Black-White Inequality in Earnings Losses After Job Displacement, 1981-2020

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Abstract:
While social scientists have devoted significant effort to understanding racial economic inequalities, surprisingly little work has examined inequalities in how Black and White workers recover from job loss. Trends in racial inequalities after job loss have not been systematically examined since the mid-1990s, leaving open questions about how economic restructuring and business cycle fluctuations have shaped racial inequalities in post-displacement outcomes. In addition, extant research on racial inequalities in post-displacement outcomes has focused on inequalities among men. I use data from the 1984-2020 Displaced Workers Supplement to the Current Population Survey to offer the first historical accounting of racial inequalities in earnings changes after job displacement since the mid-1990s. Large racial inequalities in earnings losses are explained by Black workers' relatively low levels of education, employment in vulnerable segments of the labor market, and disadvantage in finding new jobs, but also mitigated by White workers' large earnings losses due to lost earnings advantages accumulated at their previous job. Among men, racial inequalities in post-displacement earnings increased substantially during the Great Recession, entirely due to unobserved differences between White and Black men. Using Heckman-corrected models, I demonstrate that standard ordinary least squares (OLS) models substantially underestimate racial inequalities in the effect of job displacement on earnings among men due to racial differences in workers' likelihood of finding a new job – accounting for racial differences in selection into reemployment reveals significant racial disparities among men in the effect of displacement on earnings between 1981 and 2009.

Introduction

Job displacement – involuntary job loss resulting from economic conditions beyond the control of an individual worker – is an important dimension of economic precarity that negatively affects workers' short- and long-term wellbeing. Displaced workers experience negative health and psychological outcomes, lost earnings due to unemployment, and downward earnings and occupational mobility upon reemployment (Stevens 1997; Kletzer 1998; Burgard, Brand, and House 2007; Davis and von Wachter 2011; Brand 2015; Farber 2017). In the long-run, job displacement can have negative scarring effects on workers' earnings that persist for decades (Ruhm 1991; Jacobson, LaLonde, and Sullivan 1993; Couch and Placzek 2010; Davis and von Wachter 2011; Schmieder, von Wachter, and Heining 2023). What is more, as the US economy has become increasingly characterized by instability, precarity, and inequality, job displacement has become more disruptive for workers' careers: rates of reemployment, workers' chances of finding full-time work, and earnings recovery after job loss have decreased substantially since the 1980s (Farber 2017).

Perhaps surprisingly, even though social scientists have exerted considerable effort in documenting racial stratification in labor market outcomes such as earnings and employment, racial inequalities in job loss and recovery thereafter have received little attention. Just a few studies have studied racial gaps in rates of job displacement (Fairlie and Kletzer 1996, 1998; Wrigley-Field and Seltzer 2020), and little work has systematically documented historical changes in the racial patterning of recovery after displacement. Most research on racial inequalities in job displacement and its consequences either analyzes a single survey year of the Displaced Workers Supplement (DWS) to the Current Population Survey (CPS)**[[endnote 1]]** or pooled observations across survey years to examine racial gaps in the length of unemployment

spells, reemployment, and earnings post-displacement (Fairlie and Kletzer 1998; Spalter-Roth and Deitch 1999; Moore 2010; Farber 2017). However, no research since Fairlie and Kletzer (1996) has documented historical patterns of racial inequality in recovery after job displacement. Moreover, little attention has been paid to differences in patterns of racial inequalities among displaced workers by gender (but see Spalter-Roth and Deitch 1999; Moore 2010), despite substantial evidence that patterns of racial inequality differ meaningfully between men and women (McCall 2001; Mandel and Semyonov 2016). What is more, previous work on racial and gender inequalities after job displacement has done little to elaborate on the mechanisms or processes that generate such inequalities.

Drawing on queueing models of racial and gender inequality in labor market matching processes (e.g. Thurow 1969; Hodge 1973; Reskin and Roos 1990; Fernandez and Mors 2008), I offer a simple analytical framework to understand how the consequences of job displacement may vary by race and gender over time. I contend that the economic costs of job displacement depend on displaced workers' pre-displacement characteristics, their ability to find new employment, and the quality of displaced workers' new jobs. Broadly, I argue that while White workers are relatively insulated from costly job displacement due to their higher levels of education and employment in more stable economic sectors, they ultimately have more to lose from displacement due to earnings and employment advantages they accumulate at their job before displacement. After displacement, I argue that racial inequalities in hiring disadvantage Black workers in the search for new, high-quality jobs, leading Black displaced workers to endure longer bouts of unemployment, find reemployment at lower-quality jobs, and ultimately experience larger earnings losses than White workers. I further argue that such racial differences

in reemployment lead conventional analyses to underestimate the true effect of job displacement on race- and gender-based earnings inequalities.

Using data from a sample of workers displaced from full-time jobs taken from the 1984 to 2020 waves of the Displaced Workers Supplement (DWS) to the Current Population Survey (CPS), I show that net of differences on observables, racial inequalities in earnings losses among men were stable in the 1980s, narrowed in the 1990s and 2000s, and widened dramatically during the Great Recession, while such inequalities among women were relatively stable through the 1980s and 1990s before narrowing throughout the 2000s. For both men and women, White workers experience large earnings losses from displacement because they tend to lose jobs where they have accumulated large earnings advantages, while Black workers typically have greater overall earnings losses than White workers due to their relatively low levels of education and experience, employment in vulnerable occupations and industries, and reemployment in new occupations and industries and in part-time work. Racial differences in parenthood and education are more consequential for racial inequality among women while differences in labor market segment, cumulative earnings advantages, and re-sorting after displacement matter more for men. I also demonstrate that racial patterns of selection into reemployment after displacement follow selection dynamics consistent with statistical discrimination against Black men, leading conventional estimates to understate true racial inequalities in post-displacement earnings losses among men. After correcting for differential selection into reemployment, I show that job displacement has substantially larger negative effects on Black men's earnings than White men's earnings between 1981 and 2009.

Background

Black-White inequality in job displacement and its consequences

The economic costs of job displacement

Job displacement is a form of economic precarity that is both largely out of employees' control and has substantial negative effects on workers' future employment and earnings. Job displacement refers to job loss that can be attributed to economic conditions beyond workers' control and not tied to workers' individual performance, including mass layoffs, plant closures, or employers going out of business (Brand 2015). Displaced workers typically experience months of unemployment after losing their job and many remain unemployed years after displacement (Ruhm 1991; Gardner 1995; Farber 2017). Reemployed displaced workers typically earn less at their new job than at their previous job. Prior work generally suggests that short-run earnings losses amount to 25 to 33 percent and long-run earnings decrease by 10 to 15 percent (Ruhm 1991; Jacobson et al. 1993; Gardner 1995; Kletzer 1998; Cha and Morgan 2010; Couch and Placzek 2010; Davis and von Wachter 2011; Farber 2017).

The causes and consequences of job displacement remain active areas of research in the social sciences, with recent work documenting trends (Farber 2017), assessing the roles of firms and job match quality (Lachowska, Mas, and Woodbury 2020; Schmieder et al. 2023), examining variation over the business cycle (Davis and von Wachter 2011; Schmieder et al. 2023), and studying gender inequality in lost earnings (Illing, Schmieder, and Trenkle 2024). Racial inequalities continue to be a central concern of sociologists (e.g. McCall 2001; Western and Pettit 2005; Moore 2010; Bloome and Western 2011; Small and Pager 2020). Yet, with the exception of Sorkin's (2025) analysis of racial earnings inequality using a pooled sample of displaced workers, racial inequalities in the personal economic costs of job displacement remain underexamined.

Racial inequalities after job displacement

There is reason to expect that the consequences of job displacement are generally worse for Black workers than White workers. Cross-sectional analyses of displaced workers show that both the incidence and costs of job displacement are greater for Black workers than White workers. On average, Black displaced workers in the DWS experience longer spells of unemployment and are 20 to 30 percentage points less likely to be reemployed at the time of survey than White displaced workers (Fairlie and Kletzer 1998; Hu and Taber 2005; Moore 2010). Black displaced workers also experience earnings losses about 5 to 10 percent greater than White displaced workers (Spalter-Roth and Deitch 1999; Moore 2010; Sorkin 2025).

Historical trends in Black-White inequalities in earnings losses have received less attention. By most prominent accounts, job displacement and its effect on earnings are highly countercyclical, reflecting broader patterns of macroeconomic restructuring (Kletzer 1998; Kalleberg 2009; Davis and von Wachter 2011; Brand 2015; Farber 2017; Schmieder et al. 2023). Black workers were particularly disadvantaged during the 1980s and early 1990s due to mass layoffs of blue-collar workers in industries like manufacturing and construction (Gardner 1995; Farber 1996). But after the early-1990s recession spurred firms to "trim the fat" through downsizing initiatives that affected predominantly White, white-collar middle management positions, White workers experienced greater earnings losses than Black workers (Gardner 1995; Fairlie and Kletzer 1996).

Since the early 1990s, the US labor market has become more polarized. Employment grew in low-paying jobs such as retail and food service, declined in middle-paying jobs characterized by routine tasks like manufacturing production and clerical work, and grew

substantially in high-paying managerial, professional, and technical occupations (Autor and Dorn 2013; Dwyer and Wright 2019). Union power further diminished and nonstandard, contingent, and precarious employment relations became more common (Kalleberg 2009; Western and Rosenfeld 2011). Many of these inequalities came to a head during the Great Recession, which led to high rates of displacement and long-term unemployment, occupational downgrading into service sector jobs, and permanent reductions in employment in industries like manufacturing and construction that tend to provide relatively high quality employment to non-college-educated men, and Black men in particular (Farber 2017; Kalleberg and Von Wachter 2017; Rothstein 2017; Jaimovich and Siu 2020). All told, it is reasonable to expect that racial inequalities in post-displacement economic recovery, especially among men, grew in the 21st century.

Sources of Racial Inequality in the Costs of Job Displacement

Labor market matching and racialized labor queues

I draw on queueing theory to consider how Black and female workers may be disadvantaged in post-displacement earnings losses (Thurow 1969; Hodge 1973; Reskin and Roos 1990). In a standard matching model of the labor market, workers leverage their personal resources (e.g. general and specific skills, education, socioeconomic background, social capital, race, or gender) to compete for their most desired jobs and firms offer wages and benefits to attract their most desired workers. Queueing theory describes matching processes where firms hoping to fill a job opening rank jobseekers from their most to least preferred (the labor queue) and jobseekers rank jobs in a similar fashion (the jobs queue). Workers positioned at the top of the queue – those ranked highest by employers – are advantaged in the matching process, as firms attempt to fill a vacancy by making offers down the labor queue until the vacancy is filled.

Queueing theory has been used to argue that nonwhite and female workers' relatively poor economic outcomes are explained by firms ranking them relatively low in the labor queue (Hodge 1973; Reskin and Roos 1990; Spalter-Roth and Deitch 1999). Black and female workers may rank below White and male workers within labor queues due to differences in skills and experience, search behavior, or employer preferences. Race and gender may also shape which queues workers enter (i.e. which types of jobs workers apply to). Below I draw on queueing theory to elaborate the labor market processes before and after job displacement that may underlie racial and gender inequalities in workers' chances of recovering economically from job displacement.

Racial inequalities in earnings losses due to pre-displacement characteristics

I argue that White workers' labor market advantages accumulated prior to job displacement produce earnings premia and economic rents. While some of these advantages can be maintained after displacement, others are likely diminished as workers re-sort into new jobs, leading to disproportionate earnings losses for White workers relative to Black workers based on pre-displacement characteristics.

First, White workers on average have higher levels of general human capital – skills that are relatively broad and transferable across a wide range of jobs. Typically proxied by educational attainment and labor market experience, general human capital is associated with smaller earnings losses following displacement (Podgursky and Swaim 1987; Moore 2010; Farber 2017), likely because these general skills are productive at both workers' lost jobs and new jobs. White workers' higher average levels of general human capital may produce advantages within labor queues, as firms prefer to hire more productive workers, all else equal.

Educational credentials may also produce advantages in sorting between queues: degrees and certifications determine whether workers qualify for certain types of jobs and therefore limit workers' access to some queues (Araki 2020). Within- and between-queue advantages from higher levels of general human capital may therefore lead to lower earnings losses for White displaced workers compared to Blacks.

A second potential pre-displacement source of racial inequalities in the costs of job displacement is the occupations and industries from which workers are displaced. Segmentation theories depict the labor market as divided into a primary sector, characterized by high-quality jobs, upward mobility, and enduring employment relations, and a secondary sector comprised of low-paying, unstable jobs with little opportunity for advancement (Kalleberg and Sorensen 1979). Limited between-sector mobility implies that unemployed workers typically queue for jobs in the same sector where they previously worked, suggesting that the occupation and industry that workers are displaced from has important implications for their subsequent job search. Labor market segments are often delineated, in part, on racial lines (Reich, Gordon, and Edwards 1973). Indeed, Black workers are overrepresented in routine-task-intensive lower-skill jobs in sectors like manufacturing and in clerical work – jobs for which there is declining demand and that are most vulnerable to large earnings losses following displacement (Kaufman 1986; Gray et al. 2024). I expect that Black workers' overrepresentation in these segments of the labor market and likely entrance into labor queues competing for relatively few jobs in these sectors increases racial inequality in earnings losses following displacement.

A third pre-displacement determinant of racial inequalities in earnings losses following job displacement is differences in accumulated advantages within the labor market (Blau and Duncan 1967; DiPrete and Eirich 2006). Earnings over workers' careers are highly correlated

(Heckman 1981; Carneiro et al. 2023) precisely because they reflect advantages accumulated due to workers' labor market histories, which vary not only due to differences in productivity but also due to the cumulative effects of racial discrimination (e.g. Tomaskovic-Devey et al. 2005). Compared to Black workers, White workers accumulate more firm-specific skills throughout their tenure with an employer due to racial favoritism in investment in human capital, pay raises, the allocation of work and promotions, and other features of internal labor markets (Collins 1989; Maume 1999; Tomaskovic-Devey et al. 2005; Castilla 2008). White workers are also advantaged in hiring (Quillian et al. 2017; Kline, Rose, and Walters 2022), allowing them to accumulate earnings advantages via mobility between firms (Sandefur 1981; Oettinger 1996; Alon and Tienda 2005). These advantages accumulate to produce racial wage differentials over the career.

When job matches are severed due to job displacement, these cumulative advantages are likely difficult for White workers to fully recoup. Earnings losses following displacement are much higher among workers with high levels of specific capital (proxied by firm-, occupation-, or industry-level tenure) precisely because investments in specific skills do not transfer between settings (e.g. firms or industries) (Podgursky and Swaim 1987; Topel 1991; Neal 1995; Farber 2017). Similarly, a significant proportion of lost earnings can be attributed to worker-firm match effects (Lachowska et al. 2020). White workers may face difficulty finding reemployment with another firm where they can receive a comparable earnings premium. Thus, I expect that White workers' cumulative labor market advantages *disadvantage* White workers relative to Black workers in earnings recovery after job displacement.

Hypothesis 1: Differences in White and Black displaced workers' pre-displacement characteristics (general human capital, distribution across labor

market segments, and cumulative labor market advantages) are associated with (smaller, smaller, and larger, respectively) earnings losses for White workers than for Black workers after they are reemployed.

Lost earnings due to racial inequalities in re-sorting in the labor market

Displaced workers' earnings losses also depend on patterns of re-sorting post-displacement. Earnings losses are largest among those who lose out on returns to specific capital developed at their previous job by changing occupations, changing industries, or moving into jobs that are a worse fit between the worker and firm (Addison and Portugal 1989; Neal 1995; Cha and Morgan 2010; Couch and Placzek 2010; Lachowska et al. 2020). Mobility into part-time work is also quite costly (Farber 2017). In a queueing framework, displaced workers are competing for reemployment in jobs where their expected earnings are highest. These are likely to be full-time jobs in the same occupations and industries as their lost jobs.

Black displaced workers are likely disadvantaged along these dimensions of re-sorting in the labor market. There is substantial evidence that employers rank White workers higher in the labor queue, choosing to hire White workers over otherwise similar Black workers (Kirschenman and Neckerman 1991; Pager, Western, and Bonikowski 2009; Quillian et al. 2017; Kline et al. 2022). Such patterns may reflect statistical discrimination, where employers expect Black workers to be less productive than White workers either because of employers' beliefs about population-level differences in Black and White workers' skills or employers' greater uncertainty about the reliability of Black workers' signals of productivity (Phelps 1972). Some evidence also suggests that job displacement leads Black workers to re-sort into employers that are more discriminatory than their previous employer (Hu and Taber 2005). If employers rank Black

displaced workers lower in the labor queue than otherwise similar White workers, Black workers would be less likely to find high quality employment in jobs similar to their previous and more likely to change occupations or industries or move into part-time work, thereby exacerbating racial inequalities in earnings losses after job displacement.

> *Hypothesis 2: Racial differences in occupation changes, industry changes, and part-time work after displacement disadvantage Black workers relative to White workers in the effect of job displacement on earnings*.

Reemployment after job displacement and selection bias in estimates of earnings inequality

Standard ordinary least squares (OLS) estimates of racial earnings inequalities examine differences in earnings between employed Black and White workers net of differences on observable characteristics. I argue that OLS estimates of racial inequality in earnings losses after job displacement likely understate the true effect of displacement on racial earnings inequalities due to Black workers' significant disadvantage in finding new employment after displacement.

