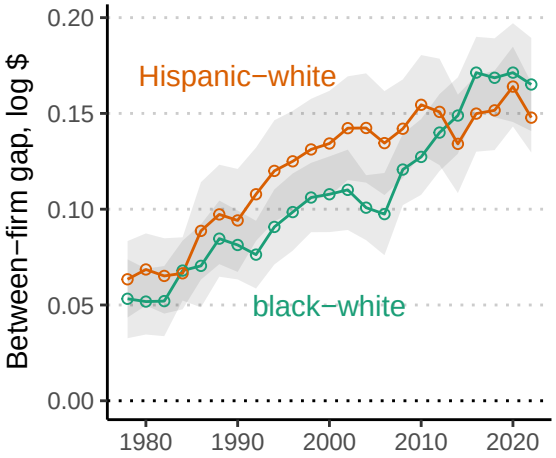


Figure 4: Racial/ethnic gaps in firm average pay. This plot shows the unconditional gap, Δ_μ from (1). Values greater than 0 indicate that whites are over-represented at higher-paying firms when compared to black (Hispanic) workers; the value 0 would indicate parity. SEs are clustered by firm. Data: EEO and LBD.

and Hispanic workers have long been over-represented in firms that pay considerably less on average, but that this over-representation has increased dramatically in the last four decades. In 1978, black workers were employed at firms paying, on average, 0.05 log-dollars less than white workers; by 2020 this disparity had increased to 0.17 log dollars. A similar trend is present for Hispanic workers, who were employed at firms paying 0.06 log dollars less than whites in 1978 but 0.16 less in 2020.

Such a pattern could have two distinct causes: first, increasing segregation may relegate black workers to *relatively* lower-paying firms; second, increased dispersion between workplaces could mechanically increase the between-firm gap, even absent additional racial sorting. To tease these apart, I classify firms by their average-pay quintiles in 1978 and 2018 and report the racial composition of each quintile in Figure 5a. The changing overall racial/ethnic composition of the workforce makes this challenging to interpret, so Figure 5b reports the relative racial composition of each quintile – that is, I divide the proportion black in a quintile by the total proportion black. A value greater than 1 indicates that black workers are over-represented in that quintile relative to their prevalence in the workforce.

Figure 5b shows that black workers were over-represented in the bottom quintile: by about 18% in 1978 and by over 32% in 2018. They were also increasingly under-represented in the top quintile of firms: from about -10% to over -30%. Hispanic workers saw a similar, though less pronounced, shift towards the bottom two quintiles of the firm distribution. These confirm that black and Hispanic workers have become

increasingly concentrated in relatively lower-paying firms. Dividing the firm-pay gap by the standard deviation of firm pay, shown in Figure 15 of Appendix C.2, yields similar conclusions.

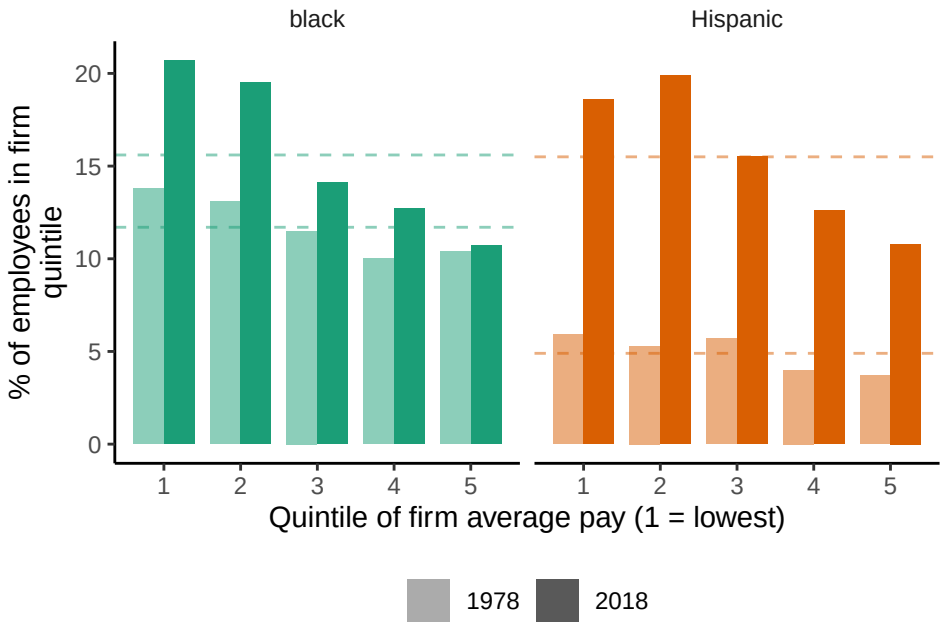
Much of the widening pay gaps between workplaces can be explained by sectors pulling apart: superstar firms dominant in finance and tech sectors claim outsize rents, while wages in the service sector have stagnated (Haltiwanger, Hyatt, and Spletzer 2022). Black and Hispanic workers' exposure to low-wage firms may reflect their concentration in stagnating sectors. In Appendix C.3, I test the explanatory power of 3-digit NAICS industry codes. This analysis reveals that industrial segregation explains the vast majority of both the level and the growth in the unadjusted between-firm inequality. This pattern is driven almost entirely by the movement of black and Hispanic workers into increasingly low-paying sectors over the past four decades.

Low revenue firms. I theorized that black and Hispanic workers have become increasingly concentrated in marginal workplaces – beyond paying less, these workplaces are located in more competitive industries and markets, with lower revenue, value-added, and profit. As a simple test of this approach, I measure the degree to which workers of color are concentrated in firms with lower revenue per worker. While it can give only a partial glimpse of organization's economic position, revenue data has the advantage of being broadly available and comparable across sectors. I use the structured establishment list (SSL) to obtain firm-level revenue information from 1992 to 1996, and Haltiwanger's 2017 revenue-enhanced LBD file to obtain firm-level revenue in the following years.

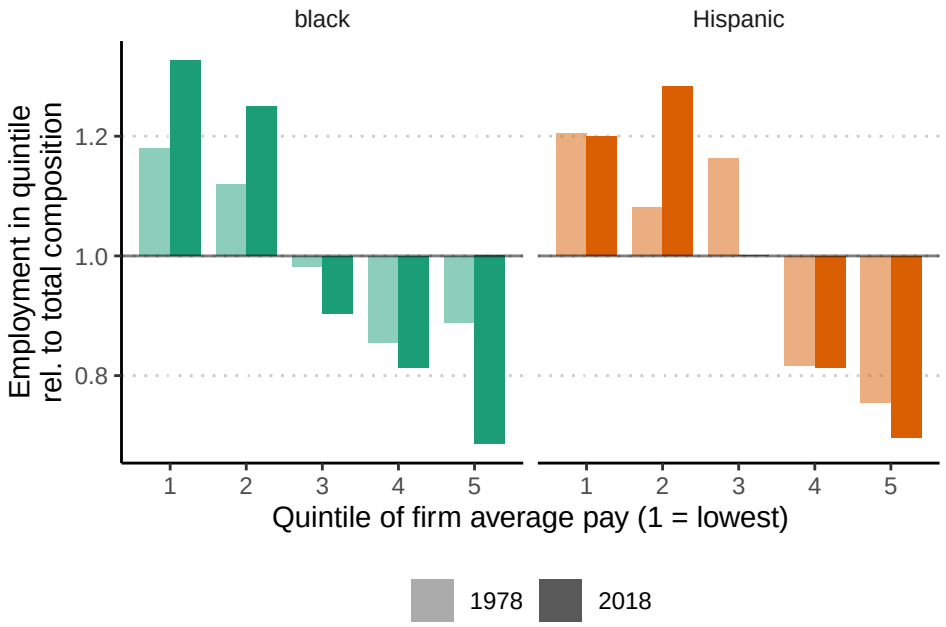
I compare the average revenue per employee of firms employing black, Hispanic, and white workers, and report the differences in Figure 6. Black workers have long been dramatically over-represented at low-revenue firms: in 1994, the average employer of black workers saw about 15% lower revenue per employee than the average employer of white workers. However, this disparity has only become more exaggerated in recent years, increasing to about 30%. The trend for Hispanic workers has been similar, albeit at lower levels: in the 1990s, the typical workplaces of Hispanic and white workers differed in revenue by under 5%. This increased to almost 15% by 2020. This finding extends our analysis of workplace marginalization: from a simple comparison of average pay to a richer vision of the weaker position of black and Hispanic workers' employers.