Black workers' marked disadvantage in job search suggests that job displacement will lead to longer durations of unemployment, lower probabilities of reemployment for Black workers compared to White workers, and ultimately reemployment in lower quality jobs for Black workers who do become reemployed. If employers statistically discriminate, they will perceive Black job candidates to be less qualified than White job candidates with the same credentials, particularly among workers with relatively weak credentials (Phelps 1972). Under these selection dynamics, White displaced workers will be reemployed at a higher rate than Black displaced workers, and the reemployment gap will widen among less qualified workers. As a result, the pool of reemployed displaced workers for whom we can observe earnings losses

will contain disproportionately few Black workers with lower qualifications – the exact workers for whom we expect earnings losses to be largest. If these workers were to become reemployed, they would experience substantial downward mobility. These selection dynamics would then result in upwardly biased estimates of the effects of displacement on Black workers' earnings (and therefore underestimate Black workers' disadvantage relative to White workers) when only examining earnings among reemployed workers.

> *Hypothesis 3: Standard OLS models underestimate Black-White inequality in the effect job displacement on earnings due to racial differences in selection into reemployment.*

Gendered racial inequalities in the consequences of job displacement

While a good deal of research has examined gender inequalities after job displacement (e.g. Maxwell and D'Amico 1986; Madden 1987; Illing et al. 2024), little work has considered how patterns of racial inequality in the effects of job displacement vary by gender (but see Spalter-Roth and Deitch 1999; Moore 2010). Research on the gendered patterns of racial earnings inequality finds that racial inequalities in earnings among women are much smaller than among men (Kilbourne et al. 1994; Cotter, Hermsen, and Vanneman 1999; Mandel and Semyonov 2016). Racial inequality in the effects of displacement on earnings may be lower among women because women are less racially segregated across occupations than men (Hegewisch et al. 2010) and less represented in industries like manufacturing and construction where declining demand for labor had a much larger effect on racial inequalities among men than among women (Wilson 1996; Bound and Holzer 2000; McCall 2001). Women are also more likely than men to transition into voluntary part-time work upon reemployment, explaining a substantial proportion of gender

inequality in post-displacement earnings losses (Farber 2017; Illing et al. 2024). It is possible that women's overall earnings losses from transitions into part-time work trump any additional inequalities by race.

On the other hand, it is possible that racial differences in family structure amplify racial inequality in the effects of job displacement among women. Gender differences in the employment, job search, and earnings effects of displacement appear to be largely driven by women's fertility decisions. There is strong empirical evidence that unemployed mothers send fewer job applications, are more selective in their search, and experience lower rates of reemployment and larger earnings losses than fathers or individuals without children (Frodermann and Müller 2019; Philippe and Skandalis 2023; Illing et al. 2024). On average, Black women have children earlier and are more likely to be single parents (McLanahan and Percheski 2008; Sweeney and Raley 2014), potentially leading Black women to spend less time searching and take lower paying jobs in order to avoid prolonged periods of unemployment. Still, because Black and White women tend to occupy more similar positions in the labor market, are less likely than men to be employed in industries vulnerable to large earnings losses following displacement, and are more likely to voluntarily queue for part-time jobs, I expect to observe less racial inequality in the effects of job displacement on earnings among women than among men.

Data and Methods

The Displaced Workers Supplement

This study uses data from the 1984 to 2020**[[endnote 2]]** waves of the Displaced Workers Supplement (DWS) to the Current Population Survey (CPS) obtained from IPUMS (Flood et al. 2023). The DWS surveys displaced workers who lost their job in the previous several years

about their earnings and employment at their lost job and current job. The definition of "displaced worker" varies between survey years. In order to make consistent comparisons across survey years, I follow Farber (2017) and impose two restrictions on the sample. First, I limit displacements to what Farber terms "the big 3" reasons: slack work, plant closings, or position/shift abolished (see also Wrigley-Field and Seltzer 2020). This excludes workers who experienced the end of a temporary job, a self-employed job, or lost their job for "other" reasons. Second, before 1994 the DWS asked respondents to recall job losses from the previous 5 years, while from 1994 onwards the recall window is limited to 3 years. Again, following Farber (2017), I limit the sample to respondents displaced within the previous 3 years. The final sample contains DWS respondents who were displaced between 1981 and 2019 and whose current earnings were observed between 1984 and 2020.

I limit the sample to Black and White displaced workers in non-agriculture civilian occupations between the ages of 20 and 64 who lost a full-time job where they reported positive earnings. In line with previous research on displaced workers, I focus on workers displaced from full-time jobs to exclude individuals who are only marginally attached to the labor force (e.g. Fairlie and Kletzer 1996, 1998; Farber 2017). Respondents in mining and protective services occupations are also dropped due to very small sample sizes. I also drop respondents who are missing data on the analytic variables. All analyses use weights specific to the DWS.

Key Variables

Dependent variables

The main outcome variable in this study is the proportional change in respondents' real weekly earnings.**[[endnote 3]]** *Real weekly earnings* are standardized to year-2000 US dollars. Top-

coded values are multiplied by 1.4. Following Farber (2017), the *proportional change in real weekly earnings* is calculated as:

$$\Delta \mathrm{W} = \frac{W_1 - W_0}{W_0} \quad (1)$$

where *W* refers to real weekly earnings. Subscripts 0 and 1 refer to respondents' lost job and their current job at the time of survey, respectively. Proportional earnings changes are Winsorized at the 1st and 99th percentile. Earnings changes cannot be observed for respondents who are unemployed at the time of survey. These respondents are dropped from most analyses but included in analyses that directly correct for bias from nonrandom selection into reemployment. Appendix 1 also presents analyses where these respondents are coded as $0 earners at the time of survey. Results remain substantively unchanged.

Independent variables

Analyses control for whether the respondent has children. General human capital is proxied by education (less than high school, high school, some college (no degree), associate's degree, bachelor's degree, graduate degree) and potential experience (age – years of education – 6). Labor market segment is measured using lost job occupation**[[endnote 4]]** and industry (2-digit NAICS codes). Cumulative labor market advantages are proxied by lost job tenure and log weekly earnings. Post-displacement re-sorting is assessed using indicators for changing occupations, changing industries, and mobility into part-time (<35 hours per week) work. I account for differences in institutional wage-setting environments by controlling for state fixed effects, year of displacement fixed effects, and years since displacement.

Time variables

The DWS records the year of displacement, allowing analysts to identify when workers lost their jobs and account for time between displacement and the survey date. In all analyses, time is defined by year of displacement. I control for year of displacement and years since displacement to ensure that results are not biased by differences in the amount of time workers have had to find employment or increase their earnings after displacement.

The main analyses report results for separate samples of men and women pooled across all survey years. For most analyses, I also report results from models where respondents are further divided into eight time periods corresponding to periods of economic recession (1981-1982, 1990-1991, 2001, 2008-2009) and expansion (1983-1989, 1992-2000, 2010-2019) in the US, following the business cycle dating provided by the National Bureau of Economic Research (NBER 2024). I code years as recession years if there was a recession for at least half the year. This approach is somewhat imprecise, but because the timing of job displacements is only reported at the year level, more precise coding of displacements during recessions is not possible.

Analytic approach

To assess Hypotheses 1 and 2, I conduct a Kitagawa-Oaxaca-Blinder decomposition (KOB) (Kitagawa 1955; Blinder 1973; Oaxaca 1973) to examine the extent to which racial inequalities in the effect of displacement on earnings are explained by racial differences in general human capital, labor market segment, accumulated advantages within the labor market, institutional environment, and patterns of re-sorting. I estimate the decomposition as follows:

$$\Delta W^W - \Delta W^B = (\bar{X}^W - \bar{X}^B)\beta^B + \bar{X}^W(\beta^B - \beta^W) \quad (2)$$

where ΔW represents proportional changes in weekly earnings between lost and current jobs and its superscripts W and B refer to White and Black. $\bar{X}^W$ and $\bar{X}^B$ refer to race-specific average

characteristics. β^W and β^B refer to race-specific coefficients. I follow Yun's (2005) normalization approach to resolve identification problems stemming from the choice of reference categories for categorical variables. Separate decompositions are run for men and women pooled across survey years and then separated by time period.

The observed difference in Black and White workers' proportional changes in weekly earnings is decomposed into two components. The "explained" component describes how the observed gap in proportional changes in earnings would change in the counterfactual scenario where Black displaced workers follow White displaced workers' average characteristics. The "unexplained" component describes how racial differences in coefficients contribute to differences in outcomes. This component is often interpreted as evidence of discrimination, although racial differences in unobservables such as productivity and job match quality are also captured by this term.

Earnings regressions

To assess Hypothesis 3, I examine how estimates of Black-White inequality in the effect of job displacement on earnings differ between standard OLS models and models that correct for selection into reemployment. First, I run a standard OLS regression of proportional earnings changes ΔW on *Black* and all pre-displacement covariates X from the KOB decompositions:

$$\Delta \mathrm{W}_i = \beta_0 + \beta_1(\mathrm{Black}_i) + X\gamma + \epsilon_i \quad (3)$$

I run separate models in each period for men and women. Estimates of β_1 describe racial inequality in earnings losses, net of differences on pre-displacement characteristics.

Hypothesis 3 predicts that estimates of Black workers' disadvantage relative to White workers (β_1) are upwardly biased due to differential patterns of selection into reemployment. To

test this hypothesis, I estimate another set of models that use a Heckman correction (Heckman 1979) to address bias stemming from missing data on earnings for respondents who are not employed at the time of the survey. Hypothesis 3 is supported if Heckman-corrected estimates of the Black-White gap in earnings losses from displacement are more negative than standard OLS estimates.

The Heckman correction relies on modeling selection using an instrument that affects selection into reemployment but does not directly affect workers' wage offers. The main analyses model selection using a categorical variable for the number of own children under 5 years old in the household and its interaction with *Black*. Presence of young children is commonly used as an instrument in Heckman selection models, including in the job displacement literature (e.g. Heckman 1974; Podgursky and Swaim 1987), but the presence of motherhood wage penalties or fatherhood wage premia could violate the exclusion restriction. To address this concern, Appendix Table A2.3 demonstrates that results from the main analyses are robust to an alternative specification of the selection model using total employment in workers' pre-displacement industry (Neal 1995). Total employment should reflect job vacancies and therefore affect selection into reemployment but not wage offers. Still, total employment may capture some underlying labor market dynamics that affect wage offers, and results should be interpreted with caution. Further details on the Heckman correction, diagnostics, and the alternative specification of the instrument are presented in Appendix 2. Appendix 3 provides supporting analyses of selection into reemployment.

Results

Descriptive Statistics

Unweighted descriptive statistics from the DWS samples separated by race and gender are presented in Table 1. The sample is about 40 percent female and 12 percent Black. After separating the sample by race, gender, and period, the Black sample size is reasonably large in most periods, although it is rather small during the early 1980s and 2001 recessions. Results from these periods should be interpreted with caution. Black women are much more likely to have children than White women, but fatherhood rates are similar between races. White displaced workers are more educated and have more labor market experience than Black displaced workers. Racial inequalities in education and experience are similar among men and women. White workers in the sample were also displaced from jobs with much higher weekly earnings and years of tenure. Inequalities in earnings and tenure at the lost job are much greater among men than among women. Black workers are much less likely to be reemployed after displacement, and those reemployed are more likely to have changed occupations and industries and have lower earnings.

[[Table 1 about here]]

Figure 1 plots descriptive trends in racial differences in proportional changes in earnings by gender. Observed racial inequalities in earnings changes are quite small on average and are rarely statistically significant. Consistent with the previous literature, there is a small Black disadvantage among men in the 1980s and a small advantage in the 1990s. Among women, Black displaced workers are disadvantaged through the 1980s and 1990s. After the Great Recession, racial inequalities in earnings losses among men amplified significantly while racial inequalities among women did not widen until the mid 2010s.

[[Figure 1 about here]]

Decomposition of earnings changes

Relatively low levels of observed inequality in earnings losses after displacement may obscure racial inequalities in the effect of displacement on earnings. I argue that while Black displaced workers are disadvantaged by their relatively low average levels of general human capital, distribution across labor market segments, and patterns of labor market sorting after displacement, they are also insulated from large earnings losses due to accumulated labor market disadvantages in the form of relatively low investment in firm-specific skills and depressed pre-displacement earnings. I examine the extent to which each of these dynamics contributes to racial inequalities in the effect of displacement on earnings through a decomposition of Black-White inequality in the proportional change in earnings among reemployed displaced workers.

Decomposition of racial inequality by gender in the pooled sample

Table 2 presents decomposition results for the pooled sample and for men and women separately over the full sampling period. Later, I disaggregate by periods of economic contraction and expansion. The top section of the table reports average Black and White proportional changes in earnings. The row labeled "Difference" reports the difference between White and Black workers' average proportional change in earnings. The "Explained" component describes the component of that difference that is attributable to differences in Black and White workers' values on covariates used in the decomposition. The "Unexplained" component reflects residual inequality after accounting for racial differences on covariate levels. This component may reflect discrimination, but also unobserved differences in worker productivity or job match quality. Full tables with the explained and unexplained components can be found in Appendix 4. These decompositions only include pre-displacement covariates. I address patterns of selection into reemployment and post-displacement mobility later.

[[Table 2 about here]]

The decomposition analyses reveal somewhat different dynamics underlying racial inequalities in proportional earnings changes after displacement for men and women. First, while there is no observed Black-White inequality in average earnings losses after displacement among men, there is a 3 percentage point gap among women. The explained component of both decompositions is negative, indicating that if Black displaced workers had the same average covariate values as White displaced workers, the Black-White gap in earnings losses after displacement would be greater. The explained component is much larger for men than women (-7.3 versus -3.2 percentage points), suggesting that racial differences in covariate values reduce racial inequality among men more than women. Subtracting the "Explained" component from the "Difference" component gives the counterfactual Black-White gap in proportional earnings changes if Blacks followed Whites' covariate distribution. This counterfactual gap is about 6 percentage points for women and 7.7 percentage points for men.

Turning to the role of each group of covariates, I first find that racial inequalities in parenthood status explain about 10 percent of the racial gap in women's earnings losses following displacement, but none of the gap among men. Black women are about 14 percentage points more likely to be mothers than White women (Table 1), possibly driving racial differences in patterns of job search and reemployment among women.

Next, I find evidence consistent with Hypothesis 1, which predicts that racial inequalities in general human capital account for some of the observed gap in Black and White displaced workers earnings losses. The positive and significant values reported in the row labeled "General human capital" indicate that if Black workers had the same average educational attainment and potential labor market experience as Whites, Black workers' disadvantage in proportional

earnings losses would be reduced by 1.3 percentage points for women and 0.8 percentage points for men.

Also in line with Hypothesis 1, racial differences in the labor market segment from which workers are displaced also explain a substantial amount of Black male workers' disadvantage in post-displacement earnings losses. If Black male workers lost jobs in the same occupations and industries as White male workers, their proportional earnings losses would be 2.4 percentage points smaller than observed. Racial differences in the occupation and industry of workers' lost jobs explains less of racial inequality in proportional earnings losses for women than for men. For women, equalizing Black and White workers' occupation and industry of lost jobs reduces Black workers' earnings losses by 1.3 percentage points. These findings are consistent with descriptive patterns of occupational and industry distributions by race and gender: men are more likely than women to lose production jobs with large expected earnings losses in sectors like construction, manufacturing, and transportation and warehousing, and racial inequality in representation in these jobs is also lower among women (Appendix 5, Table A5.1).

Consistent with the final prediction from Hypothesis 1, racial differences in accumulated labor market advantages (proxied by tenure and log weekly earnings at workers' lost jobs) reduce racial inequalities in proportional earnings changes. If Black men lost jobs where they had the same tenure and earnings as White men, their earnings losses would be 11 percentage points larger. In the same counterfactual scenario, Black women's earnings losses would be 5.8 percentage points larger. These results suggest White workers accumulate labor market advantages that produce higher earnings at their lost job but are not fully recovered following displacement.

The decompositions for men and women also exhibit large, positive, and significant "Unexplained" components, reflecting a combination of Black disadvantage in returns to each covariate and in unobservables like productivity and job match quality (Appendix Table 4.1). None of the differences in returns to individual covariates are significant, but the large positive point estimates on cumulative labor market advantages suggest that lost job tenure and earnings provide less insulation to earnings losses after displacement for Black workers than White workers.

Trends over time

Figures 2 and 3 plot trends in observed proportional changes in earnings for White and Black displaced workers and counterfactual proportional changes in earnings for Black workers if they shared the same average pre-displacement characteristics as White workers. Full decomposition results for samples disaggregated into periods of economic expansion and contraction are presented in Appendix 4 (Tables A4.3-A4.6).

First, I examine trends among men (Table A4.3). Across all periods, there are no significant observed racial inequalities in proportional earnings losses except for workers displaced during the Great Recession. However, the explained component is large, negative, and significant in all periods except from 1981 to 1982. As a result, inequality between observed White displaced workers (red) and counterfactual Black displaced workers (grey) who have the same average covariate values is large and significant in nearly every period, indicating large disadvantages for Black displaced workers compared to similar White displaced workers. This gap is especially pronounced during the Great Recession (26 percentage points).

Differences in general human capital explain relatively less racial inequality in earnings losses in the 1980s and early 1990s compared to the period from 1992 to 2007, where Black earnings losses would be just under 2 percentage points lower if they had the same general human capital as White displaced workers. From 2008 onwards, equalizing Black and White human capital has little effect of racial inequality in earnings losses. In all periods except the early 1980s recession and the Great Recession, equalizing Black and White workers' occupation and industry of displacement greatly reduces racial inequality in earnings losses on the order of 2.3 to 4.3 percentage points, suggesting that economic contraction may weaken White men's advantages from occupational and industrial sorting. Across all periods, equalizing Black and White workers' tenure and log earnings at their lost jobs greatly increases racial inequality in earnings losses by about 7 to 13 percentage points. This effect somewhat weakens during and after the Great Recession. The large and significant in racial inequality in earnings losses during the Great Recession is not driven by racial differences on observables. Rather, it is entirely attributable to the large unexplained component of the decomposition (Table A4.3), consistent with the differential treatment of similar Black and White men or unobserved racial differences in productivity or job match quality.

[[Figure 2 about here]]

Trends among women differ (Table A4.5). First, significant Black disadvantage in earnings losses after displacement is observed during the early 1980s recession and during economic expansion from 1992 to 2000. Results from the early 1980s should be interpreted with caution due to small sample size. Second, the explained component is negative during all periods of economic expansion but positive during recessions in the early 1980s, early 1990s, and the Great Recession. Compared to non-recessionary periods, racial inequality among women in these

recessionary periods appears to be driven by Black women's disadvantageous allocation across occupations and industries and the relatively small effect of equalizing Black and White women's tenure and log earnings at their lost jobs. Notably, there is no racial inequality in earnings losses among women during the Great Recession, even after adjusting for differences on observables. Unlike for men, the unexplained component of these decompositions is not consistently positive and individual covariates do not contribute consistently to the unexplained component.

[[Figure 3 about here]]

Re-sorting in the labor market

Hypothesis 2 predicts that Black workers are relatively disadvantaged in patterns of re-sorting in the labor market compared to White workers. If this hypothesis holds, racial inequality in earnings losses should be reduced by equalizing patterns of occupation changes, industry changes, and transitions into full-time work. Results from decompositions that include post-displacement indicators of these labor market transitions are reported for the pooled sample in Table 3 (see Table A4.2 for the unexplained component) and by period in Appendix Tables A4.4 and A4.6. In the pooled sample, Black men are significantly disadvantaged by their relatively high rates of occupation changes, industry changes, and mobility into part-time work (Table 3). If Black men followed White men's patterns of labor market transitions, their average earnings losses would be about 2.2 percentage points smaller. This effect is particularly large and significant from 1983 to 1989 and throughout the entirety of the 2000s (Table A4.4). The effect of labor market transitions is smaller and not significant for women, reducing racial inequality in earnings losses by only 0.7 percentage points. The effect is only significant from 1981 to 1982,

and point estimates are not consistently positive or negative (Table A4.6). Compared to men, women exhibit much more similar rates of occupation changes, industry changes, and transitions into part-time work (Table 1). Thus, racial disadvantages in labor market re-sorting appear much greater for Black men than for Black women.

[[Table 3 about here]]

Selection into reemployment

Estimates of racial inequality in the effect of job displacement on earnings from OLS models only capture changes in earnings among displaced workers who found a new job and were reemployed at the time of the survey. Hypothesis 3 anticipates strong positive selection effects for Black workers, resulting in a population of unemployed Black displaced workers with large expected earnings losses and leading standard OLS estimates underestimate racial inequalities in the effect of job displacement on earnings. Descriptive analyses presented in Appendix 3 are consistent with these selection dynamics: Black displaced workers are typically 10 to 20 percentage points less likely to be reemployed at the time of survey than White displaced workers, job search duration is typically 5 to 10 weeks longer for reemployed Black workers compared to White workers, these inequalities widen when the labor market loosens during recessions, and these inequalities are largest among workers with relatively low human capital**.** These dynamics are consistent with statistical discrimination and racialized labor queues but could also be driven by unobserved differences in productivity or match quality. I use Heckman-corrected models to account for this nonrandom selection into reemployment and estimate the effect of displacement on earnings for all displaced workers, including those who are not currently employed.

[[Table 4 about here]]

Among men, Heckman-corrected models estimate similar or larger racial inequality in earnings losses compared to OLS models (Table 4; Figure 4). After correcting for selection into reemployment, racial inequalities in earnings losses after displacement among men are 8 percentage points (100 percent) larger in the pooled sample. The Heckman correction results in larger estimates of racial inequality in all periods except from 2010 to 2019. The difference between OLS and Heckman estimates of racial inequality in these periods is especially large during recessionary periods from 1981 to 1982 (15 percentage points), 1990 to 1991 (8 percentage points) and 2008 to 2009 (15 percentage points).

[[Figure 4 about here]]

Among women, Heckman-corrected estimates of racial inequality are more similar to OLS estimates. In the pooled sample, the Heckman estimate of inequality is 0.7 percentage points smaller. The Heckman estimate of inequality in 2001 is 8 percentage points greater, but in all other periods the Heckman and OLS estimates are quite similar.

Conclusions

Job displacement is a highly disruptive event that has significant negative consequences for workers' short- and long-run economic wellbeing. While social scientists have devoted considerable attention to understanding racial inequalities in other economic outcomes, surprisingly little work has examined racial inequalities in job displacement and its consequences. This paper makes three major empirical contributions towards that end. First, I offer the first systematic investigation of trends in Black-White inequality in the effect of displacement on earnings for the first time since Fairlie and Kletzer's analyses of job

displacement in the 1980s and 1990s (Fairlie and Kletzer 1996, 1998). Second, I present the first analyses of historical trends in men and women's patterns of racial inequality in economic recovery from job displacement. Third, I combine insights from queueing theory, statistical discrimination, and models of self-selection into employment to develop an analytical framework of job displacement as an inequality generating process that allows me to examine how sequences of career processes characterized by racialized labor queues – sorting into initial jobs, the accumulation of labor market advantages over the career before displacement, job search and selection into reemployment, and hiring again after losing a job – shape racial inequalities after job displacement.

I find that despite White workers' relatively high levels of general human capital and advantageous occupational and industrial sorting, they experience significant and disproportionate earnings losses relative to Black workers because they are displaced from jobs where they have accumulated significant labor market advantages in the form of high earnings and job tenure. But after displacement, I show that Black workers are disadvantaged because they are consistently less likely to find a new job and the new jobs they enter are typically further afield from their previous job than those found by otherwise similar displaced White workers. What is more, I use Heckman-corrected analyses to demonstrate how failing to account for selection in the process of racial stratification after job displacement leads us to underestimate Black men's disadvantage relative to White men. I show that the job search and hiring process for displaced workers selects strongly in favor of White men, particularly among workers with relatively low skills. Among displaced workers who remain unemployed, Black men tend to be relatively low skilled and have very high expected earnings losses. These selection dynamics are

consistent with statistical discrimination by employers but may also be driven by differences in worker productivity or job search effort, referral networks, or a host of other unobservables.

Accounting for these selection dynamics reveals large disadvantages for Black male displaced workers during recessions in the early 1980s, early 1990s, and the Great Recession. Black displaced workers' amplified disadvantage during these recessions appears to be driven by a combination of preferential treatment of White men over otherwise similar Black men and White men's advantage in job search in slack labor markets, rather than by differences on observables. Black workers tend to be concentrated in middle-paying routine manual jobs (e.g. manufacturing production or clerical work), which account for almost all job destruction during these periods (Wilson 1996; Kalleberg and Von Wachter 2017; Rothstein 2017; Jaimovich and Siu 2020; Acemoglu and Restrepo 2022). Consistent with theories of racialized labor queues (Hodge 1973), when demand for labor decreases, vacancies are disproportionately filled by White men and Black men must accept lower quality jobs in the job queue or move into other jobs queues (i.e. change occupations or industries). These results underscore a crucial connection between racial inequalities in job loss and transitions to unemployment and exit from the labor force (Fairlie and Kletzer 1998; Ritter and Taylor 2011; Wrigley-Field and Seltzer 2020) and earnings loss after job displacement.

Patterns of racial inequality in post-displacement earnings differ somewhat for women. Compared to men, racial differences in educational attainment play a larger role, likely because returns to education are higher for women than for men (DiPrete and Buchmann 2006), as racial differences in educational attainment are similar among men and women (Women's Bureau 2025). Differences in occupation and industry are less important, consistent with previous studies showing lower levels of racial occupational segregation among women (Hegewisch et al. 2010)

and women's lower representation in shrinking industries with high displacement costs like manufacturing (Bound and Holzer 2000; McCall 2001). Family responsibilities also play a small role – equalizing rates of motherhood between races reduces racial inequality in earnings losses following job displacement by about 10 percent. Unlike men, patterns of job changes and selection into reemployment have little effect on estimates of racial inequality among women. Future research could probe deeper into these findings, perhaps investigating how changes over time in marriage, fertility, and their timing have shaped racial inequalities among women displaced workers.

Policymakers interested in reducing the large racial inequalities in earnings losses among otherwise similar displaced workers may consider expanding unemployment insurance. Unemployment benefits are typically available for 6 months, but Black displaced workers are often unemployed for far longer. Extending unemployment benefits for longer may allow Black workers to search for higher quality employment rather than accepting lower quality options. Job training and public job matching services targeted towards workers displaced from shrinking industries where Black workers are concentrated may also alleviate some racial inequalities in the costs of job displacement.

While these analyses provide novel and up-to-date insights into the dynamics underlying racial inequalities following job displacement, they are not without limitations. First, the structure of DWS data only allows analysts to observe short-run consequences of job displacement. Future research should investigate racial and gender differences in long-term scarring from job displacement. Second, these analyses do not directly examine how other dimensions of job quality change with job displacement; I cannot show whether similar racial inequalities manifest in hours, schedule variability, job tasks, and other nonmonetary dimensions

of job quality. Future research may be interested in examining whether job quality moves in tandem with earnings, or if some earnings inequalities are mitigated by compensating differentials.

Data Availability Statement

For information regarding additional results and copies of the computer programs used to generate the results presented in the article, please address correspondence to the corresponding author.

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Endnotes

1. Though some other analyses use administrative data (e.g. Lachowska, Mas, and Woodbury 2020; Sorkin 2025)

2. The DWS is fielded biennially in either January or February. The job displacements recorded in the 2020 DWS were not driven by the COVID-19 pandemic, which had a massive effect on job loss beginning in March 2020 (Ansell and Mullins 2021).

3. The proportional change in earnings is preferable to the difference in log earnings because log earnings do not well approximate large percent changes, which are common in earnings losses following displacement. See Appendix 1 for more details and robustness tests.

4. 2-digit occupation codes obtained from a standardized occupational coding scheme developed by David Dorn (Dorn 2009; Autor and Dorn 2013) that accounts for numerous changes to the US Census occupational coding scheme over the period of analysis.

Figure Legend

Figure 1. Observed proportional changes in earnings by race and gender
Figure 2. Observed and counterfactual earnings changes (men)
Figure 3. Observed and counterfactual earnings changes (women)
Figure 4. OLS and Heckman predicted Black-White inequality in proportional change in earnings

Tables

Table 1. Analytic sample demographics

	Male				Female			
	White		Black		White		Black	
	Mean or %	SD	Mean or %	SD	Mean or %	SD	Mean or %	SD
Demographics								
Has kids	46.8	49.9	43.79	49.62	48.39	49.98	62.58	48.4
Education								
Less than high school	10.54	30.71	15.65	36.34	7.5	26.34	13.9	34.61
High school	37.83	48.5	42.76	49.48	36.86	48.25	38.44	48.66
Some college	24.41	42.95	22.93	42.05	25.12	43.37	26.87	44.34
Associates	7.02	25.55	5.76	23.3	8.89	28.46	8.4	27.75
Bachelors	14.86	35.57	9.71	29.62	16.18	36.83	8.9	28.47
Graduate	5.35	22.49	3.19	17.58	5.45	22.69	3.49	18.35
Years potential experience	20.21	11.73	18.72	11.26	20.58	11.94	18.62	11.05
Lost job characteristics								
Weekly earnings (year-2000 dollars, lost job)	782.87	571.72	544.17	384.73	565.23	424.49	450.06	298.68
Years tenure (lost job)	5.48	7.21	4.45	6.14	5.14	6.45	4.74	6.16
Post-displacement outcomes								
Currently employed	68.95	46.27	54.18	49.84	66.03	47.36	54.18	49.84
Years since displacement	1.84	0.83	1.79	0.84	1.86	0.83	1.84	0.83
Weekly earnings (year-2000 dollars)	688.15	535.65	498.33	383.86	486.95	392.24	395.15	284.55
Proportional change in earnings	-0.06	0.47	-0.07	0.46	-0.1	0.46	-0.12	0.44
Changed occupation	52.08	49.96	57.1	49.51	50.59	50	53.22	49.92
Changed industry	54.87	49.76	59.83	49.04	60.26	48.94	62.52	48.43
Full-time	90.51	29.32	87.05	33.58	80.07	39.95	79.79	40.18
N								
Total	21216		2224		13976		2237	
1981-1982	1009		129		590		74	
1983-1989	5283		554		3098		496	
1990-1991	1721		155		1018		177	
1992-2000	4502		399		3265		506	
2001	1119		106		744		126	
2002-2007	2913		344		2206		317	

2008-2009	1769	229	1092	172
2010-2019	2900	308	1963	369

Table 2. Decomposition of Black-White gap in proportional change in earnings by gender (pre-displacement only)

	Pooled	Men	Women
White Δ prop earnings	-0.0692***	-0.0545***	-0.0930***
	(0.00347)	(0.00447)	(0.00546)
Black Δ prop earnings	-0.0897***	-0.0581***	-0.125***
	(0.0109)	(0.0163)	(0.0141)
Difference (ΔWhite-ΔBlack)	0.0206+	0.00360	0.0322*
	(0.0115)	(0.0169)	(0.0151)
Explained	-0.0558***	-0.0769***	-0.0291***
	(0.00521)	(0.00742)	(0.00822)
Unexplained	0.0763***	0.0805***	0.0613***
	(0.0117)	(0.0172)	(0.0154)
		Explained	
Has kids	-0.00228***	-0.000116	0.00315+
	(0.000586)	(0.000991)	(0.00163)
	(-11.07%)	(-3.22%)	(+9.78%)
General human capital	0.00956***	0.00776***	0.0131***
	(0.00181)	(0.00228)	(0.00315)
	(+46.41%)	(+215.56%)	(+40.68%)
Labor market segment	0.0236***	0.0242***	0.0132***
	(0.00252)	(0.00350)	(0.00363)
	(+114.56%)	(+672.22%)	(+40.99%)
Cumulative labor market advantage	-0.0835***	-0.105***	-0.0578***
	(0.00472)	(0.00724)	(0.00670)
	(-405.34%)	(-2916.67%)	(-179.50%)
Institutional controls	-0.00317	-0.00413	-0.000807
	(0.00305)	(0.00410)	(0.00505)
	(-15.39%)	(-114.72%)	(-2.51%)
N	26274	15834	10440

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors in parentheses. General human capital includes education and potential experience. Labor market segment includes lost job occupation and industry. Cumulative labor market advantage includes lost job tenure and log weekly earnings. Institutional controls include year of job loss fixed effects, years since displacement, and state fixed effects. The percentage in parentheses reflects the percent of the Difference component explained by each group of covariates. All analyses use DWS weights.

Table 3. Decomposition of Black-White gap in proportional change in earnings by gender (pre- and post-displacement)

	Pooled	Men	Women
White Δ prop earnings	-0.0689***	-0.0542***	-0.0928***
	(0.00343)	(0.00444)	(0.00537)
Black Δ prop earnings	-0.0886***	-0.0574***	-0.124***
	(0.0107)	(0.0161)	(0.0137)
Difference (ΔWhite-ΔBlack)	0.0197+	0.00317	0.0311*
	(0.0113)	(0.0167)	(0.0147)
Explained	-0.0485***	-0.0663***	-0.0290**
	(0.00634)	(0.00870)	(0.00976)
Unexplained	0.0681***	0.0695***	0.0600***
	(0.0107)	(0.0162)	(0.0132)
		Explained	
Has kids	-0.00198***	-0.0000939	0.000623
	(0.000542)	(0.000712)	(0.00148)
	(-10.05%)	(-2.96%)	(+2.00%)
General human capital	0.00995***	0.00832***	0.0134***
	(0.00174)	(0.00221)	(0.00299)
	(+50.51%)	(+262.46%)	(+43.09%)
Labor market segment	0.0193***	0.0196***	0.0129***
	(0.00230)	(0.00329)	(0.00332)
	(+97.97%)	(+618.30%)	(+41.48%)
Cumulative labor market advantage	-0.0958***	-0.115***	-0.0656***
	(0.00530)	(0.00789)	(0.00748)
	(-486.29%)	(-3627.76%)	(-210.93%)
Institutional controls	0.000306	-0.00136	0.00310
	(0.00287)	(0.00395)	(0.00455)
	(+1.55%)	(-42.90%)	(+9.97%)
Labor market transitions	0.0197***	0.0221***	0.00672
	(0.00402)	(0.00502)	(0.00608)
	(+100.00%)	(+697.16%)	(+21.61%)
N	25953	15653	10300

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors in parentheses. General human capital includes education and potential experience. Labor market segment includes lost job occupation and industry. Cumulative labor market advantage includes lost job tenure and log weekly earnings. Labor market transitions includes indicators for whether the respondent changed occupations, changed industries, and is employed at a full-time job. Institutional controls include year of job loss fixed effects, years since displacement, and state fixed effects. The percentage in parentheses reflects the percent of the Difference component explained by each group of covariates. All analyses use DWS weights.