6 The role of occupational alignment

Recent decades have seen dramatic shifts in the occupational structure of workplaces. High-paying workplaces are increasingly made up of high-paying occupations – think,



(a) Racial/ethnic composition of firm-pay quintiles. Dashed lines show total composition by year.



(b) Composition relative to overall racial/ethnic composition. A value of 1 means that, e.g., the Black composition of a quintile is equal to the overall proportion of Black workers. Values greater than 1 indicate over-representation in a quintile.

Figure 5: Racial/ethnic composition of quintiles of firm average pay (μ) in 1978 and 2018. Note that quintiles are recalculated separately by year. Data: EEO and LBD.

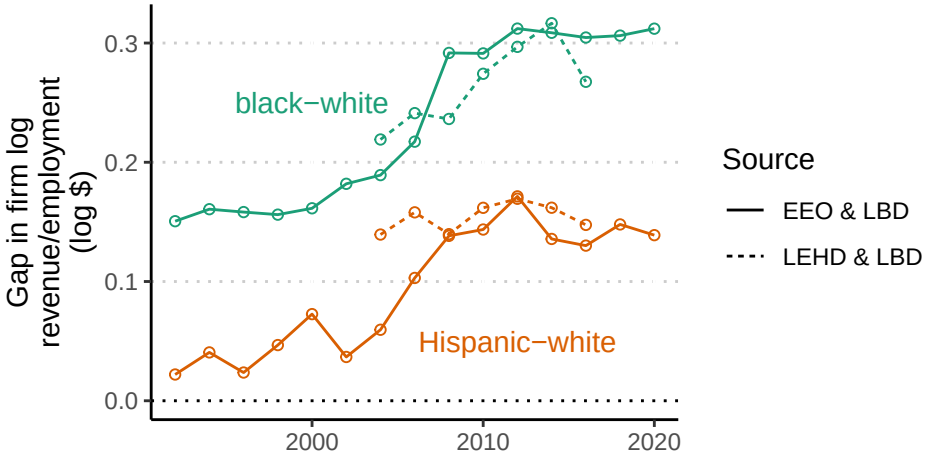


Figure 6: Racial/ethnic gaps in log firm revenue per employee. Values greater than 0 indicate the black/Hispanic workers are over-represented in low-revenue establishments compared to white workers. Data: EEO and LBD.

for example, of the professional jobs dominant at firms in finance, consulting, and tech – while blue-collar and service occupations cluster in low-paying workplaces (Wilmers and Aeppli 2021). I term this pattern occupational alignment. If these blue-collar and service jobs were more likely to be staffed by workers of color, then the movement of those jobs to marginal firms should contribute to the concentration of black and Hispanic workers in low-paying firms. This section tests this hypothesis.

Methods. The EEO measures employment in nine occupational categories: officials and managers, professional staff, technicians, sales, clerical, craftsmen, operatives, laborers, and service occupations. I first average the firm mean-pay terms, μ, across white workers in occupation o and year t. Calling this average ω_o^t, the gap

$$\Delta^t_{\text{occ}} := \mathbb{E}[\omega^t_{o(i)} \mid i \text{ white}, t] - \mathbb{E}[\omega^t_{o(i)} \mid i \text{ black}, t] \tag{2}$$

measures the contribution of occupational composition to firm-average sorting in year t.[1] To distinguish the effect of increased occupation-employer alignment from the

1. This is equivalent to a Oaxaca-Blinder-Kitagawa decomposition where we use the explained-by-occupations terms. The first-step regression is a simple regression of the average pay at person i's employer $f(i)$ on indicators for i's occupation $o(i)$. That is,

$$\mu_{f(i)} = \sum_{o \in \{1,\ldots,9\}} \omega_o \, \mathbf{1}\{o(i) = o\} + u_i.$$

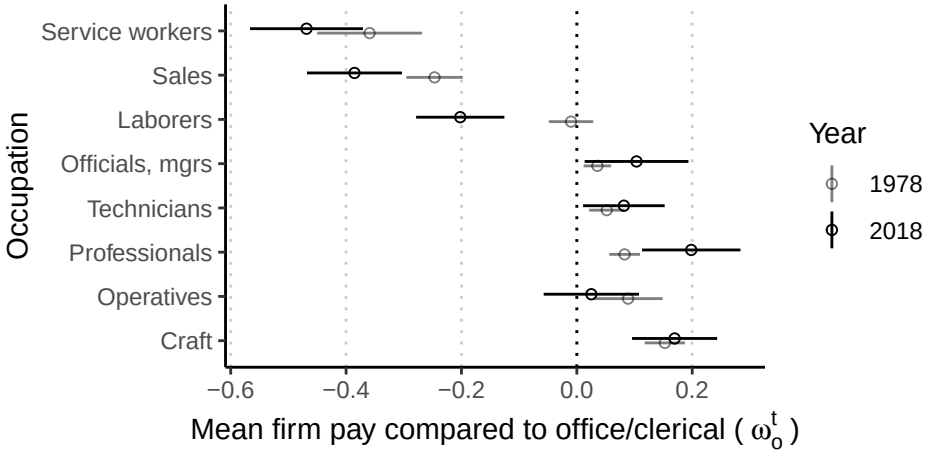


Figure 7: Average firm pay by broad EEO occupation, in 1978 and 2018. These are the ω_o^t terms used in Eq 2, and the reference group, not shown, is office/clerical workers. SEs clustered by firm. Data: EEO and LBD.

effect of changing occupational composition, I calculate a counterfactual gap fixing the ω terms at their 1978 levels but allowing the demographics of each occupation to evolve:

$$\Delta_{\text{occ}}^{\text{CF},t} := \mathbb{E}[\omega_{o(i)}^{1978} \mid i \text{ white}, t] - \mathbb{E}[\omega_{o(i)}^{1978} \mid i \text{ black}, t]. \tag{3}$$

The difference $\Delta_{\text{occ}}^{t} - \Delta_{\text{occ}}^{\text{CF},t}$ tells us how much of the growth in between-firm inequality can be explained by occupation-firm alignment alone. I calculate standard errors via 200 bootstrap replications, resampling entire firms.

Results. Figure 7 reports the average firm pay available to occupations in 1978 and 2018, relative to the "office/clerical workers" occupation. Higher values indicate that a given occupation is more commonly found at high-paying firms. Comparing the coefficients from 1978 to those from 2018 reveals growing polarization among occupations. Sales workers, laborers, and service workers concentrated at the bottom of the distribution of firms, while managerial and professional work have come to dominate at the top. This trend of occupation-workplace alignment reflects findings with other American data (Song et al. 2018).

The solid lines in Figure 8 show the growth in total between-firm inequality from 1978 to the present. Note that these are equivalent to the results shown in Figure 4 shifted to start at 0. The dashed lines of Figure 8 show the the amount of this growth in between-firm inequality explained by occupation-firm alignment alone. These components increase steadily: by over 0.05 log-dollars for black workers and by about 0.07 for Hispanic workers. These amount to about 45% and 68% of the total growth in

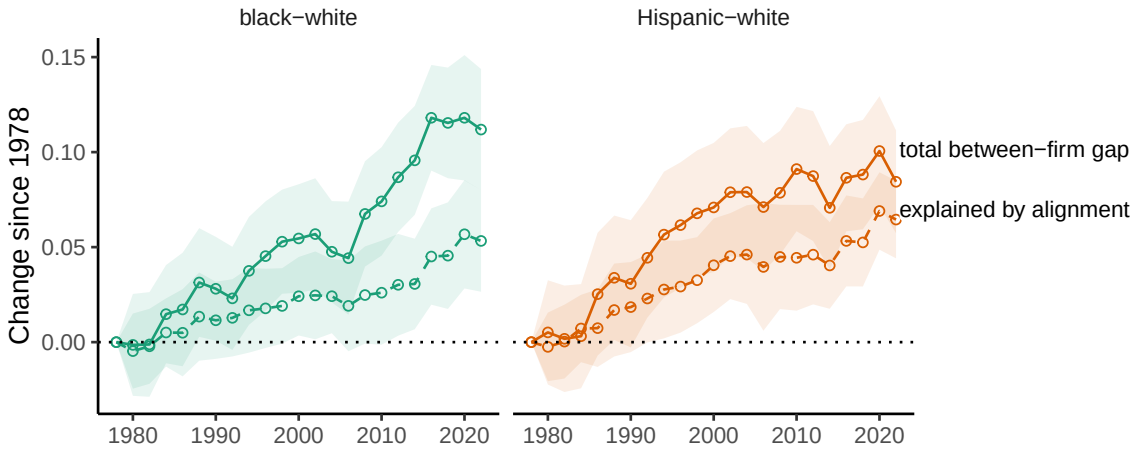


Figure 8: Evolution in between-firm inequality explained by occupation-firm alignment. Solid line shows change in between-firm inequality terms, first reported in Figure 4. Dashed line shows the amount counterfactually explained by changes in the workplace pay associated with each occupation, $\Delta^{t}_{\text{occ}} - \Delta^{\text{CF},t}_{\text{occ}}$ from Eq 3. SEs are bootstrapped at the firm level. Data: EEO and LBD.

black-white and Hispanic-white between-firm inequality, respectively. That is, the relegation of blue-collar and service occupations to low-paying firms can account for a considerable share of Black and Hispanic workers' concentration in low-paying firms. (See Table 2 of Appendix C.4 for additional details.)

These results underscore the role of phenomena such as subcontracting, outsourcing, and superstar firms, which have shifted professional or managerial work to high-paying firms and service or blue-collar work to low-paying firms. As service and blue-collar occupations have moved to low-paying firms, black and Hispanic workers have become concentrated in these firms. Note that the coarseness of the nine EEO occupational categories means that my results likely understate the role of occupations in governing access to high-paying firms.

7 Earnings effects of marginality

While Figure 4 shows that black and Hispanic workers are increasingly relegated to low-paying firms, this does not show that workplace segregation actually produces a pay penalty for them. Does the concentration of black and Hispanic workers in marginal workplaces produce a pay penalty? To quantify this penalty, I use the linked worker-workplace dataset, the LEHD, from 1998 to 2020. I show that, in recent years, workplace segregation increases the black-white and Hispanic-white earnings gaps by

about 15% and 27%, respectively.

Methods. I model person i's log quarterly earnings in year t, denoted y_i^t, with additive worker and firm fixed effects. This model, in the style of Abowd, Kramarz, and Margolis (1999), can be written

$$y_i^t = \alpha_i^w + \varphi_{f(i,t)}^w + e_i^t \tag{4}$$

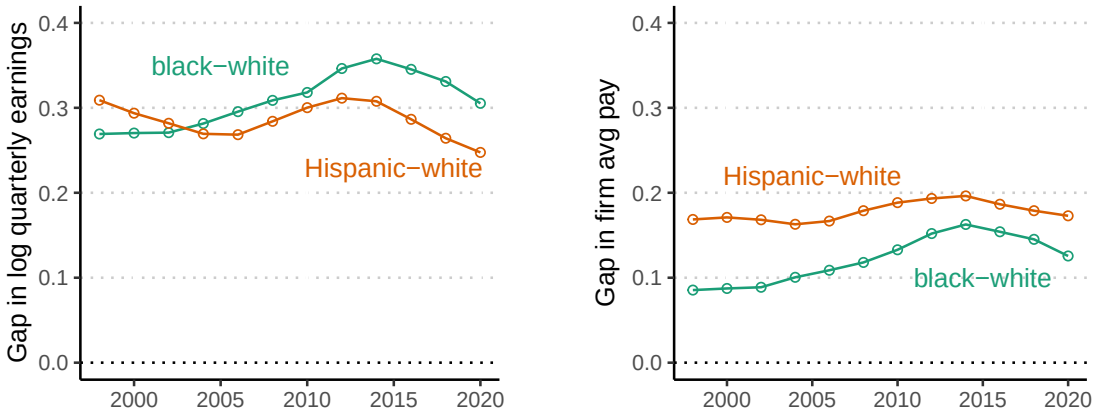
and I fit it among white workers only in rolling two-year windows indexed by w (i.e., w refers to 1998-1999, 2000-2001, and so on). The firm premium φ_f^w tells us how much firm f pays beyond what an individual might expect to earn elsewhere (Kline 2025). Analogously to Equation 1, I average the firm premia among white and black workers and take the difference:

$$\Delta_\varphi^w := \mathbb{E}[\varphi_{f(i,t)}^w \mid i \text{ white}, w] - \mathbb{E}[\varphi_{f(i,t)}^w \mid i \text{ black}, w]. \tag{5}$$

I repeat this decomposition for each window of years w. This quantity answers the question: if white workers relocated to the same distribution of firms as black workers, by what amount would the racial earnings gap decrease?

The quantity Δ_φ^w is similar to the interventional counterfactuals developed by Lundberg (2022) and Opacic, Wei, and Zhou (2024), who ask how disparities change if the distribution of education or other covariates are manipulated. In this case, I manipulate the distribution of firms. To obtain the effect of each firm, I assume in Eq 4 that the person and firm effects are additive and constant. This may be unlikely, in particular if person and firm effects evolve over time (Card et al. 2018). However, because I repeat the entire procedure for each two-year window, I only require that person and firm effects are constant for two years at a time.

This reliance on two-year windows introduces a new risk. My approach, as the AKM more generally, relies on "movers" – workers who switch workplaces from one year to the next – to identify firms' effects on pay. Because of the short time frame, identification of a given firm's effect depends on workers joining or leaving during a two-year period. This introduces noise to the estimates of firm fixed effects. Recent research highlights that this noise biases estimates of the variances and covariances of firm fixed effects, even if the fixed-effect estimates are themselves unbiased (Bonhomme et al. 2023; Kline, Saggio, and Solvsten 2020). However, this is not an issue when estimating Δ_φ^w, as discussed in Appendix B. Unbiased estimation of the φ among White workers, as well as the proportion of Black workers in each firm, suffices to produce an unbiased estimate of Δ_φ^w. I do, however, use the sample-splitting technique of Godechot, Palladino, and Babet (2023) to obtain an unbiased estimate of the variance of the φ; I use this in Appendix C.2 to standardize the Δ_φ^w series.