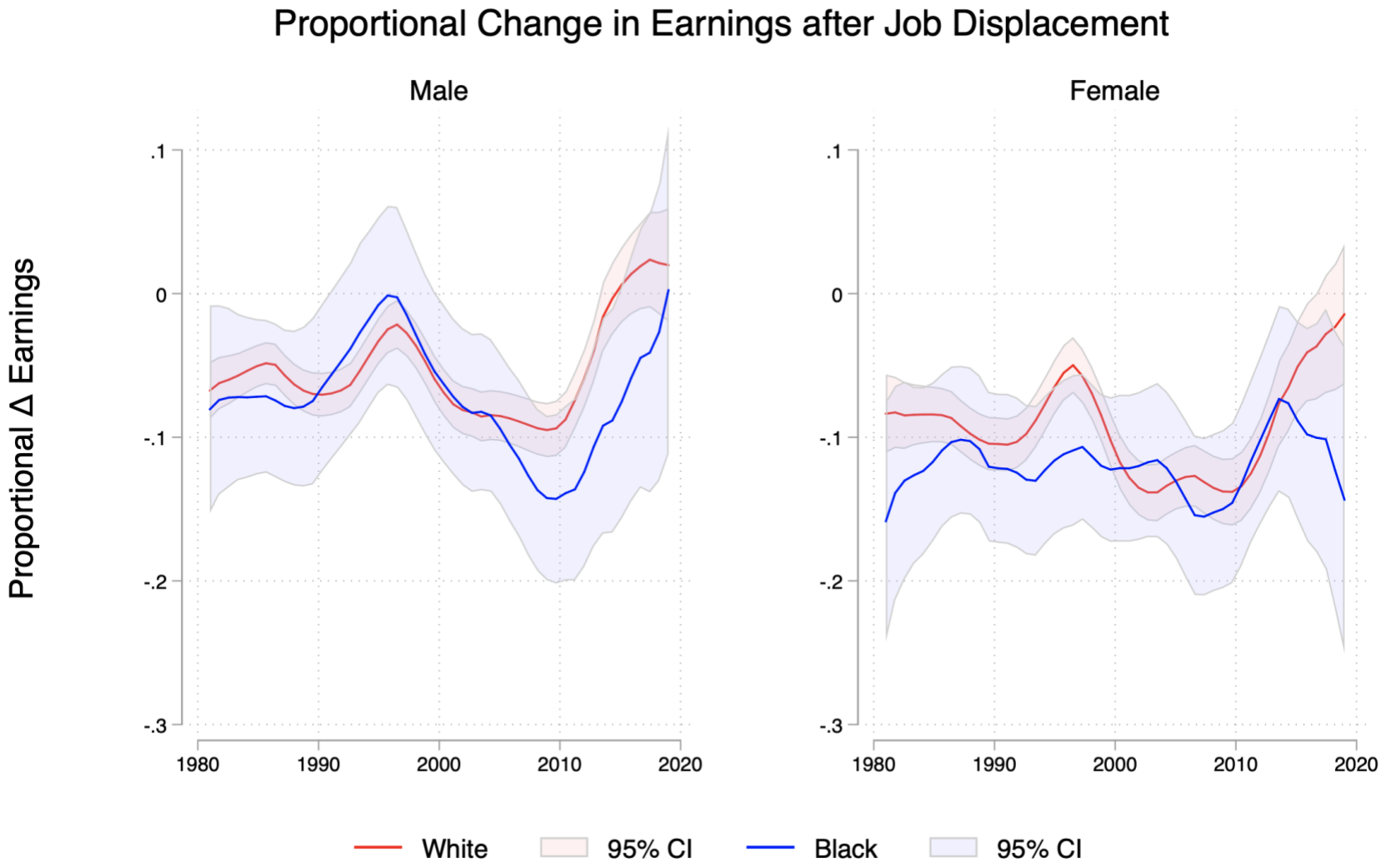
Table 4. OLS and Heckman models of proportional change in earnings

	Men			Women		
	OLS (1)	OLS (2)	Heckman	OLS (1)	OLS (2)	Heckman
1981-1982	-0.0307	-0.101+	-0.255***	-0.195*	-0.0723	-0.0518
	(0.0735)	(0.0566)	(0.0721)	(0.0883)	(0.0972)	(0.0983)
1983-1989	-0.0435	-0.107***	-0.164***	-0.0443	-0.0746**	-0.0669*
	(0.0294)	(0.0264)	(0.0292)	(0.0300)	(0.0280)	(0.0274)
1990-1991	-0.0519	-0.101+	-0.179***	0.0797	0.118+	0.127*
	(0.0625)	(0.0517)	(0.0539)	(0.0639)	(0.0655)	(0.0641)
1992-2000	0.0387	-0.0508	-0.120***	-0.0727**	-0.0941***	-0.0881***
	(0.0373)	(0.0331)	(0.0359)	(0.0268)	(0.0265)	(0.0262)
2001	-0.00746	-0.0866	-0.122+	0.0507	-0.101+	-0.184**
	(0.0692)	(0.0642)	(0.0665)	(0.103)	(0.0558)	(0.0628)
2002-2007	0.0719	-0.0150	-0.0582	-0.0444	-0.0443	-0.0362
	(0.0453)	(0.0443)	(0.0466)	(0.0389)	(0.0363)	(0.0353)
2008-2009	-0.182**	-0.222***	-0.372***	-0.0403	-0.00851	-0.00729
	(0.0559)	(0.0542)	(0.0655)	(0.0572)	(0.0571)	(0.0539)
2010-2019	-0.0295	-0.0935*	-0.0885+	-0.0315	-0.0764+	-0.0768+
	(0.0458)	(0.0464)	(0.0456)	(0.0444)	(0.0405)	(0.0393)
Pooled	-0.00718	-0.0816***	-0.161***	-0.0354*	-0.0609***	-0.0538***
	(0.0174)	(0.0166)	(0.0182)	(0.0161)	(0.0146)	(0.0147)
Institutional controls	X	X	X	X	X	X
Pre-displacement controls		X	X	X	X	X
Selection			X			X

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors in parentheses. Coefficients are the marginal effect of race (reference=white) on change in proportional earnings. OLS (1) includes controls for year of job loss, years since job displacement, and state fixed effects. OLS (2) adds controls for whether the respondent has children, education, potential experience, and lost job occupation, industry, tenure, and log weekly earnings. The Heckman selection equation includes a measure of the number of children under 5 years old in the respondent's household and its interaction with Black. All analyses use DWS weights.

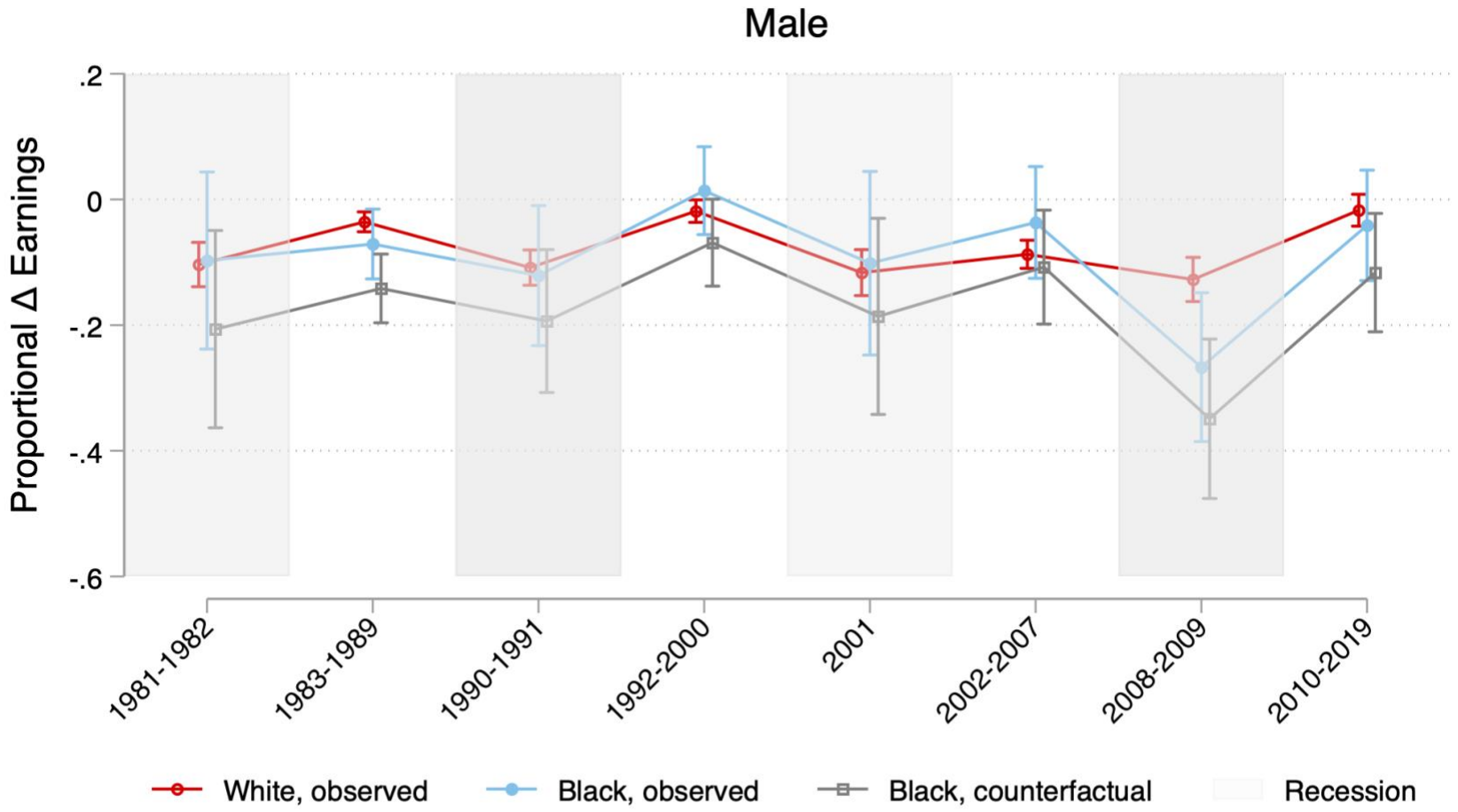
Figures

Figure 1.



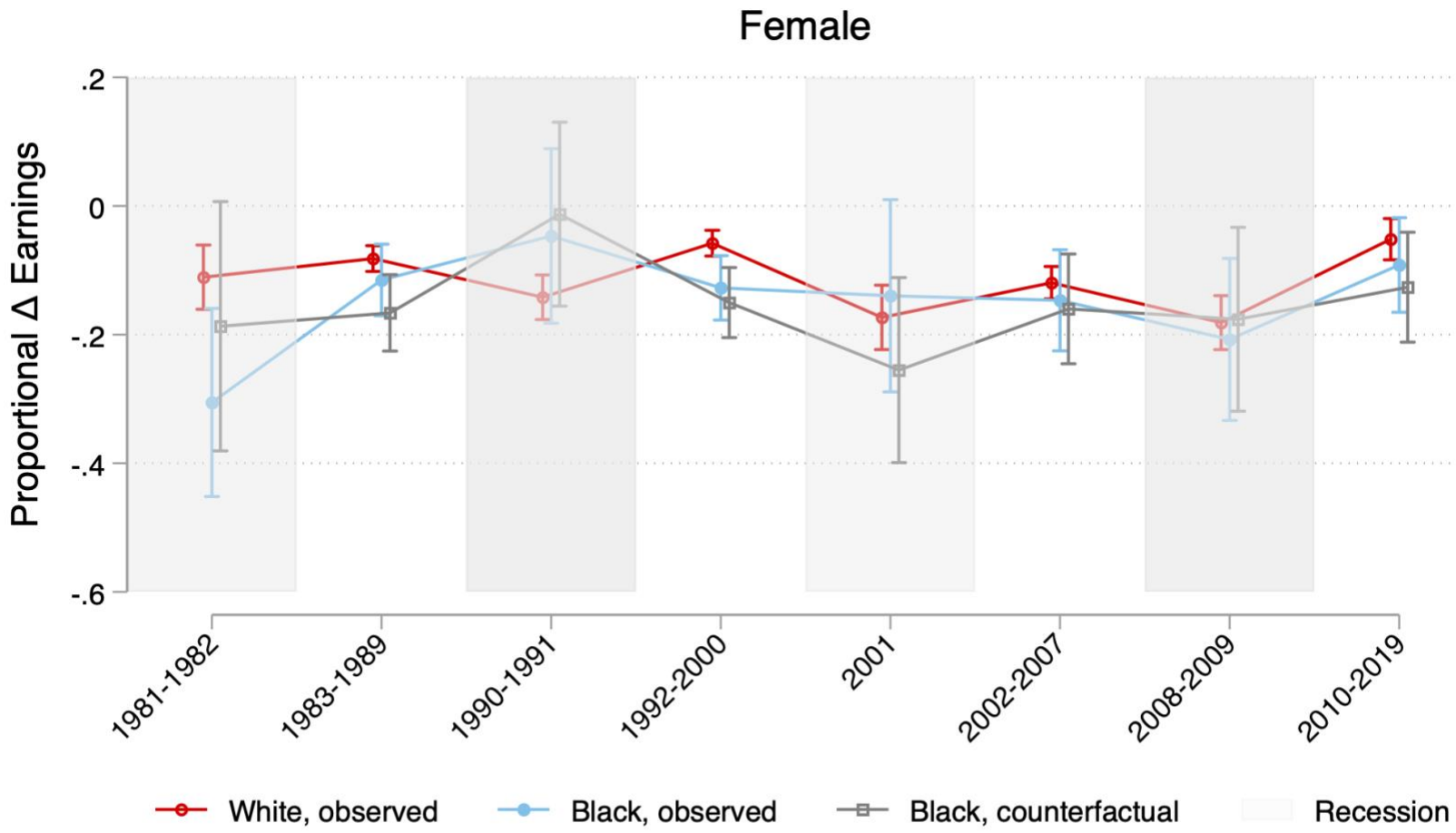
Note: Descriptive kernel-weighted local polynomial plots of proportional change in earnings by race and gender in CPS DWS sample.

Figure 2



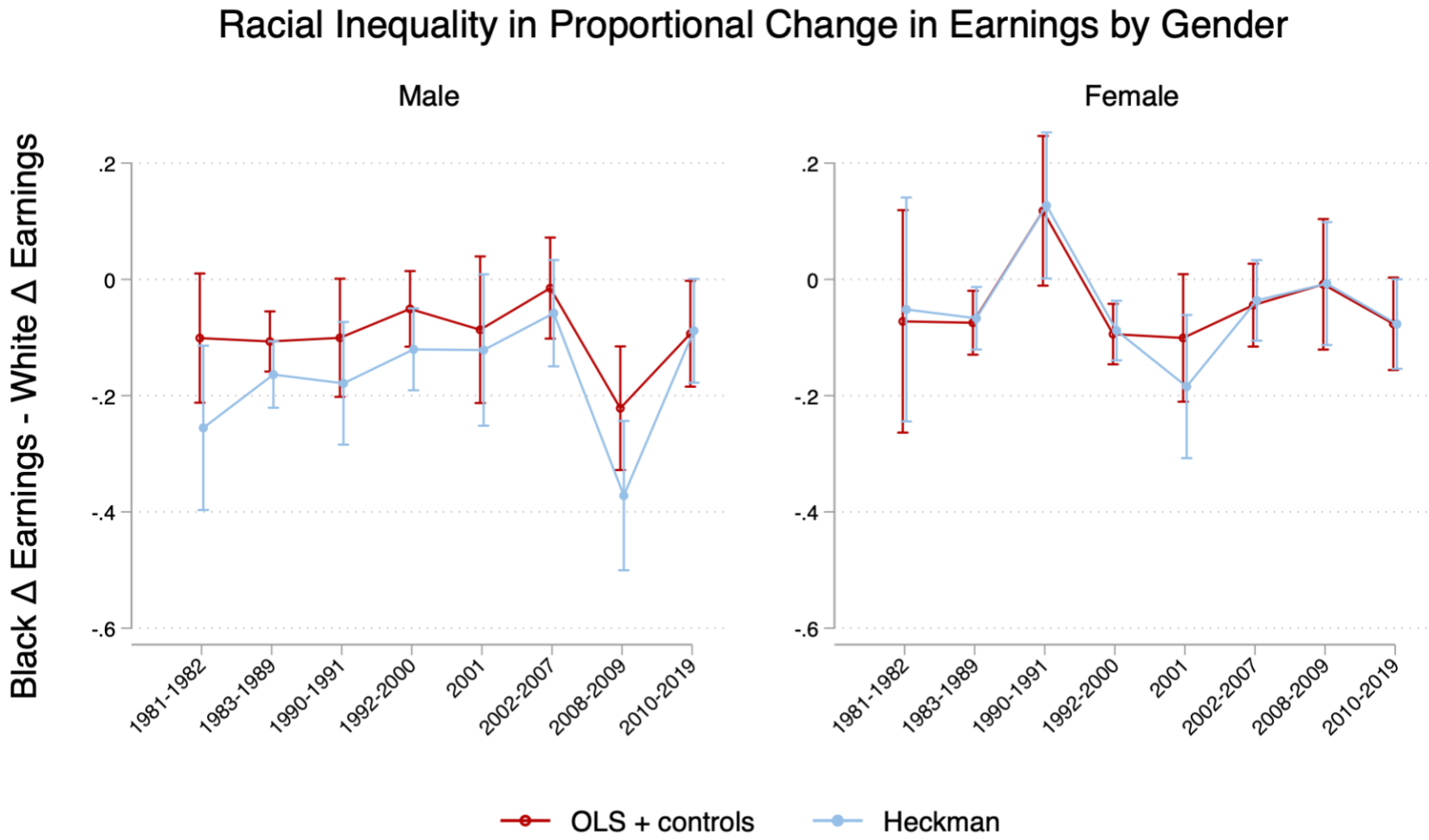
Note: Observed and counterfactual proportional changes in earnings after job displacement from separate KOB decompositions by period and gender. All models are weighted by IPUMS-provided Displaced Workers Supplement weights. "Counterfactual" models reflect the counterfactual obtained from the KOB decomposition where Black respondents follow White respondents' distribution on has kids, education, potential experience, lost job occupation, industry, tenure, and log earnings, year of job loss, years since job loss, and state.

Figure 3



Note: Observed and counterfactual proportional changes in earnings after job displacement from separate KOB decompositions by period and gender. All models are weighted by IPUMS-provided Displaced Workers Supplement weights. "Counterfactual" models reflect the counterfactual obtained from the KOB decomposition where Black respondents follow White respondents' distribution on has kids, education, potential experience, lost job occupation, industry, tenure, and log earnings, year of job loss, years since job loss, and state.

Figure 4



Note: Marginal effects of race obtained from separate regressions by decade and gender. 95% CIs. All models are weighted by IPUMS-provided Displaced Workers Supplement weights. "OLS + controls" models include controls for education, potential experience, lost job occupation, industry, tenure, and log earnings, year of job loss, years since displacement, and state fixed effects. "Heckman" models include all the same controls and model selection with an indicator for number of own children <5 years old and its interaction with Black.

Appendix 1: Alternative Dependent Variables

Proportional earnings changes are preferred to differences in log earnings because the difference in log earnings does not well approximate proportional changes in earnings when changes are large (see e.g. Petersen 1989; Portes and Zhou 1996). Farber (2017:S257) discusses how analyses of changes in wages after job displacement that report the average log wage change can be misleading because proportional wage changes among displaced workers are often large and variable. As a result, the proportional wage changes implied by changes in the average log wage can be much greater in magnitude than the true proportional change in wages. Additionally, these issues can be amplified in a regression framework where the independent variable of interest is a dummy variable (in this case, an indicator for race) (Halvorsen and Palmquist 1980; Blackburn 2007; Farber 2017; Petersen 2017).

To assess the robustness of the main results to alternative specifications of the dependent variable, I reproduce the main analyses on the pooled sample using two alternative dependent variables. First, to complement the Heckman-corrected analyses that examine the how the Black-White gap in proportional changes in earnings is shaped by non-employment, I re-run the analyses with the proportional change in weekly earnings as the outcome, where current-job earnings are coded as $0 for all non-employed respondents. Heckman-corrected analyses are not used for this outcome because coding non-employed respondents as $0 earners means earnings are "observed" for all respondents. Second, as an alternative measure to the proportional change in weekly earnings, I use the difference in the logarithms of weekly earnings at respondents' current job and lost job. Decomposition results are presented in Table A1.1 and earnings regressions in Table A1.2.

Consistent with the main results from the decompositions and earnings regressions, both alternative dependent variables show large Black disadvantage in earnings changes after displacement for men and women. The decompositions still produce large negative explained components, indicating that if Black displaced workers followed White displaced workers' covariate distributions, racial inequality in earnings changes after displacement would be even larger. Similar to the main analyses, these results are driven by large negative explained components attributed to cumulative labor market advantages, and relatively small explained components attributed to general human capital and labor market segment. The earnings regressions for men still show large Black disadvantages on both outcomes that persist after including controls and correcting for selection into reemployment. Earnings regressions for women show Black disadvantage when non-employed respondents are coded as $0 earners. When the outcome is the difference in log weekly earnings, Black disadvantage among women is only significant at $p<0.10$ and is non-significant after applying the Heckman correction. However, point estimates from these analyses of racial inequality among women are fairly close to those presented in Table 4 of the main text.

Table A1.1. Alternative DV decompositions

	Proportional change in earnings (unemployed=$0)		Difference in logarithm of weekly earnings	
	Men	Women	Men	Women
White Δ prop earnings	-0.348***	-0.215***	-0.405***	-0.269***
	(0.00447)	(0.00770)	(0.00535)	(0.0103)
Black Δ prop earnings	-0.468***	-0.247***	-0.506***	-0.265***
	(0.0143)	(0.0302)	(0.0130)	(0.0206)
Difference (ΔWhite-ΔBlack)	0.120***	0.0319	0.101***	-0.00357
	(0.0150)	(0.0312)	(0.0140)	(0.0230)
Explained	-0.0356***	-0.107***	-0.00129	-0.0479***
	(0.00700)	(0.0125)	(0.00730)	(0.0141)
Unexplained	0.155***	0.139***	0.103***	0.0443+
	(0.0155)	(0.0320)	(0.0149)	(0.0242)
	Explained			
Has children	0.000495	-0.000168	0.00652***	0.00519+
	(0.00116)	(0.00144)	(0.00155)	(0.00308)
	(+0.41%)	(-0.53%)	(+6.46%)	(+145.38%)
General human capital	0.00150	0.0101**	0.00748*	0.0166***
	(0.00271)	(0.00384)	(0.00330)	(0.00493)
	(+1.25%)	(+31.66%)	(+7.41%)	(+464.99%)
Labor market segment	0.0265***	0.0325***	0.0162***	0.0222***
	(0.00349)	(0.00574)	(0.00348)	(0.00662)
	(+22.08%)	(+101.88%)	(+16.04%)	(+621.85%)
Cumulative labor market advantage	-0.0677***	-0.147***	-0.0338***	-0.0932***
	(0.00483)	(0.0130)	(0.00368)	(0.0123)
	(-56.42%)	(-460.82%)	(-33.47%)	(-2610.64%)
Institutional controls	0.00361	-0.00321	0.00232	0.00144
	(0.00480)	(0.00753)	(0.00531)	(0.00909)
	(+3.01%)	(-10.06%)	(+2.30%)	(+40.34%)
N	23440	15834	16213	10440

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors. General human capital includes education and potential experience. Labor market segment includes lost job occupation and industry. Cumulative labor market advantage includes lost job tenure and log weekly earnings. Institutional controls include year of job loss fixed effects, years since displacement, and state fixed effects. The percentage in parentheses reflects the percent of the Difference component explained by each group of covariates. All analyses use DWS weights.

Table A1.2. Alternative DV earnings regressions

	Proportional change in earnings (unemployed=$0)		Difference in logarithm of weekly earnings at current and lost jobs		
	OLS (1)	OLS (2)	OLS (1)	OLS (2)	Heckman
Male	-0.120***	-0.154***	-0.0319	-0.143***	-0.146***
	(0.0152)	(0.0150)	(0.0307)	(0.0313)	(0.0312)
Female	-0.101***	-0.0990***	0.00357	-0.0440+	0.0449
	(0.0141)	(0.0143)	(0.0233)	(0.0230)	(0.0289)

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors; pooled sample. Coefficients are the marginal effect of race (reference=white) on change in proportional earnings. OLS (1) includes controls for year of job loss, years since job displacement, and state fixed effects. OLS (2) adds controls for whether the respondent has children, education, potential experience, and lost job occupation, industry, tenure, and log weekly earnings. The Heckman selection equation includes a measure of the number of children under 5 years old in the respondent's household and its interaction with Black. All analyses use DWS weights.

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Appendix 2: Heckman Correction

The Heckman Correction

Analyses in this paper are concerned with identifying the effect of race (x) on the proportional change in real weekly earnings (y) among displaced workers. One important source of endogeneity to address in analyses of the effect of race on earnings is selection bias. Selection bias refers to censorship of the dependent variable due to nonrandom selection into the sample. Nonrandom selection into the sample can be due to decisions made by the analyst or by the unit of observation. In this case, I am concerned with what Heckman (1979) refers to as bias from "self-selection" of individuals into the sample of workers with observable earnings after job displacement vis-à-vis their decision to become re-employed. I am interested in estimating earnings losses for all displaced workers. But selection into reemployment is nonrandom. It is very likely that individuals who become reemployed after job displacement differ meaningfully from individuals who remain unemployed. They may differ, for example, in earnings potential, reservation wages, or available job opportunities. Therefore, standard OLS estimates of the association between race and change in earnings after job displacement likely do not generalize to the population of displaced workers because they only estimate that association for the subset of displaced workers who find new jobs. The effect of race on earnings changes after job displacement for individuals who remain unemployed likely differs meaningfully from these estimates.

The Heckman correction (Heckman 1979) is a statistical procedure designed to correct for selection bias and estimate the effect of x on y for the entire population of interest – in this case, for all displaced workers, regardless of their current employment status. The procedure uses

a control function approach. We are interested in modeling Y_i^* (proportional change in weekly earnings for *all* displaced workers) as a function of covariates X_i:

$$Y_i^* = X_i\beta + \varepsilon_i$$

However, Y_i^* is only observed among reemployed displaced workers (E=1):

$$Y_i = \begin{cases} Y_i^* \text{ if } E = 1 \\ \cdot \text{ if } E = 0 \end{cases}$$

Selection into reemployment can be modeled using a probit regression:

$$P(E_i = 1|Z) = \Phi(z_i\gamma)$$

where Z is a set of explanatory variables that predict selection into reemployment. Under the assumption that the error terms are jointly normal, Y_i can be modeled as:

$$(Y_i|E = 1) = X_i\beta + \rho\sigma_\varepsilon\lambda(Z_\lambda)$$

where ρ is the correlation between the error terms the equations modeling workers' likelihood of finding reemployment and workers' earnings and λ is the inverse Mills ratio evaluated at Z_λ. Including the inverse Mills ratio λ estimated from the selection equation in the earnings model allows analysts to estimate the effect of X on Y net of selection bias if selection variables Z are valid instruments. Therefore, Z must 1) be a strong predictor of selection E (relevance) and 2) have no direct effect on the outcome Y (exclusion restriction).

Selection Variables Used in The Main Analyses

I use the number of children in the respondent's household under 5 years of age and its interaction with an indicator for race as the instrument Z. Measures of household composition, and particularly the number of young children in a household, are commonly used as selection variables in Heckman models (e.g. Heckman 1974; Smith 1979; Hersch 1991; Buchinsky 1998), including in the literature on displaced workers (e.g. Podgursky and Swaim 1987). The intuition

underlying the relevance of household composition for selection into employment is that the presence of young children in the household significantly affects workers' opportunity cost of seeking employment. On the one hand, children require additional household resources, so reemployment may be more urgent for individuals with more children. On the other hand, young children require caregiving, which can be costly if parents – and particularly mothers – choose to find new employment. These costs may vary by gender and race, but these concerns are alleviated by running separate regressions by gender and including interactions between the number of young children and race in the selection equation.

To assess the instrument's relevance, I present coefficient estimates on these variables from the selection equations in Table A2.1. Note that the selection equations also include all independent variables used in the earnings equation. Athrho is the inverse hyperbolic tangent transformation of the correlation between the error terms in the selection and earnings equations, and significant values indicate that there is nonrandom selection into the sample. Significant associations between these selection variables and employment suggest the variable is a relevant instrument in predicting employment.

A2.1. Coefficients on selection variables from Heckman selection equations

	1980-1982	1983-1989	1990-1991	1992-2000	2001	2002-2007	2008-2009	2010-2019	Pooled
Men									
Number of children < 5 (ref=0)									
1	0.152	-0.109+	0.102	-0.0582	0.00719	-0.00782	0.173**	-0.241*	-0.0350
	(0.134)	(0.0566)	(0.102)	(0.0638)	(0.160)	(0.0825)	(0.0634)	(0.114)	(0.0297)
2	-0.113	-0.134	-0.132	0.0953	0.0218	0.306*	-0.0255	0.00476	0.0625
	(0.170)	(0.0867)	(0.166)	(0.107)	(0.134)	(0.143)	(0.122)	(0.192)	(0.0538)
3	-0.411	-0.130	0.631	0.382+	-1.247***	-0.0289	-0.0741	-0.903+	0.00986
	(0.395)	(0.220)	(0.717)	(0.214)	(0.262)	(0.293)	(0.261)	(0.533)	(0.122)
4+	-7.077***	0.815	3.585***	2.733***	-9.647***	0	0	5.773***	0.389
	(0.453)	(0.593)	(0.767)	(0.258)	(0.362)	(.)	(.)	(0.385)	(0.410)
1 X Black	-0.447	0.0716	-0.809**	0.153	-0.386***	-0.255	-0.0108	0.376	0.0511
	(0.315)	(0.157)	(0.273)	(0.180)	(0.0883)	(0.208)	(0.116)	(0.289)	(0.0825)
2 X Black	-0.264	-0.184	-0.749+	-0.111	-1.376+	-0.636*	0.231	-1.823*	-0.357**
	(0.575)	(0.212)	(0.417)	(0.238)	(0.729)	(0.304)	(0.187)	(0.754)	(0.130)
3 X Black	5.288***	-0.486	0	-7.669***	-6.635***	-7.404***	-7.547***	-0.933	-0.607+
	(1.435)	(0.630)	(.)	(0.334)	(0.427)	(0.388)	(0.415)	(1.040)	(0.358)
4+ X Black	0	0	0	-1.085***	0	0	0	0	5.905
	(.)	(.)	(.)	(0.250)	(.)	(.)	(.)	(.)	(.)
Artrho	1.368***	1.245***	1.404***	1.610***	15.33***	1.647***	14.98***	-0.108	1.428***
	(0.326)	(0.0636)	(0.203)	(0.0764)	(0.0462)	(0.110)	(0.0323)	(0.0703)	(0.0316)
Women									
Number of children < 5 (ref=0)									
1	-0.905***	-0.516***	-0.781***	-0.474***	-0.452**	-0.491***	-0.469**	-0.503***	-0.536***
	(0.222)	(0.0963)	(0.161)	(0.0926)	(0.143)	(0.129)	(0.182)	(0.142)	(0.0463)
2	-1.255*	-0.798***	-1.274***	-0.791***	-0.595**	-0.666**	-0.344	-0.803**	-0.801***
	(0.495)	(0.169)	(0.313)	(0.161)	(0.220)	(0.208)	(0.289)	(0.265)	(0.0826)
3	0	-0.799	-6.616***	-0.770	-11.44***	0.689	-6.437***	-0.337	-0.794**
	(.)	(0.755)	(0.347)	(0.470)	(0.755)	(0.652)	(0.396)	(0.817)	(0.286)
4+	0	0	0	0	0	-8.413***	0	6.200***	0.361
	(.)	(.)	(.)	(.)	(.)	(0.363)	(.)	(0.364)	(0.841)
1 X Black	0.534	0.183	0.631+	-0.0284	0.928**	0.192	-0.764+	0.252	0.152
	(0.536)	(0.182)	(0.359)	(0.192)	(0.317)	(0.240)	(0.426)	(0.262)	(0.0944)
2 X Black	-5.338***	0.407	1.183*	0.297	1.033+	-0.234	0.473	0.114	0.340*
	(0.657)	(0.316)	(0.552)	(0.329)	(0.569)	(0.410)	(0.519)	(0.503)	(0.167)
3 X Black	0	1.210	0.512	-6.473***	18.00	-1.984*	-0.737	0	-0.0105
	(.)	(0.997)	(0.417)	(0.539)	(.)	(0.885)	(0.569)	(.)	(0.490)
4+ X Black	0	0	0	0	0	14.99***	0	0	6.853***
	(.)	(.)	(.)	(.)	(.)	(0.618)	(.)	(.)	(0.875)
Artrho	-0.189	-0.166**	-0.126	-0.152**	8.493***	-0.140+	-0.0742	-0.131	-0.160***
	(0.353)	(0.0607)	(0.153)	(0.0583)	(0.0559)	(0.0759)	(0.247)	(0.0826)	(0.0288)

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001. Standard errors in parentheses. Cells report coefficients from the first stage of the Heckman corrected models presented in Table 4.

The exclusion restriction requires that the instrument only affects the outcome – proportional changes in earnings – through selection into employment. This assumption cannot be directly tested empirically. I argue that it is unlikely, albeit still possible, that these selection variables affect proportional earnings changes net of individual characteristics. First, when seeking reemployment, jobseekers' parenthood status is likely unknown by the employer unless the jobseeker chooses to disclose. Second, there is some evidence of fatherhood wage premia and

motherhood wage penalties (Budig and England 2001; Yu and Hara 2021). However, an indicator for if the respondent has children in their household is already included as a control variable in both the selection equation and the earnings regression, allowing parenthood status to affect selection into employment and employers' wage offers. Only variation in employment status from the number of young children in the household is used to address nonrandom selection into reemployment. As an indirect test of whether the exclusion restriction might hold, I regress pre-displacement log weekly earnings on the selection variables and all other controls from the earnings regressions in the pooled sample (Table A2.2). There is very little evidence that the number of young children in the household affects earnings, net of other controls. There is only a significant relationship between number of young children and pre-displacement earnings among women with 4 or more children under 5 years of age (N=4, 0.01% of the sample).