(a) Gaps in log quarterly earnings.

(b) Gaps in unadjusted firm averages, Δ_μ.

Figure 9: Racial/ethnic gaps in log quarterly earnings, and in unadjusted firm average pay. Units are log-dollars. Data: LEHD.

Results. As noted in Section 4, my analysis of the LEHD focuses on average quarterly pay from each individual's primary employer. The full racial/ethnic gaps in this quantity are presented in Figure 9a. Black workers earned about 27% less than whites in 1998, which increased to about 35% by the last decade before decreasing somewhat. Hispanic workers faced a similar pay gap, fluctuating between 25 and 31%. These are somewhat smaller than the earnings gaps in the population at large (Figure 1, see also Appendix A.2).

Before estimating earnings penalties with Equations 4 and 5, I average the log quarterly earnings by firm and measure the racial/ethnic gaps in these firm averages. In 1998, black workers were employed at firms paying 0.09 log dollars less, on average, than white workers; this increased to 0.13 log dollars by 2020. Hispanics faced an elevated level of workplace segregation – at about 0.17 log dollars over twenty years – though without a strong trend in either direction. In both cases, the unadjusted between-firm gaps are equal, in magnitude, to one third to one half of the total racial/ethnic pay gaps. These levels and trends are broadly consistent with the gaps found from 1998 to 2020 in the EEO analysis in Figure 4, though are slightly lower.

To capture the effect of *de facto* establishment segregation, I use Equation 5 to calculate the reduction in the earnings gap should white workers be redistributed to firms with the same frequency as black or Hispanic workers. Figure 10 shows these results. For black workers, the pay penalty due to employer segregation grew from 0.017 log-dollars in 1998 to 0.041 in 2020. This amounts to under 5% of the total black-white pay gap in 1998 and almost 15% in more recent years, a roughly three-fold increase. For Hispanic workers, the pay penalty due to employer segregation

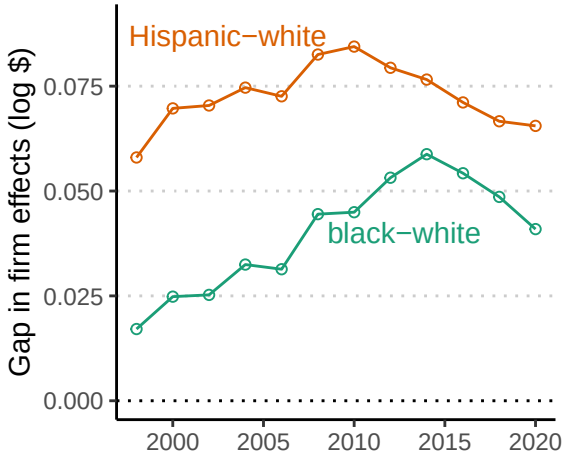


Figure 10: Racial/ethnic gaps in firm effects, Δ_{φ} from Eq 5. Data: LEHD.

increased from 0.058 log-dollars to 0.066 – though more stable over time, this also amounts to a growing share of the total Hispanic-white pay gap, from 19% to 27%. In brief, the relegation of black and Hispanic workers to low-premium firms has been an increasingly significant engine of racial/ethnic pay inequality in this century.

As in the case of the unadjusted between-firm gap, these transformations could be explained by further segregation into *relatively* lower-premium firms, or by increased dispersion between firms. Figure 16 in Appendix C.2 presents the gaps rescaled by the standard deviation of the firm effects. These show that black workers have become more concentrated in relatively lower-premium workplaces. This concentration combines with growing pay inequality between firms to produce increasingly severe pay penalties.

8 Discussion

This paper traces the movement of black and Hispanic workers into marginal establishments, its causes and its consequences for earnings. First, I use four decades of EEO and LBD data to show that black and Hispanic workers have become increasingly concentrated in low-paying, low-revenue firms. In 1978, black and Hispanic workers worked at firms that paid, on average, about 5% less than where whites worked. By the 2010s, these disparities had widened to over 15%. This was due, primarily, to black and Hispanic workers relocating to especially low-paying firms.

Next, I flesh out a key mechanism responsible for this form of inequality. Over the four decades beginning in 1978, laborer, sales, and service occupations lost ac-

cess to high-paying workplaces, which professional and managerial workers came to dominate. This finding, which I term occupation-firm alignment, reflects the rise of outsourcing, franchising, and globalizing product markets (Weil 2017; Autor et al. 2020). Occupation-firm alignment can account for about half of the increase in the between-firm racial gap. That is, as routine and manual occupations have been offloaded to low-paying employers, workers of color have been steered to these same employers.

The EEO-based analysis does not truly measure the effect of such workplace segregation on earnings. To measure this, I draw on linked employer-employee data from 1998 to 2021. I find that workplace segregation is responsible for a growing amount of the black-white pay gaps: from 6.3% of the total gap in 1998 to 13.4% in 2020. Workplace segregation accounts for an even larger, though more constant, share of Hispanic pay gap: from 18.8% to 26.6%. These findings underscore the importance of workplace sorting as a motor of racial inequality.

This account has significant limitations. First, my analysis of pay penalties – based on the LEHD – does not begin until 1998. The two-decade stretch beginning in 1978 saw dramatic growth in the gap in average firm pay (Figure 4); to what extent did this correspond to growth in the effect of firm sorting? To address this concern, Appendix C.1 presents a supplementary analysis of occupation-by-workplace data from this period. By the 1980s there already was a gap in firm pay premia net of occupation – about 0.08 log dollars for black workers and 0.05 for Hispanic workers. However, this analysis is restricted to only a few sectors and does not adjust for individual workers.

Second, both the EEO and the LEHD are "found frames", not truly representative of the population of American workers (Abowd, McKinney, and Zhao 2018). Only employers with over 100 employees have had to submit the EEO-1 form since 1980, meaning the EEO data does not accurately capture employment at smaller establishments. The LEHD, meanwhile, comprises only firms filing unemployment insurance reports on behalf of their direct employees. It omits employees on nonstandard contracts, as well as any workers employed outside of the seventeen states to which I have access. I further discuss representativeness in Appendix A. While these limitations are significant, each dataset makes up for some of the shortcomings of the other. Together, they afford the first long-term, even if not quite economy-wide, view of the link between racial earnings inequality and place of work in the United States.

9 Conclusion

While segmented economic theory anticipated the role of workplace segregation forty years ago (Baron and Bielby 1984), the relegation of workers of color to marginal

establishments has since expanded at breathtaking speed. I find that it is driven, in large part, by the relocation of blue-collar and service occupations to low-paying firms. In recent years, this has had a substantial effect on earnings disparities. The transformation reveals an unavoidable truth: the structure of production and work has changed, such that racial inequality is increasingly due to differences between workplaces.

Among many possible implications, this paper explores only those for earnings. Yet the low-end workplaces of the fissured economy often feature disruptive scheduling practices, limited opportunities for advancement, dangerous conditions, and minimal benefits (Weil 2019; Choper, Schneider, and Harknett 2022; Bana et al. 2023; Wilmers and Kimball 2021). Their proliferation means that, at the other end of the distribution, high-income workers increasingly find themselves surrounded by mostly high-income coworkers, worsening social segregation (Godechot et al. 2024).