A2.2. Coefficients from log weekly earnings (lost job) regressed on selection variables and controls

	Pooled Sample	
	Men	Women
Number of children < 5 (ref=0)		
1	0.00622	0.0232
	(0.0135)	(0.0152)
2	-0.00217	-0.00757
	(0.0211)	(0.0257)
3	0.0199	-0.108
	(0.0484)	(0.0765)
4+	0.0946	-0.148*
	(0.141)	(0.0587)
1 X Black	-0.00202	-0.0299
	(0.0346)	(0.0421)
2 X Black	-0.00787	0.00247
	(0.0515)	(0.0416)
3 X Black	-0.163	0.0195
	(0.102)	(0.142)
4+ X Black	0.109	0.464***
	(0.151)	(0.0827)

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001. Standard errors in parentheses. Cells report coefficients from regressions of log weekly earnings (lost job) on black, number of children less than 5, their interaction, and all pre-displacement controls used in the Table 4 earnings regressions.

An Alternative Specification

As a further robustness check, I re-run all Heckman-corrected analyses using a different set of instruments in the selection equation. Following Neal's (1995) analysis of displaced workers, I model selection using a measure of local industry-level total employment. He argues that total employment affects search costs for jobseekers because it reflects the availability of open vacancies. He further argues that while employment growth rates might reflect changes in product demand or technology shocks and therefore may affect wage offers, the total

employment itself should not directly affect wage offers. In these analyses, I use the state-year level logarithm of total employment in the pre-displacement industry to model selection. Table A2.3 presents results from these Heckman-corrected analyses. Results are nearly identical to the Heckman-corrected analyses presented in Table 4 of the main text, with the exception of results from 1980-1982. Unstable results for this period are perhaps unsurprising because of the small sample sizes.

Table A2.3. Heckman models with alternative selection variables

	Men	Women
1980-1982	-0.0730	-0.304**
	(0.0610)	(0.107)
1983-1989	-0.164***	-0.0729**
	(0.0291)	(0.0275)
1990-1991	-0.181***	0.0366
	(0.0538)	(0.0629)
1992-2000	-0.123***	-0.134***
	(0.0359)	(0.0301)
2001	-0.124+	-0.0969+
	(0.0684)	(0.0548)
2002-2007	-0.0601	-0.0437
	(0.0466)	(0.0357)
2008-2009	-0.385***	-0.00473
	(0.0759)	(0.0540)
2010-2019	-0.0880+	-0.0767*
	(0.0458)	(0.0391)
Pooled	-0.161***	-0.0587***
	(0.0182)	(0.0147)

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors. Coefficients are the marginal effect of race (reference=white) on change in proportional earnings. Controls include whether the respondent has children, education, potential experience, and lost job occupation, industry, tenure, and log weekly earnings, year of job loss, years since job displacement, and state fixed effects. The Heckman selection equation includes the logarithm of state-year-industry total employment and its interaction with Black. All analyses use DWS weights.

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Appendix 3. Racial Inequalities in Reemployment and Job Search

Hypothesis 3 predicts that racial differences in patterns of reemployment after job displacement upwardly bias estimates of Black workers' post-displacement earnings and bias estimates of racial inequalities in the effect of displacement on earnings towards zero. In the presence of statistically discriminating employers, White workers will be hired over otherwise similarly qualified Black workers, and these hiring inequalities will be especially pronounced among workers with low qualifications – low education, experience, tenure, skills, etc. As a result, less qualified White workers will be more likely to find reemployment while the remaining pool of unemployed workers will have a disproportionate number of lower-skill Black workers. These low skill workers are expected to have large earnings losses upon reemployment. Higher rates of reemployment among low-skill White workers will drive down estimates of earnings losses for displaced White workers, while low rates of reemployment for low-skill Black workers will bias upwards estimates of earnings losses for displaced Black workers. In what follows I test the claims that 1) Black displaced workers are disadvantaged in reemployment and job search relative to similar White displaced workers and 2) this bias is largest among less qualified workers. While findings consistent with these propositions are consistent with statistical discrimination, the analyses presented hereafter are only descriptive. Observed associations may also be driven by unobservable differences between workers, employers, or both.

Methods

Reemployment

I use linear probability models to examine how Black and White displaced workers differ in their probability of being reemployed at the survey date. I run separate analyses for men and women for each period. I specify linear probability models of being employed as:

$$P(\text{Emp}_i) = \beta_0 + \beta_1(\text{Black}_i) + X\gamma + \epsilon_i \quad (4)$$

Emp_i is a binary indicator for whether the respondent is employed at the time of survey. X represents a vector of control variables including whether the respondent has children, education, potential experience, tenure at lost job, occupation and industry of lost job, year of job displacement, years since job displacement, and state fixed effects.

Job search

Racial inequalities in job search for men and women are modeled using Cox proportional hazards models specified as follows:

$$h(t; z) = h_0(t)exp(\delta\text{Black}_i + X\beta) \quad (5)$$

where time is defined in weeks of unemployment after job displacement and failure is defined as obtaining any new job. δ describes the Black-White difference in the expected logarithm of the hazard of becoming reemployed. Exponentiated coefficients are reported and describe the ratio of Black and White hazards of reemployment. X represents the same vector of control variables as above including individual characteristics, lost job characteristics, and state and year of job displacement fixed effects.

Racial inequalities in reemployment by human capital

Last, I assess whether racial inequalities in selection into reemployment widen among less skilled workers. I use a linear probability model similar to Equation (1), but with added interactions between race and indicators of human capital:

$$P(\text{Emp}_i) = \beta_0 + \beta_1(\text{Black}_i) + \beta_2(\text{HC}_i) + \beta_3(\text{Black}_i \text{ X } \text{HC}_i) + X\gamma + \epsilon_i \quad (6)$$

where HC_i is one of four continuous measures of human capital: years of education, potential experience, years tenure at lost job, and logarithm of weekly earnings at the lost job. X is a vector of covariates including the three other measures of human capital, an indicator for own children in the household, occupation and industry of the lost job, year of job loss fixed effects, years since displacement, and state fixed effects.

Results

Evidence that Black workers are less likely to find work than otherwise similar White workers would be consistent with racial disadvantage in labor queues. First, I assess whether Black displaced workers are less likely to find reemployment than similar White displaced workers. Tables A3.1 and A3.2 present estimates of racial inequalities in the probability of reemployment and the duration of job search, respectively, among male and female displaced workers. Black men and women are consistently disadvantaged in job search compared to their White counterparts. Reemployment rates for Black men and women are typically 10 to 15 percentage points lower than for White men and women. Racial inequalities in reemployment rates were also much larger for men and women during recessions in the early 1980s and 1990s and among men during the Great Recession.

A3.1. Re-employment rates by race and gender

	Unadjusted			Adjusted			
	White	Black	Difference	White	Black	Difference	N
Men							
1980-1982	0.665***	0.429***	-0.237***	0.673***	0.383***	-0.290***	1138
	(0.0167)	(0.0481)	(0.0509)	(0.0156)	(0.0436)	(0.0470)	
1983-1989	0.671***	0.532***	-0.139***	0.666***	0.570***	-0.0957***	5837
	(0.00719)	(0.0230)	(0.0241)	(0.00671)	(0.0217)	(0.0231)	
1990-1991	0.618***	0.448***	-0.170***	0.615***	0.473***	-0.142**	1876
	(0.0130)	(0.0455)	(0.0473)	(0.0122)	(0.0408)	(0.0434)	
1992-2000	0.770***	0.653***	-0.117***	0.769***	0.661***	-0.108***	4901
	(0.00703)	(0.0255)	(0.0264)	(0.00689)	(0.0245)	(0.0260)	
2001	0.689***	0.626***	-0.0631	0.689***	0.626***	-0.0635	1225
	(0.0156)	(0.0503)	(0.0527)	(0.0152)	(0.0502)	(0.0536)	
2002-2007	0.727***	0.649***	-0.0777*	0.721***	0.681***	-0.0399	3257
	(0.00955)	(0.0288)	(0.0304)	(0.00947)	(0.0291)	(0.0315)	
2008-2009	0.556***	0.361***	-0.194***	0.552***	0.386***	-0.165***	1998
	(0.0133)	(0.0342)	(0.0367)	(0.0128)	(0.0333)	(0.0366)	
2010-2019	0.705***	0.613***	-0.0922**	0.703***	0.625***	-0.0780*	3208
	(0.00963)	(0.0316)	(0.0330)	(0.00929)	(0.0301)	(0.0320)	
Women							
1980-1982	0.544***	0.304***	-0.240***	0.542***	0.318***	-0.224***	664
	(0.0226)	(0.0625)	(0.0665)	(0.0214)	(0.0612)	(0.0668)	
1983-1989	0.643***	0.535***	-0.108***	0.640***	0.551***	-0.0885***	3594
	(0.00954)	(0.0244)	(0.0262)	(0.00923)	(0.0231)	(0.0256)	
1990-1991	0.625***	0.472***	-0.153***	0.620***	0.498***	-0.122**	1195
	(0.0168)	(0.0426)	(0.0458)	(0.0164)	(0.0405)	(0.0449)	
1992-2000	0.724***	0.634***	-0.0894***	0.721***	0.649***	-0.0719**	3771
	(0.00869)	(0.0234)	(0.0249)	(0.00858)	(0.0232)	(0.0253)	
2001	0.654***	0.543***	-0.111*	0.653***	0.548***	-0.105*	870
	(0.0202)	(0.0484)	(0.0525)	(0.0205)	(0.0447)	(0.0516)	
2002-2007	0.686***	0.563***	-0.123***	0.682***	0.580***	-0.102**	2523
	(0.0113)	(0.0310)	(0.0330)	(0.0113)	(0.0311)	(0.0340)	
2008-2009	0.549***	0.478***	-0.0713	0.546***	0.494***	-0.0522	1264
	(0.0170)	(0.0413)	(0.0447)	(0.0167)	(0.0428)	(0.0473)	
2010-2019	0.657***	0.618***	-0.0393	0.648***	0.655***	0.00676	2332
	(0.0122)	(0.0279)	(0.0304)	(0.0118)	(0.0279)	(0.0314)	

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors. Coefficients are the marginal effect of race (reference=white) on employment status obtained from linear probability models. Unadjusted models have no controls. Adjusted models control for whether the respondent has children, educational attainment, potential experience, lost job occupation, industry, tenure, and log weekly earnings, and year of job loss, years since displacement, and state fixed effects. All models use DWS weights.

Inequalities in job search duration show similar patterns. Raw differences in number of weeks unemployed and in estimates from Cox proportional hazards models are also consistent with racialized labor queues, indicating that racial inequalities in job search among men and

women persist even after adjusting for differences on observables. For both men and women, large racial inequalities in job search duration attenuated somewhat between the 1980s and mid-2000s. Among men, these inequalities grew during the Great Recession while inequality among women continued to decline. Strong and persistent inequalities in reemployment among similar Black and White workers are consistent with selection patterns that would underestimate the disproportionate negative effect of job displacement on Black workers' earnings.

A3.2. Racial inequality in time to reemployment by gender

	Men					Women				
	Avg. Weeks Unemployed (White)	Avg. Weeks Unemployed (Black)	Cox PH (1)	Cox PH (2)	N	Avg. Weeks Unemployed (White)	Avg. Weeks Unemployed (Black)	Cox PH (1)	Cox PH (2)	N
1980-1982	39.41	53.2	0.718**	0.699**	817	39.69	63.37	0.625***	0.564***	460
			(0.0726)	(0.0802)				(0.0863)	(0.0906)	
1983-1989	21.44	29.04	0.723***	0.726***	4439	25.64	34.03	0.745***	0.799**	2674
			(0.0387)	(0.0419)				(0.0462)	(0.0547)	
1990-1991	56.19	59.26	0.771*	0.744*	1540	58.07	61.75	0.818+	0.734*	942
			(0.0832)	(0.0883)				(0.0921)	(0.0924)	
1992-2000	28.55	33.19	0.817***	0.796***	5219	32.75	35.15	0.884*	0.882*	3845
			(0.0415)	(0.0435)				(0.0449)	(0.0491)	
2001	28.09	33.43	0.835+	0.771*	1280	30.34	34.93	0.829+	0.854	868
			(0.0862)	(0.0898)				(0.0859)	(0.102)	
2002-2007	28.11	34.78	0.812***	0.824**	3596	31.63	45.12	0.701***	0.700***	2631
			(0.0447)	(0.0504)				(0.0452)	(0.0508)	
2008-2009	44.64	53.46	0.622***	0.628***	2288	45.26	51.98	0.847+	0.892	1420
			(0.0535)	(0.0576)				(0.0787)	(0.0921)	
2010-2019	30.75	42.41	0.729***	0.702***	4084	33.64	37.02	0.856**	0.915	2924
			(0.0412)	(0.0434)				(0.0483)	(0.0567)	
Controls			No	Yes				No	Yes	

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors. Exponentiated coefficients on indicator variable for race (reference=white) obtained from Cox proportional hazards models. Model (1) includes no controls. Model (2) controls include whether the respondent has children, educational attainment, potential experience, lost job occupation, industry, tenure, and log weekly earnings, and year of job loss, years since displacement, and state fixed effects.

Last, I assess whether, consistent with statistical discrimination, racial inequalities in reemployment are greater among workers with weaker signals of human capital. Table A3.3 presents results from linear probability models of employment status regressed on race, indicators of human capital, and their interaction. For both men and women, racial inequality in the probability of reemployment increases as human capital decreases. Figures A3.1 and A3.2 plot predicted probabilities of reemployment by race and human capital obtained from these regressions at the 10^{th}, 25^{th}, 50^{th}, 75^{th}, and 90^{th} percentile of each human capital variable. For

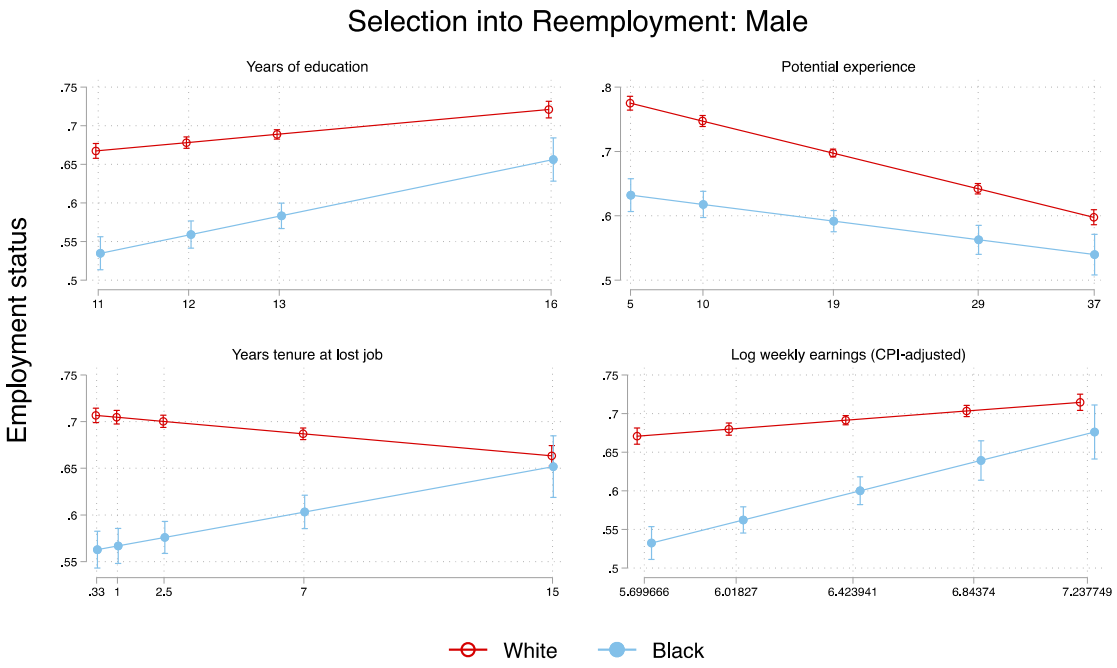
years of education, tenure, and lost job weekly earnings, we see that Black workers' probability of reemployment varies much more strongly with these indicators of human capital and diminishes significantly as human capital decreases. White workers probability of reemployment is much less sensitive to their own human capital. These patterns are broadly consistent with statistical discrimination by employers: employers are less likely to hire Black workers than White workers. Among workers with strong signals of human capital (high levels of education, experience, tenure, and previous earnings), racial inequality in employment is low. However, as that signal weakens, racial inequality in reemployment is dramatically amplified. Of course, while these results are consistent with statistical discrimination, we cannot rule out the possibility that these patterns are driven by racial differences in search effort, access to professional networks, or other unobservables.

Table A3.3. Regressions of employment status on race and human capital

	Men	Women
Black X		
Years of education	0.0135***	0.0137**
	(0.00381)	(0.00459)
Potential experience	0.00265***	0.00309***
	(0.000771)	(0.000856)
Tenure (lost job)	0.00902***	0.00868***
	(0.00141)	(0.00151)
Log weekly earnings (lost job)	0.0649***	0.0436**
	(0.0150)	(0.0164)

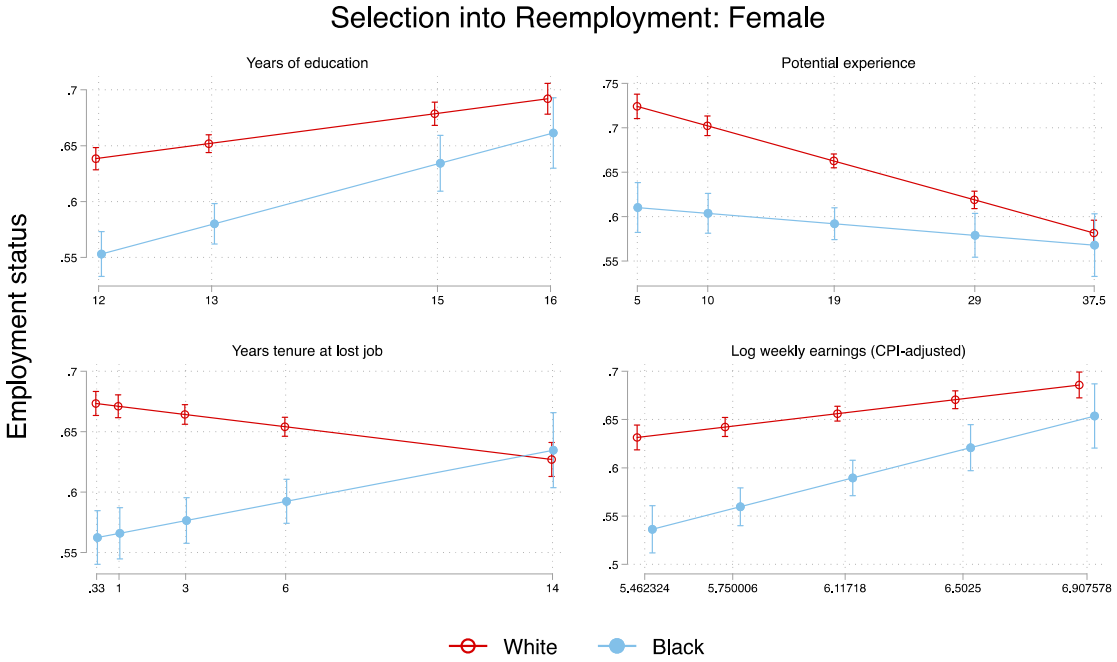
Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors; all analyses use DWS weights. Coefficients from regressions of employment regressed on one of four measures of human capital (years of education, potential experience, tenure, log weekly earnings at lost job) , Black, their interaction, and controls including has kids, each other measure of human capital , lost job occupation, industry, year of job loss, years since displacement, and state fixed effects.

Figure A3. 1 Selection into reemployment by human capital and race (male)



Note: Predicted probability of employment by each human capital variable and race obtained from separate gender-specific linear models of employment regressed on race, employment status, their interaction, each other outcome of interest, an indicator for own children in household, occupation and industry of lost job, year of job loss fixed effects, years since job loss, and state fixed effects. All regressions use DWS weights.

Figure A3. 2 Selection into reemployment by human capital and race (female)



Note: Predicted probability of employment by each human capital variable and race obtained from separate gender-specific linear models of employment regressed on race, employment status, their interaction, each other outcome of interest, an indicator for own children in household, occupation and industry of lost job, year of job loss fixed effects, years since job loss, and state fixed effects. All regressions use DWS weights.

Appendix 4: Full Decomposition Results

Appendix 4 contains the full results of the decomposition analyses presented in the main text, including both the explained and unexplained components of the decompositions. Separate decompositions are presented for the full sample, for men and women separately, and for men and women further disaggregated by period.

Table A4.1. Decomposition of Black-White gap in proportional change in earnings by gender (pre-displacement only; pooled sample)

	Pooled	Men	Women
White Δ prop earnings	-0.0692***	-0.0545***	-0.0930***
	(0.00347)	(0.00447)	(0.00546)
Black Δ prop earnings	-0.0897***	-0.0581***	-0.125***
	(0.0109)	(0.0163)	(0.0141)
Difference (ΔWhite-ΔBlack)	0.0206+	0.00360	0.0322*
	(0.0115)	(0.0169)	(0.0151)
Explained	-0.0558***	-0.0769***	-0.0291***
	(0.00521)	(0.00742)	(0.00822)
Unexplained	0.0763***	0.0805***	0.0613***
	(0.0117)	(0.0172)	(0.0154)
		Explained	
Has kids	-0.00228***	-0.000116	0.00315+
	(0.000586)	(0.000991)	(0.00163)
	(-11.07%)	(-3.22%)	(+9.78%)
General human capital	0.00956***	0.00776***	0.0131***
	(0.00181)	(0.00228)	(0.00315)
	(+46.41%)	(+215.56%)	(+40.68%)
Labor market segment	0.0236***	0.0242***	0.0132***
	(0.00252)	(0.00350)	(0.00363)
	(+114.56%)	(+672.22%)	(+40.99%)
Cumulative labor market advantage	-0.0835***	-0.105***	-0.0578***
	(0.00472)	(0.00724)	(0.00670)
	(-405.34%)	(-2916.67%)	(-179.50%)
Institutional controls	-0.00317	-0.00413	-0.000807
	(0.00305)	(0.00410)	(0.00505)
	(-15.39%)	(-114.72%)	(-2.51%)
		Unexplained	
Has kids	0.00213+	-0.000367	-0.000457
	(0.00129)	(0.000601)	(0.000705)
	(+10.34%)	(-10.19%)	(-1.42%)
General human capital	-0.00693	-0.0151	-0.00884
	(0.0240)	(0.0334)	(0.0312)
	(-33.64%)	(-419.44%)	(-27.45%)
Labor market segment	0.0172	-0.00222	-0.00486
	(0.0169)	(0.0247)	(0.0262)
	(+83.50%)	(-61.67%)	(-15.09%)
Cumulative labor market advantage	0.186	0.0753	0.129
	(0.179)	(0.299)	(0.299)
	(+902.91%)	(+2091.67%)	(+400.62%)
Institutional controls	0.00653	-0.0130	0.00535
	(0.0294)	(0.0439)	(0.0410)
	(+31.70%)	(-361.11%)	(+16.61%)
Constant	-0.129	0.0359	-0.0284
	(0.182)	(0.301)	(0.305)
	(-626.21%)	(+997.22%)	(-88.20%)
N	26274	15834	10440

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors. General human capital includes education and potential experience. Labor market segment includes lost job occupation and industry. Cumulative labor market advantage includes lost job tenure and log weekly earnings. Institutional controls include year of job loss fixed effects, years since displacement, and state fixed effects. The percentage in parentheses reflects the percent of the Difference component explained by each group of covariates. All analyses use DWS weights.

Table A4.2. Decomposition of Black-White gap in proportional change in earnings by gender (pre- and post-displacement; pooled sample)

	Pooled	Men	Women
White Δ prop earnings	-0.0689***	-0.0542***	-0.0928***
	(0.00343)	(0.00444)	(0.00537)
Black Δ prop earnings	-0.0886***	-0.0574***	-0.124***
	(0.0107)	(0.0161)	(0.0137)
Difference (ΔWhite-ΔBlack)	0.0197+	0.00317	0.0311*
	(0.0113)	(0.0167)	(0.0147)
Explained	-0.0485***	-0.0663***	-0.0290**
	(0.00634)	(0.00870)	(0.00976)
Unexplained	0.0681***	0.0695***	0.0600***
	(0.0107)	(0.0162)	(0.0132)
		Explained	
Has kids	-0.00198***	-0.0000939	0.000623
	(0.000542)	(0.000712)	(0.00148)
	(-10.05%)	(-2.96%)	(+2.00%)
General human capital	0.00995***	0.00832***	0.0134***
	(0.00174)	(0.00221)	(0.00299)
	(+50.51%)	(+262.46%)	(+43.09%)
Labor market segment	0.0193***	0.0196***	0.0129***
	(0.00230)	(0.00329)	(0.00332)
	(+97.97%)	(+618.30%)	(+41.48%)
Cumulative labor market advantage	-0.0958***	-0.115***	-0.0656***
	(0.00530)	(0.00789)	(0.00748)
	(-486.29%)	(-3627.76%)	(-210.93%)
Institutional controls	0.000306	-0.00136	0.00310
	(0.00287)	(0.00395)	(0.00455)
	(+1.55%)	(-42.90%)	(+9.97%)
Labor market transitions	0.0197***	0.0221***	0.00672
	(0.00402)	(0.00502)	(0.00608)
	(+100.00%)	(+697.16%)	(+21.61%)
		Unexplained	
Has kids	0.00203+	0.0208	0.00111
	(0.00121)	(0.0157)	(0.0164)
	(+10.30%)	(+656.15%)	(+3.57%)
General human capital	0.0140	0.00525	-0.00349
	(0.0211)	(0.0594)	(0.0543)
	(+71.07%)	(+165.62%)	(-11.22%)
Labor market segment	0.00301	-0.0911	0.182
	(0.0155)	(0.127)	(0.187)
	(+15.28%)	(-2873.82%)	(+585.21%)
Cumulative labor market advantage	0.214	0.129	0.240
	(0.164)	(0.299)	(0.165)
	(+1086.29%)	(+4069.40%)	(+771.70%)
Institutional controls	0.0184	0.0537	-0.0502
	(0.0261)	(0.117)	(0.135)
	(+93.40%)	(+1694.01%)	(-161.41%)
Labor market transitions	-0.0171+	-0.0756	-0.0181
	(0.00977)	(0.0537)	(0.0331)
	(-86.80%)	(-2384.86%)	(-58.20%)
Constant	-0.166	0.0273	-0.292
	(0.168)	(0.370)	(0.281)
	(-842.64%)	(+861.20%)	(-938.91%)
N	25953	15653	10300

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors. General human capital includes education and potential experience. Labor market segment includes lost job occupation and industry. Cumulative labor market advantage includes lost job tenure and log weekly earnings. Labor market transitions includes indicators for whether the respondent changed occupations, changed industries, and is employed at a full-time job. Institutional controls include year of job loss fixed effects, years since displacement, and state fixed effects. The percentage in parentheses reflects the percent of the Difference component explained by each group of covariates. All analyses use DWS weights.

Table A4.3. Decomposition of Black-White inequality in proportional change in earnings (men; pre-displacement only)

	1980-1982	1983-1989	1990-1991	1992-2000	2001	2002-2007	2008-2009	2010-2019
White Δ prop earnings	-0.100***	-0.0361***	-0.109***	-0.0184*	-0.117***	-0.0881***	-0.128***	-0.0172
	(0.0184)	(0.00806)	(0.0145)	(0.00923)	(0.0189)	(0.0114)	(0.0179)	(0.0129)
Black Δ prop earnings	-0.0972	-0.0709*	-0.121*	0.0140	-0.102	-0.0366	-0.267***	-0.0412
	(0.0719)	(0.0284)	(0.0569)	(0.0357)	(0.0745)	(0.0454)	(0.0604)	(0.0448)
Difference (ΔWhite-ΔBlack)	-0.00290	0.0348	0.0125	-0.0324	-0.0158	-0.0515	0.139*	0.0240
	(0.0742)	(0.0295)	(0.0587)	(0.0368)	(0.0769)	(0.0468)	(0.0630)	(0.0467)
Explained	-0.109	-0.0707***	-0.0723*	-0.0827***	-0.0846*	-0.0711***	-0.0822**	-0.0752***
	(0.0693)	(0.0159)	(0.0359)	(0.0172)	(0.0409)	(0.0193)	(0.0299)	(0.0218)
Unexplained	0.106	0.105***	0.0848	0.0504	0.0688	0.0196	0.221**	0.0992*
	(0.0827)	(0.0291)	(0.0592)	(0.0364)	(0.0813)	(0.0474)	(0.0673)	(0.0504)
					Explained			
Has kids	-0.00282	0.00573*	0.00259	-0.00405	-0.00604	-0.00170	-0.00145	-0.000318
	(0.00954)	(0.00264)	(0.00377)	(0.00270)	(0.00878)	(0.00231)	(0.00248)	(0.00205)
	(-97.24%)	(+16.47%)	(+20.72%)	(-12.50%)	(-38.23%)	(-3.30%)	(-1.04%)	(-1.33%)
General human capital	0.0106	0.00663+	0.00326	0.0182**	0.0128	0.0212*	-0.00202	0.000973
	(0.00895)	(0.00388)	(0.00657)	(0.00643)	(0.0140)	(0.00833)	(0.0118)	(0.00551)
	(+365.52%)	(+19.05%)	(+26.08%)	(+56.17%)	(+81.01%)	(+41.17%)	(-1.45%)	(+4.05%)
Labor market segment	0.0159	0.0222**	0.0257	0.0225*	0.0398	0.0210+	0.0148	0.0342**
	(0.0263)	(0.00737)	(0.0167)	(0.00873)	(0.0262)	(0.0111)	(0.0192)	(0.0114)
	(+548.28%)	(+63.79%)	(+205.60%)	(+69.44%)	(+251.90%)	(+40.78%)	(+10.65%)	(+142.50%)
Cumulative labor market advantage	-0.102**	-0.101***	-0.0894**	-0.121***	-0.112**	-0.134***	-0.0667***	-0.0967***
	(0.0378)	(0.0138)	(0.0278)	(0.0155)	(0.0340)	(0.0163)	(0.0182)	(0.0191)
	(-3517.24%)	(-290.23%)	(-715.20%)	(-373.46%)	(-708.86%)	(-260.19%)	(-47.99%)	(-402.92%)
Institutional controls	-0.0313	-0.00468	-0.0145	0.00181	-0.0196	0.0224+	-0.0268	-0.0134
	(0.0489)	(0.00810)	(0.0235)	(0.0109)	(0.0265)	(0.0123)	(0.0212)	(0.0135)
	(-1079.31%)	(-13.45%)	(-116.00%)	(+5.59%)	(-124.05%)	(+43.50%)	(-19.28%)	(-55.83%)
					Unexplained			
Has kids	0.00426	-0.00608	0.0324	-0.00299	0.0312	-0.000366	0.0269	-0.00399
	(0.0114)	(0.00468)	(0.0387)	(0.00401)	(0.0914)	(0.00172)	(0.0257)	(0.00560)
	(+146.90%)	(-17.47%)	(+259.20%)	(-9.23%)	(+197.47%)	(-0.71%)	(+19.35%)	(-16.63%)
General human capital	0.162	-0.189*	0.807*	-0.118	0.380	0.118	0.155	-0.172
	(0.449)	(0.0892)	(0.410)	(0.0762)	(0.580)	(0.0923)	(0.250)	(0.142)
	(+5586.21%)	(-543.10%)	(+6456.00%)	(-364.20%)	(+2405.06%)	(+229.13%)	(+111.51%)	(-716.67%)
Labor market segment	0.0830	0.0554	0.0557	0.183**	-0.0116	0.0906	-0.194	-0.0125
	(0.267)	(0.0606)	(0.302)	(0.0688)	(0.533)	(0.0730)	(0.247)	(0.0701)
	(+2862.07%)	(+159.20%)	(+445.60%)	(+564.81%)	(-73.42%)	(+175.92%)	(-139.57%)	(-52.08%)
Cumulative labor market advantage	0.675	0.0286	12.00*	0.677	-2.254	-0.0840	1.506	-0.647
	(2.071)	(0.445)	(5.225)	(0.605)	(3.680)	(0.695)	(1.393)	(0.826)
	(+23275.86%)	(+82.18%)	(+96000.00%)	(+2089.51%)	(-14265.82%)	(-163.11%)	(+1083.45%)	(-2695.83%)
Institutional controls	0.275	-0.0658	-0.287	0.0969	0.310	-0.284	0.445	0.411*
	(0.666)	(0.129)	(0.835)	(0.130)	(0.626)	(0.185)	(0.418)	(0.187)
	(+9482.76%)	(-189.08%)	(-2296.00%)	(+299.07%)	(+1962.03%)	(-551.46%)	(+320.14%)	(+1712.50%)
Constant	-1.093	0.282	-12.53*	-0.785	1.613	0.180	-1.717	0.524
	(2.369)	(0.476)	(5.116)	(0.625)	(3.053)	(0.692)	(1.525)	(0.826)
	(-37689.66%)	(+810.34%)	(-100240.00%)	(-2422.84%)	(+10208.86%)	(+349.51%)	(-1235.25%)	(+2183.33%)
N	727	3784	1093	3691	833	2380	1091	2235

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors. General human capital includes education and potential experience. Labor market segement includes occupation and industry of lost job. Cumulative labor market advantage includes tenure and log weekly earnings at lost job. Institutional controls include year of job displacement, years since job displacement, and state fixed effects. All analyses use DWS weights.