When coupled with the findings of this paper, this suggests a somber possibility. The hallmarks of pre-Civil Rights Era labor – not just lower pay but career tracking, spatial separation, exposure to risk, and lack of benefits (Linden and Lucassen 1995; Sundstrom 1994; Vargas 2013) – could be recreated through hierarchies between organizations rather than via hierarchies within them. The color line, that long-running feature of American work (Du Bois 1994 [1903]), has moved again. Between-firm inequality thus carries the seed for a new form of racially divided work.

To properly understand this new form, we need not treat racial inequality as a mechanical consequence of the changing economic structure. Instead, processes producing interfirm inequalities may both rely on, and feed into, racial perceptions and beliefs. Devaluation of racialized occupations may help to justify those occupations' placement outside of the firm (e.g. Kmec 2003); struggles over organizational boundaries, such as those documented in efforts to outsource call center work (Doellgast, Sarmiento-Mirwaldt, and Benassi 2016), could mobilize preexisting inequalities and racial schema (Tomaskovic-Devey and Avent-Holt 2019); and the organizational separation of support tasks via outsourcing could prompt additional racialization of those tasks (e.g. Cranford 2005). These dynamics call for further research if we are to grasp the changing basis of racial and ethnic earnings inequality.

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A Data appendix

This section provides more information about the datasets used in this paper. I first continue the discussion of representativeness in the EEO, before turning to the LEHD.

A.1 EEO

Section 4 described one limitation of the EEO: since 1980, it has been required only of employers with at least 100 employees. This over-represents black workers and under-represents Hispanic workers in the EEO-LBD data, as compared to the ASEC (Figure 3). This section probes this difference further: does the 100-employee cutoff affect the magnitude of the black-white and Hispanic-white earnings gaps? As in Section 4, I make use of the ASEC question about firm size, asked since 1988.

Figure 11 reports the average annual wage/salary earnings in the ASEC, according to respondents' race/ethnicity and employer size. The earnings of white, black, and Hispanic respondents were greater at workplaces with at least 100 employees than elsewhere. Figure 12 reports the average racial/ethnic gaps in log earnings across the full ASEC sample (solid line) as well on the subsample restricted to employees of large workplaces. Introducing the 100-employee cutoff increases the black-white earnings gap by about 0.02 log dollars. On the other hand, doing so *lowers* the Hispanic-white earnings gap by a similar degree. The differences are, reassuringly, not large: under one tenth of the total earnings gaps in any given year.

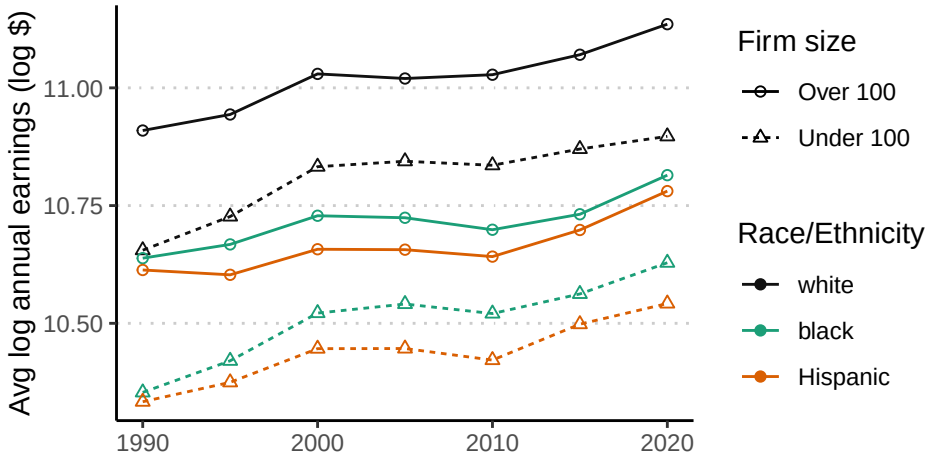


Figure 11: Average log annual earnings from wages and salary, separated by race/ethnicity as well as size of employer. Data: CPS-ASEC from IPUMS (Ruggles et al. 2021).

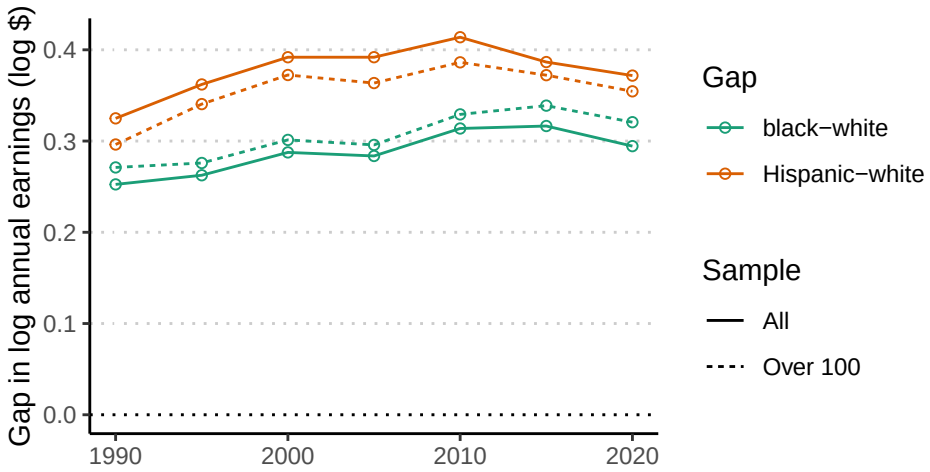


Figure 12: Racial/ethnic gaps in log annual earnings from wage and salary, shown for all respondents (solid line) as well as for subset of respondents employed at workplaces with at least 100 employees. Data: CPS-ASEC from IPUMS.

A.2 LEHD

The LEHD is assembled from unemployment-insurance reports that employers submit each quarter. The Census Bureau processes these into several files at the person, firm, establishment, and job (firm-person or establishment-person) by quarter levels. I use the Employment History File (EHF) to identify person-job spells. I then attach the Census Bureau's firm identifiers, *firmid*, to these records using the Title 26 Employer Characteristics File (ECF-T26).

I collapse the records to the person-by-firm-by-state-by-quarter level, and for a given person retain Q2 earnings only if that person received nonzero earnings from the same firm in Q1 and Q3; in this way, I omit any "shoulder" quarters during which employment began or ended. I repeat the same process for Q3 earnings, and then further require that the Q2 and/or Q3 earnings be greater than the effective state minimum wage times 200 hours. I then take the average of the Q2 and Q3 earnings. This produces a person-by-firm-by-state-by-year level file. If a single person appears more than twice in this file, due to employment at multiple firms, I select the highest value. This produces a primary-job file with one row per person-year. I use this file for the AKM analysis in Section 7.

Table 1 gives an overview of the final LEHD-based sample in 1998 and 2018. In 1998, at the beginning of the period considered, the sample comprised about 1.5 million firm-by-state units; this increased to about 1.6 million twenty years later. 7.8 and 11.9% of the covered employees were black and Hispanic, respectively, in 1998. These shares increased to 9.5 and 19%, respectively, in 2018.

Table 1: Key features of LEHD sample in 1998 and 2018.

		Composition (among white, black, Hispanic workers only)	
Year	N. firm-states	% black	% Hispanic
1998	1503000	7.82	11.88
2018	1603000	9.47	19.00

Unlike household surveys designed with a target population and sampling frame in mind, the LEHD is a "found" frame (see Abowd, McKinney, and Zhao 2018). Because it is based on unemployment insurance filings for covered employees and employers, it likely undercounts public sector employees and those in nonstandard or informal work arrangements. To assess the degree of representativeness, I make use of the Census Bureau's internal copy of the ACS. This copy can be linked, at the person level, to individual records of the LEHD.

I calculate the ethnic/racial gaps in logged annual wage and salary earnings with three samples of the ACS: first, restricting to all workers aged 18 to 60 employed at least 20 weeks of the prior year; second, further restricting to only those workers in the 17 states for which I have LEHD data; and third, further restricting to only those workers whom I successfully link to the LEHD. Figure 13 shows the resulting quantities. The difference between the main sample and the LEHD-states sample is small for both black and Hispanic workers, indicating that my focus on 17 states may not greatly affect the results. Linking to the LEHD, on the other hand, does reduce the racial earnings gap somewhat: by about 0.02 log dollars for the black-white gap, and by about 0.08 log dollars for the Hispanic-white gap.

B Estimation of the between-firm terms

The between-firm effect term Δ^w_φ is defined in Equation 5, and can be estimated through the following procedure. First, I fit the AKM regression (4) among white workers only, obtaining estimated firm effects $\hat{\varphi}^w_f$; then, I plug these effects in

$$\hat{\Delta}^w_\varphi = \frac{1}{n^t_{\text{white}}} \sum_{i:\ i \text{ white}} \hat{\varphi}^w_{f(i,t)} - \frac{1}{n^t_{\text{black}}} \sum_{i:\ i \text{ black}} \hat{\varphi}^w_{f(i,t)}, \tag{6}$$

where n^t_{white} is the number of white individuals in year t of the LEHD. Since the fixed effects φ are identified up to a constant, we can require that they average to 0 among the white-worker sample on which they are estimated. So the first term of

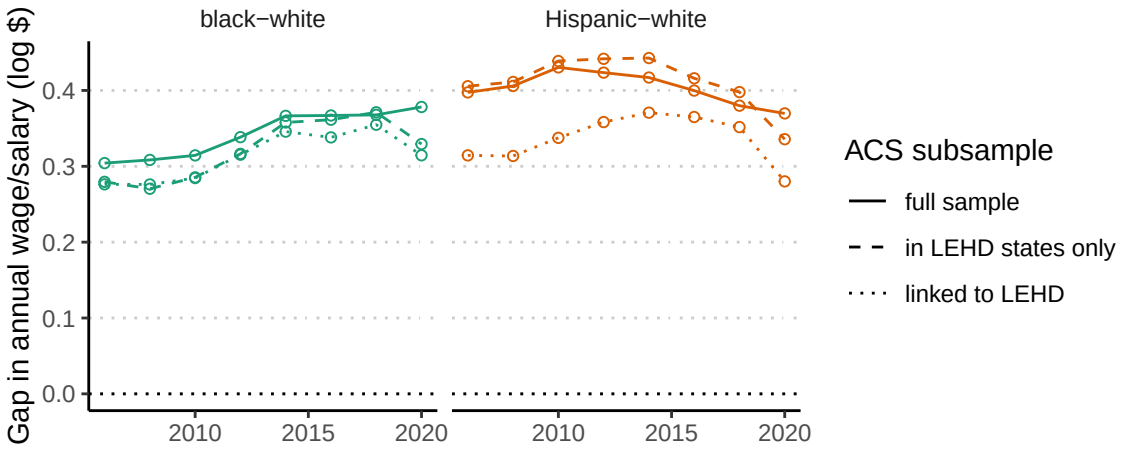


Figure 13: Racial/ethnic gap in log annual wage and salary earnings, based on the ACS. The "full sample" is comprised of individuals between 18 and 60 years of age, employed for at least 20 weeks in the prior year. Data: LEHD and FSRDC copy of ACS.

(6) drops and we are left with only the second term. I assume that the proportion of Black workers who work at firm f is estimated without bias, and that these sample proportions are uncorrelated with the $\hat{\varphi}^w_{f(i,t)}$ – a defensible assumption since these two quantities are estimated on two different samples, split by race. Then, even if the $\hat{\varphi}$ are noisy estimates of the φ, their unbiasedness alone guarantees that $\hat{\Delta}^w_\varphi$ is an unbiased estimate of Δ^w_φ.

On the other hand, the naive estimate of the variance of the φ (that is, the sample variance of the $\hat{\varphi}$) *is* biased if the $\hat{\varphi}$ are noisy. This is known as "limited-mobility bias" (Kline, Saggio, and Solvsten 2020). In order to estimate the variance of the φ, I adapt the sample splitting-procedure developed in Godechot, Palladino, and Babet (2023): first, I restrict the sample to firms with at least two white employees who switch firms over the window (the "movers"); second, I randomly split the sample of "movers" in half, making sure at least one white mover remains at each firm in each of the two subsamples; third, I fit the AKM model (4) separately on each of these samples, obtaining for each firm two de-meaned fixed effects, $\hat{\varphi}^{w,A}_f$ and $\hat{\varphi}^{w,B}_f$. Finally, I calculate the covariance of $\hat{\varphi}^{w,A}_f$ and $\hat{\varphi}^{w,B}_f$, weighting by white employment by firm. Under the assumption that disturbances in the $\hat{\varphi}^{w,A}_f$ and $\hat{\varphi}^{w,B}_f$ are uncorrelated, and that both are unbiased estimates of φ^w_f, then $Cov\left(\hat{\varphi}^{w,A}_f, \hat{\varphi}^{w,A}_f\right)$ is an unbiased estimate of $\mathbf{V}(\varphi^w_f)$.

C Additional results

This section presents additional results from the analyses of the EEO and LEHD data.

C.1 Hourly instead of annual pay

A shortcoming of the LBD is that it can only be used to measure average annual – not hourly – pay per employee at the firm level. It also does not allow us to truly measure a firm's premium *net* of individual or occupational characteristics – as in the LEHD analysis. Here I reproduce the main measurements of between-firm inequality for the years 1978 to 1992. I use the Wage Fixing Authority Survey (WFAS), a survey collected by the US Department of Defense in order to set pay scales for federal employees. These data are used by Massenkoff and Wilmers (2023). The WFAS questionnaires asked private-sector employers to report the hourly pay scales of specific occupations. While the survey is still collected today, only years 1978 to 1992 are available from the National Archives.

I merge the WFAS to the EEO using firm names, state, and two-digit SIC codes. I allow EEO records to match with WFAS records from up to two years beforehand or afterwards. I restrict my sample to the manufacturing sector, where the WFAS coverage is most extensive and consistent. I then calculate the racial/ethnic differences in average *hourly* pay associated with each firm, adapting Equation 1. I also regress the occupation-by-firm level pay on occupation o and firm f fixed effects,

$$\ln\left(\text{hourly pay}_{o,f,t}\right) = \alpha_{o,t} + \varphi'_{f,t} + v_{o,f,t}. \tag{7}$$

As in Wilmers and Aeppli (2021), the firm effects here (φ') measure firm f's pay premium in year t net of the occupations it employs. I then calculate the racial/ethnic gaps in firm premia as in Equation 5. The resulting firm-FE differences capture the overrepresentation of white workers in high-premium firms, net of occupation.

Figure 14 shows the racial/ethnic gaps in firm mean hourly pay and firm fixed effects. Interestingly, the gaps in average hourly pay are slightly higher than the gaps based on average pay per employee (shown in Figure 4). Adjusting for occupation does not greatly affect the magnitudes or trends of the gaps. These results show that black and Hispanic workers were, already, concentrated in lower-paying firms in the early years of this study – and that this was not an effect of their concentration in firms where employees worked fewer hours.

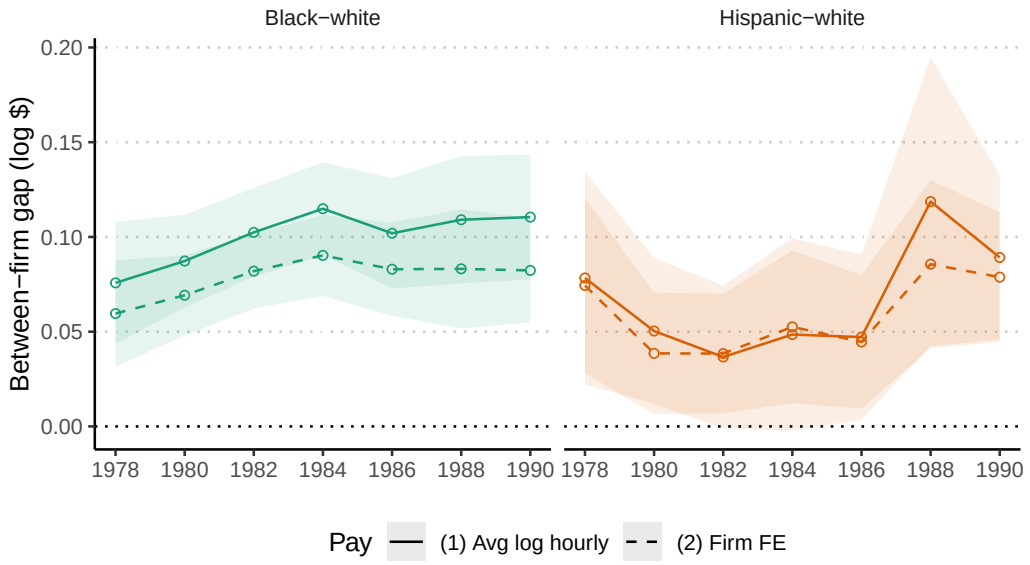
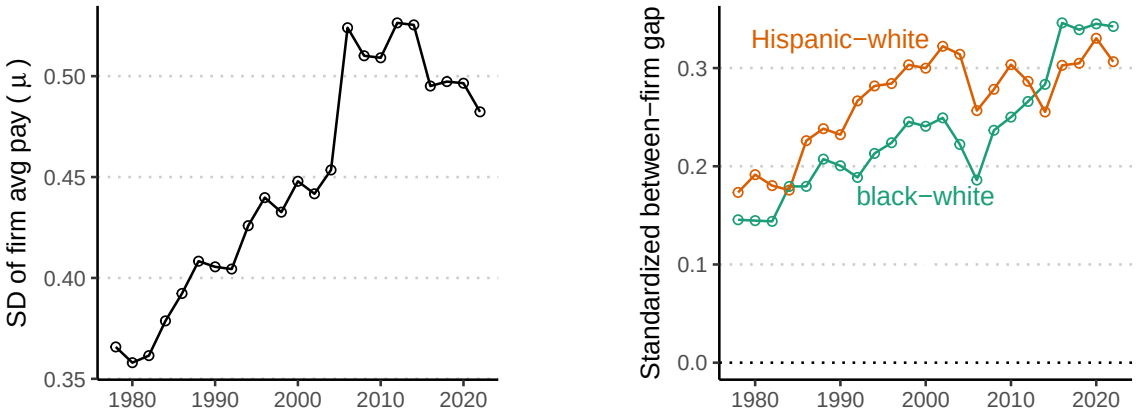


Figure 14: Between-firm inequality using the EEO for establishment-level racial/ethnic composition and the WFAS records for establish-by-occupation pay. Data: EEO and WFAS from the National Archives.

C.2 Standardization

The main results in Sections 5 and 7 (Figures 4 and 10) could be produced by two distinct processes: increasing spread in firm premiums or averages, or increased concentration of black or Hispanic workers in relatively lower-paying firms. As one way of teasing these apart, Figure 5 reports the racial composition of quintiles of firm pay. These show that, indeed, Black and Hispanic workers have become further concentrated in relatively low-end firms. This section presents another angle on this finding. Figure 15a shows the evolution of the standard deviation of firm mean pay (μ_f). This increases dramatically over time, consistent with the finding of firms pulling apart in pay (Tomaskovic-Devey et al. 2020). However, against this backdrop of rising between-firm variation, black and Hispanic workers have become even more over-represented in *relatively* lower paying firms: Figure 15b reports the standardized between-firm gap.

I repeat this procedure for the LEHD-based analysis. Figure 16a shows the standard deviation of the firm effects φ_f, calculated using the sample-splitting procedure described in Appendix B to mitigate limited-mobility bias. This increases from 1998 to 2012 before decreasing somewhat in recent years, consistent with recent literature (e.g., Wilmers and Aeppli 2021). After standardizing by this term, in Figure 16b,



(a) Standard deviation of firm mean pay μ.

(b) Between-firm sorting term Δ_μ standardized by standard deviation of the μ.

Figure 15: Increasing spread of firm mean pay terms as well as increased sorting of Black and Hispanic workers into relatively lower-paying firms. Data: EEO and LBD.

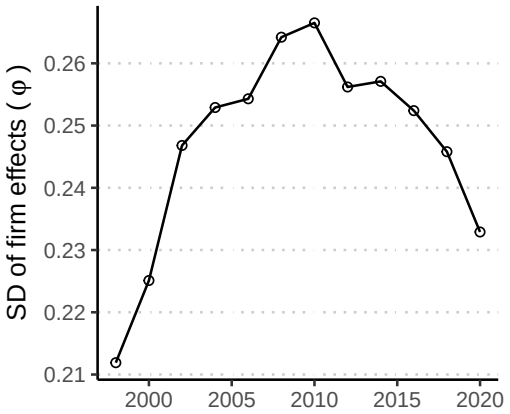
I find that Black workers have become more concentrated in relatively low-paying firms (from 0.1 to 0.2 standard deviations), while Hispanic workers are consistently concentrated in relatively low-paying firms (about 0.3 standard deviations).

C.3 Industry-level patterns.

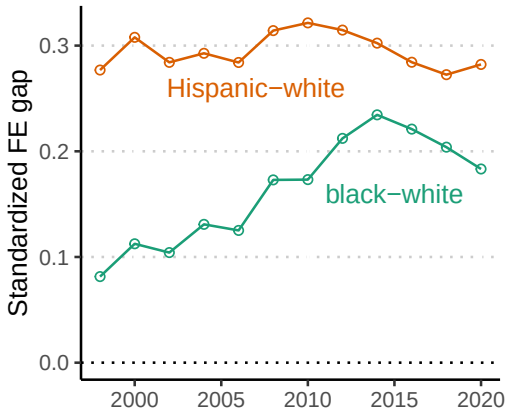
Much of the rise in inequality between firms is explained by sector: low-paying firms are often found in low-paying sectors such as the custodial services sector (Dube and Kaplan 2010), while higher-paying firms are found in sectors like consulting, finance, and technology (Haltiwanger, Hyatt, and Spletzer 2022). How much of the trend in between-firm racial inequality is explained by sectoral racial composition?

For this analysis, I use the version-consistent 3-digit NAICS codes developed by the Census Bureau and applied to the LBD in all years since 1976. I first average the firm mean-pay (μ_f) terms within each 3-digit NAICS industry, and then calculate the racial difference in these averages. The solid lines of Figure 17 show the full between-firm inequality trends as in Figure 4, and the dashed lines show this between-sector component. The between-sector component makes up the vast majority of the total between-firm inequality in each year. That is, much of the inequality observed in this paper is explained by the fact that both black and Hispanic workers sort into sectors where the typical workplace pays little.

These sectors have also polarized over time, with FIRE doing especially well (Wilmers and Aeppli 2021). To distinguish the changing pay profile of each sec-



(a) Standard deviation of firm effects φ_f, calculated using sample splitting as in Appendix B.



(b) Between-firm effect term Δ_φ standardized by standard deviation of the φ.

Figure 16: Increasing spread of firm effects as well as increased sorting of Black workers into relatively lower-premium firms. Data: LEHD.

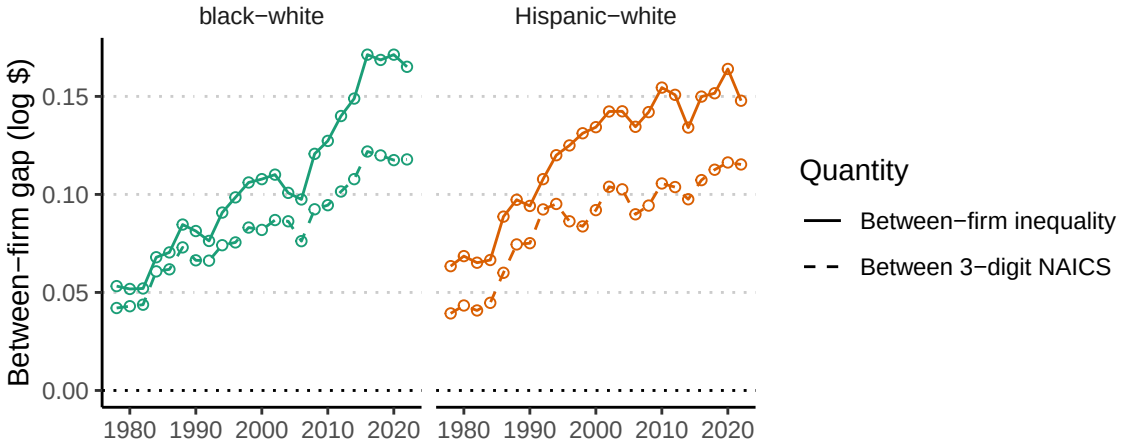


Figure 17: Racial/ethnic gaps in firm average pay (solid lines) and amount explained by racial/ethnic composition of sectors (dashed lines). Data: EEO and LBD.

tor from the changing demographics of each sector, I decompose the evolution in this between-sector quantity into two parts. For simplicity of notation, I define δ_s^t to be the difference between the proportion of white and black workers at sector s in year t.[2] Then the between-sector term in year t can be written $\sum_s \delta_s^t \bar{\mu}_s^t$, where $\bar{\mu}_s^t$ is the

2. i.e., $\delta_s^t := P(s \mid \text{white}, t) - P(s \mid \text{black}, t)$.

mean of the average pay (μ) of firms in sector s in year t. This allows for a convenient decomposition of the change in the between-sector term:

$$\sum_s \delta_s^t \bar{\mu}_s^t - \sum_s \delta_s^{1978} \bar{\mu}_s^{1978} = \overbrace{\sum_s \left(\delta_s^t - \delta_s^{1978}\right) \bar{\mu}_s^t}^{\text{changing sorting}} + \overbrace{\sum_s \delta_s^{1978} \left(\bar{\mu}_s^t - \bar{\mu}_s^{1978}\right)}^{\text{changing pay w/out extra sorting}} . \quad (8)$$

This decomposition is repeated each year t, and a similar decomposition is calculated for the Hispanic-white gap.

The results of this analysis are shown in Figure 18. The solid lines show the increase in the total between-firm gap from 1978 to the present. The dashed lines show the amount of this change that is explained by sector – note that these are the same results as in Figure 17, but shifted to zero at 1978. The dotted line (3) shows the amount of this change due to the increased sorting of black and Hispanic workers into low-paying sectors. This increased sorting can explain almost all of the growth of the between-sector terms, and the majority of the growth of the total between-firm gaps as well. By contrast, changing payoffs by sector explain very little.

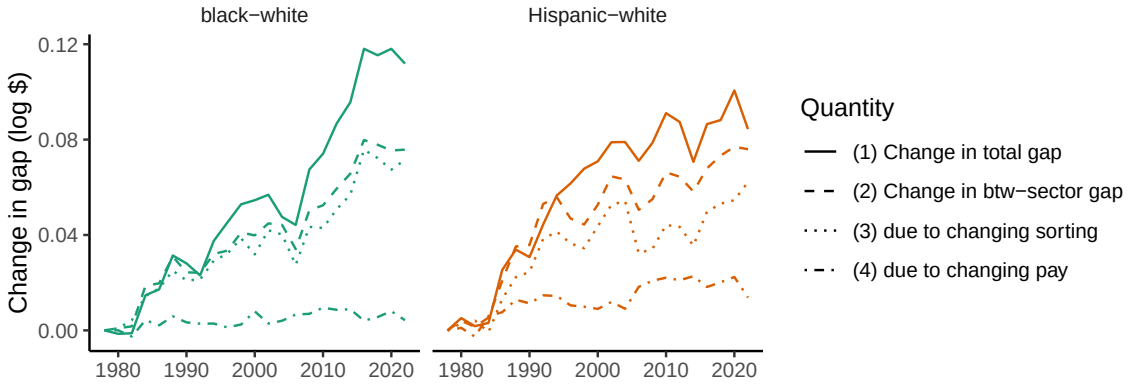


Figure 18: Evolution in racial/ethnic gaps in firm average pay (solid lines) and amount explained by racial/ethnic composition of sectors (dashed lines). Dotted line shows change due to the increased sorting of black or Hispanic workers into low-pay sectors, per Equation 8. Data: EEO and LBD.

In brief, the vast majority of black and Hispanic workers' over-representation in low-paying firms is explained by their concentration in low-paying sectors. And almost the entirety of this sectoral concentration has occurred as black and Hispanic workers have shifted into lower-paying sectors since 1978. This is consistent with the argument, advanced in this paper, that the past half-century of transformation has *moved* black and Hispanic workers into increasingly marginal corners of the economy.

C.4 Decomposition quantities

Tables 2 and 3 report decompositions discussed in the text. Table 2 describes change in between-firm pay gaps from the EEO-LBD data over two periods, from 1978 to 1998 and from 1998 to 2018. The total black-white between-firm gap, for instance, increased by 0.062 log dollars from 1998 to 2018. Over 40% of this (0.026 log dollars) can be explained by increasing occupation-firm alignment. Table 3 reports levels and changes of the total LEHD racial pay gap, unadjusted between-firm gap, and the between-FE gap, for 1998 and 2020.

Table 2: Decompositions of changing between-firm inequality from the EEO-LBD analysis. Quantities shown are in log dollars.

		Change explained by occupation		
Years	Change in full btw-firm gap	All explained	By occup. composition	By occ-firm alignment
Black-white gap				
1978-1998	0.053	0.037	0.018	0.019
1998-2018	0.062	0.034	0.007	0.026
Hispanic-white gap				
1978-1998	0.068	0.057	0.024	0.033
1998-2018	0.020	0.022	0.002	0.020

Table 3: Decompositions of changing income and between-firm gaps from the LEHD analysis. Quantities shown are in log dollars.

	Levels			*Changes*		
Years	Total pay gap	Unadjusted btw-firm gap	Btw-FE gap	Total pay gap	Unadjusted btw-firm gap	Btw-FE gap
Black-white gap						
1998	0.269	0.085	0.017	NA	NA	NA
2020	0.305	0.126	0.041	0.036	0.040	0.024
Hispanic-white gap						
1998	0.309	0.169	0.058	NA	NA	NA
2020	0.248	0.173	0.066	-0.062	0.004	0.008