Table A4.4. Decomposition of Black-White inequality in proportional change in earnings (men; pre- and post-displacement)

	1980-1982	1983-1989	1990-1991	1992-2000	2001	2002-2007	2008-2009	2010-2019
White Δ prop earnings	-0.104***	-0.0356***	-0.108***	-0.0186*	-0.116***	-0.0873***	-0.127***	-0.0171
	(0.0180)	(0.00808)	(0.0143)	(0.00913)	(0.0187)	(0.0114)	(0.0179)	(0.0129)
Black Δ prop earnings	-0.0972	-0.0686*	-0.120*	0.0123	-0.102+	-0.0323	-0.267***	-0.0416
	(0.0665)	(0.0280)	(0.0614)	(0.0354)	(0.0520)	(0.0457)	(0.0595)	(0.0451)
Difference (ΔWhite-ΔBlack)	-0.00641	0.0329	0.0120	-0.0309	-0.0149	-0.0550	0.140*	0.0244
	(0.0689)	(0.0291)	(0.0631)	(0.0365)	(0.0552)	(0.0471)	(0.0621)	(0.0469)
Explained	-0.106	-0.0493**	-0.0440	-0.0811***	-0.0211	-0.0570*	-0.0653+	-0.0837***
	(0.0708)	(0.0177)	(0.0413)	(0.0187)	(0.0485)	(0.0223)	(0.0382)	(0.0247)
Unexplained	0.0995	0.0823**	0.0560	0.0503	0.00613	0.00201	0.205***	0.108*
	(0.0789)	(0.0270)	(0.0595)	(0.0351)	(0.0575)	(0.0469)	(0.0610)	(0.0482)
				Explained				
Has kids	-0.00195	0.00435+	0.00146	-0.00295	-0.00370	-0.00152	-0.00174	-0.0000398
	(0.00566)	(0.00222)	(0.00237)	(0.00211)	(0.00578)	(0.00195)	(0.00263)	(0.00133)
	(-30.42%)	(+13.22%)	(+12.17%)	(-9.55%)	(-24.83%)	(-2.76%)	(-1.24%)	(-0.16%)
General human capital	0.0115	0.00697+	0.000894	0.0186**	0.0120	0.0231**	0.00277	0.000548
	(0.00873)	(0.00361)	(0.00607)	(0.00603)	(0.0131)	(0.00815)	(0.0113)	(0.00555)
	(+179.41%)	(+21.19%)	(+7.45%)	(+60.19%)	(+80.54%)	(+42.00%)	(+1.98%)	(+2.25%)
Labor market segment	0.00471	0.0180*	0.0280	0.0189*	0.0402	0.0198+	0.00263	0.0257*
	(0.0210)	(0.00735)	(0.0178)	(0.00801)	(0.0251)	(0.0102)	(0.0180)	(0.0105)
	(+73.48%)	(+54.71%)	(+233.33%)	(+61.17%)	(+269.80%)	(+36.00%)	(+1.88%)	(+105.33%)
Cumulative labor market advantage	-0.106**	-0.104***	-0.100**	-0.130***	-0.121***	-0.153***	-0.0838***	-0.106***
	(0.0373)	(0.0145)	(0.0305)	(0.0165)	(0.0352)	(0.0173)	(0.0220)	(0.0211)
	(-1653.67%)	(-316.11%)	(-833.33%)	(-420.71%)	(-812.08%)	(-278.18%)	(-59.86%)	(-434.43%)
Institutional controls	-0.0206	-0.000806	-0.00645	0.00374	-0.00823	0.0260*	-0.0289	-0.00994
	(0.0484)	(0.00783)	(0.0224)	(0.0105)	(0.0261)	(0.0121)	(0.0209)	(0.0131)
	(-321.37%)	(-2.45%)	(-53.75%)	(+12.10%)	(-55.23%)	(+47.27%)	(-20.64%)	(-40.74%)
Labor market transitions	0.00598	0.0260**	0.0322	0.0106	0.0598*	0.0281*	0.0437+	0.00562
	(0.0240)	(0.00871)	(0.0219)	(0.00974)	(0.0259)	(0.0124)	(0.0239)	(0.0131)
	(+93.29%)	(+79.03%)	(+268.33%)	(+34.30%)	(+401.34%)	(+51.09%)	(+31.21%)	(+23.03%)
				Unexplained				
Has kids	0.00401	-0.00626	0.0562	-0.00322	0.0233	-0.0000779	0.00532	-0.00584
	(0.00906)	(0.00443)	(0.0668)	(0.00391)	(0.0673)	(0.00128)	(0.0222)	(0.00665)
	(+62.56%)	(-19.03%)	(+468.33%)	(-10.42%)	(+156.38%)	(-0.14%)	(+3.80%)	(-23.93%)
General human capital	0.191	-0.118	0.735	-0.116	0.348*	0.157	-0.224	-0.148
	(0.274)	(0.0900)	(0.749)	(0.0741)	(0.156)	(0.0973)	(0.346)	(0.136)
	(+2979.72%)	(-358.66%)	(+6125.00%)	(-375.40%)	(+2335.57%)	(+285.45%)	(-160.00%)	(-606.56%)
Labor market segment	0.307	0.0152	-0.458	0.144*	0.266	-0.0386	0.118	-0.0849
	(0.359)	(0.0552)	(0.436)	(0.0653)	(0.192)	(0.0948)	(0.139)	(0.0719)
	(+4789.39%)	(+46.20%)	(-3816.67%)	(+466.02%)	(+1785.23%)	(-70.18%)	(+84.29%)	(-347.95%)
Cumulative labor market advantage	0.566	-0.0562	10.75	0.862	-3.300***	-0.369	1.048	-0.931
	(1.613)	(0.416)	(11.03)	(0.587)	(0.262)	(0.704)	(1.458)	(0.810)
	(+8829.95%)	(-170.82%)	(+89583.33%)	(+2789.64%)	(-22147.65%)	(-670.91%)	(+748.57%)	(-3815.57%)
Institutional controls	-0.368	-0.0639	-2.406	0.0889	1.477***	-0.344+	0.144	0.430*
	(0.492)	(0.115)	(1.900)	(0.126)	(0.211)	(0.181)	(0.371)	(0.183)
	(-5741.03%)	(-194.22%)	(-20050.00%)	(+287.70%)	(+9912.75%)	(-625.45%)	(+102.86%)	(+1762.30%)
Labor market transitions	0.186	-0.0214	0.114	-0.0447	-0.434***	0.0218	-0.0425	-0.0332
	(1.950)	(0.443)	(13.79)	(0.606)	(0.255)	(0.678)	(1.887)	(0.814)
	(+2901.72%)	(-65.05%)	(+950.00%)	(-144.66%)	(-2912.75%)	(+39.64%)	(-30.36%)	(-136.07%)
Constant	-0.786	0.333	-8.739	-0.881	1.626***	0.575	-0.845	0.881
	(1.950)	(0.443)	(13.79)	(0.606)	(0.255)	(0.678)	(1.887)	(0.814)
	(-12262.09%)	(+1012.16%)	(-72825.00%)	(-2851.13%)	(+10912.75%)	(+1045.45%)	(-603.57%)	(+3610.66%)
N	713	3743	1085	3666	826	2336	1073	2211

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors. General human capital includes education and potential experience. Labor market segement includes occupation and industry of lost job. Cumulative labor market advantage includes tenure and log weekly earnings at lost job. Institutional controls include year of job displacement, years since job displacement, and state fixed effects. Labor market transitions include indicators for changing occupations, changing industries, and whether the new job is full-time. All analyses use DWS weights.

Table A4.5. Decomposition of Black-White inequality in proportional change in earnings (women; pre-displacement only)

	1980-1982	1983-1989	1990-1991	1992-2000	2001	2002-2007	2008-2009	2010-2019
White Δ prop earnings	-0.112***	-0.0824***	-0.143***	-0.0575***	-0.174***	-0.121***	-0.179***	-0.0501**
	(0.0262)	(0.0103)	(0.0182)	(0.0104)	(0.0258)	(0.0129)	(0.0219)	(0.0168)
Black Δ prop earnings	-0.306***	-0.115***	-0.0466	-0.127***	-0.140+	-0.147***	-0.207**	-0.0917*
	(0.0746)	(0.0284)	(0.0692)	(0.0256)	(0.0763)	(0.0401)	(0.0643)	(0.0375)
Difference (ΔWhite-ΔBlack)	0.194*	0.0326	-0.0968	0.0698*	-0.0341	0.0253	0.0281	0.0416
	(0.0791)	(0.0302)	(0.0716)	(0.0276)	(0.0805)	(0.0421)	(0.0679)	(0.0411)
Explained	0.119	-0.0512**	0.0339	-0.0229	-0.116+	-0.0133	0.0314	-0.0346
	(0.0858)	(0.0172)	(0.0348)	(0.0163)	(0.0651)	(0.0245)	(0.0400)	(0.0274)
Unexplained	0.0753	0.0838**	-0.131+	0.0927**	0.0815	0.0386	-0.00326	0.0762+
	(0.0994)	(0.0317)	(0.0737)	(0.0290)	(0.0754)	(0.0450)	(0.0746)	(0.0460)
				Explained				
Has kids	-0.000587	0.00104	0.0110	0.00162	0.00411	0.00835+	-0.00622	0.00458
	(0.00922)	(0.00333)	(0.00854)	(0.00282)	(0.00805)	(0.00495)	(0.00772)	(0.00429)
	(-0.30%)	(+3.19%)	(+11.36%)	(+2.32%)	(+12.05%)	(+33.00%)	(-22.14%)	(+11.01%)
General human capital	0.105*	-0.00320	0.0160	0.0297***	0.00515	0.0200*	-0.00147	0.0167
	(0.0494)	(0.00621)	(0.0123)	(0.00731)	(0.0159)	(0.00849)	(0.0136)	(0.0120)
	(+54.12%)	(-9.82%)	(+16.53%)	(+42.55%)	(+15.10%)	(+79.05%)	(-5.23%)	(+40.14%)
Labor market segment	0.000291	0.00921	0.0359+	0.00846	0.0115	0.0300*	0.0314	0.0172
	(0.0429)	(0.00892)	(0.0189)	(0.00817)	(0.0327)	(0.0122)	(0.0243)	(0.0145)
	(+0.15%)	(+28.25%)	(+37.09%)	(+12.12%)	(+33.72%)	(+118.58%)	(+111.74%)	(+41.35%)
Cumulative labor market advantage	0.0231	-0.0459***	-0.0396*	-0.0709***	-0.132*	-0.0659***	-0.00229	-0.0800***
	(0.0344)	(0.0104)	(0.0193)	(0.0134)	(0.0532)	(0.0160)	(0.0210)	(0.0180)
	(+11.91%)	(-140.80%)	(-40.91%)	(-101.58%)	(-387.10%)	(-260.47%)	(-8.15%)	(-192.31%)
Institutional controls	-0.00973	-0.0123	0.0106	0.00815	-0.00423	-0.00575	0.00992	0.00701
	(0.0460)	(0.0109)	(0.0238)	(0.00951)	(0.0297)	(0.0177)	(0.0266)	(0.0192)
	(-5.02%)	(-37.73%)	(+10.95%)	(+11.68%)	(-12.40%)	(-22.73%)	(+35.30%)	(+16.85%)
				Unexplained				
Has kids	0.00131	-0.0123	0.150	-0.00668	0.0521	0.0111	0.00382	-0.00323
	(0.00778)	(0.00875)	(0.0959)	(0.00886)	(0.0422)	(0.0161)	(0.0238)	(0.00682)
	(+0.68%)	(-37.73%)	(+154.96%)	(-9.57%)	(+152.79%)	(+43.87%)	(+13.59%)	(-7.76%)
General human capital	0.0903	0.0329	-0.0244	-0.0126	0.110	-0.227	-0.193	0.000233
	(0.0591)	(0.0796)	(0.413)	(0.0534)	(0.208)	(0.142)	(0.250)	(0.0902)
	(+46.55%)	(+100.92%)	(-25.21%)	(-18.05%)	(+322.58%)	(-897.23%)	(-686.83%)	(+0.56%)
Labor market segment	0.198**	0.0366	-0.146	0.0319	0.161	-0.114	-0.130	0.0743
	(0.0757)	(0.0699)	(0.294)	(0.0467)	(0.231)	(0.101)	(0.126)	(0.0679)
	(+102.06%)	(+112.27%)	(-150.83%)	(+45.70%)	(+472.14%)	(-450.59%)	(-462.63%)	(+178.61%)
Cumulative labor market advantage	-3.550***	0.691	0.755	-0.578	0.0376	1.405+	-0.495	0.208
	(0.467)	(0.467)	(1.722)	(0.466)	(0.909)	(0.777)	(1.428)	(0.614)
	(-1829.90%)	(+2119.63%)	(+779.96%)	(-828.08%)	(+110.26%)	(+5553.36%)	(-1761.57%)	(+500.00%)
Institutional controls	-0.278***	0.0747	-0.527	0.0729	0.458	-0.0840	0.530	0.0164
	(0.0792)	(0.110)	(0.428)	(0.118)	(0.330)	(0.185)	(0.373)	(0.131)
	(-143.30%)	(+229.14%)	(-544.42%)	(+104.44%)	(+1343.11%)	(-332.02%)	(+1886.12%)	(+39.42%)
Constant	3.613***	-0.739	-0.339	0.585	-0.736	-0.952	0.281	-0.220
	(0.473)	(0.519)	(1.882)	(0.502)	(1.146)	(0.797)	(1.424)	(0.645)
	(+1862.37%)	(-2266.87%)	(-350.21%)	(+838.11%)	(-2158.36%)	(-3762.85%)	(+1000.00%)	(-528.85%)
N	348	2229	695	2670	558	1724	687	1529

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors. General human capital includes education and potential experience. Labor market segement includes occupation and industry of lost job. Cumulative labor market advantage includes tenure and log weekly earnings at lost job. Institutional controls include year of job displacement, years since job displacement, and state fixed effects. All analyses use DWS weights.

Table A4.6. Decomposition of Black-White inequality in proportional change in earnings (women; pre- and post-displacement)

	1980-1982	1983-1989	1990-1991	1992-2000	2001	2002-2007	2008-2009	2010-2019
White Δ prop earnings	-0.111***	-0.0818***	-0.142***	-0.0578***	-0.173***	-0.119***	-0.181***	-0.0516**
	(0.0255)	(0.0102)	(0.0177)	(0.0102)	(0.0255)	(0.0129)	(0.0214)	(0.0164)
Black Δ prop earnings	-0.306***	-0.111***	-0.0431	-0.130***	-0.134+	-0.151***	-0.198***	-0.0879*
	(0.0746)	(0.0276)	(0.0718)	(0.0250)	(0.0773)	(0.0395)	(0.0576)	(0.0351)
Difference (ΔWhite-ΔBlack)	0.195*	0.0297	-0.0988	0.0723**	-0.0393	0.0319	0.0171	0.0363
	(0.0789)	(0.0294)	(0.0739)	(0.0270)	(0.0814)	(0.0416)	(0.0615)	(0.0387)
Explained	0.212*	-0.0356+	0.00362	-0.0390*	-0.0858	-0.0153	0.0256	-0.0304
	(0.0951)	(0.0203)	(0.0406)	(0.0183)	(0.0727)	(0.0277)	(0.0450)	(0.0298)
Unexplained	-0.0172	0.0653*	-0.102	0.111***	0.0465	0.0472	-0.00852	0.0667+
	(0.0844)	(0.0282)	(0.0737)	(0.0251)	(0.0650)	(0.0414)	(0.0626)	(0.0374)
				Explained				
Has kids	-0.000854	0.000150	0.00330	-0.00230	-0.00283	0.00633	-0.00167	0.00404
	(0.00804)	(0.00309)	(0.00737)	(0.00249)	(0.00782)	(0.00451)	(0.00740)	(0.00400)
	(-0.44%)	(+0.51%)	(+3.34%)	(-3.18%)	(-7.20%)	(+19.84%)	(-9.77%)	(+11.13%)
General human capital	0.0555	-0.00250	0.0159	0.0294***	0.0106	0.0202*	-0.00708	0.0196+
	(0.0352)	(0.00546)	(0.0110)	(0.00705)	(0.0163)	(0.00829)	(0.0118)	(0.0104)
	(+28.46%)	(-8.42%)	(+16.09%)	(+40.66%)	(+26.97%)	(+63.32%)	(-41.40%)	(+53.99%)
Labor market segment	0.0245	0.0153+	0.0340*	0.00990	0.0314	0.0231*	0.0337	0.0146
	(0.0372)	(0.00831)	(0.0158)	(0.00719)	(0.0302)	(0.0100)	(0.0235)	(0.0137)
	(+12.56%)	(+51.52%)	(+34.41%)	(+13.69%)	(+79.90%)	(+72.41%)	(+197.08%)	(+40.22%)
Cumulative labor market advantage	0.0291	-0.0508***	-0.0463*	-0.0799***	-0.155**	-0.0727***	-0.00189	-0.0952***
	(0.0426)	(0.0123)	(0.0221)	(0.0145)	(0.0572)	(0.0174)	(0.0220)	(0.0196)
	(+14.92%)	(-171.04%)	(-46.86%)	(-110.51%)	(-394.40%)	(-227.90%)	(-11.05%)	(-262.26%)
Institutional controls	-0.00241	-0.00135	0.0333	0.00474	0.0115	-0.0104	0.0237	0.00704
	(0.0415)	(0.00992)	(0.0217)	(0.00861)	(0.0271)	(0.0173)	(0.0253)	(0.0164)
	(-1.24%)	(-4.55%)	(+33.70%)	(+6.56%)	(+29.26%)	(-32.60%)	(+138.60%)	(+19.39%)
Labor market transitions	0.106*	0.00368	-0.0366	-0.000836	0.0182	0.0182	-0.0212	0.0196
	(0.0534)	(0.0114)	(0.0223)	(0.0115)	(0.0252)	(0.0143)	(0.0259)	(0.0190)
	(+54.36%)	(+12.39%)	(-37.04%)	(-1.16%)	(+46.31%)	(+57.05%)	(-123.98%)	(+53.99%)
				Unexplained				
Has kids	0.00478	-0.0103	0.0939	-0.000814	0.0583	0.00940	-0.0265	0.000243
	(0.00757)	(0.00818)	(0.126)	(0.00721)	(0.0505)	(0.0156)	(0.0270)	(0.00609)
	(+2.45%)	(-34.68%)	(+95.04%)	(-1.13%)	(+148.35%)	(+29.47%)	(-154.97%)	(+0.67%)
General human capital	0.199***	0.0749	-0.0651	0.00458	0.0240	-0.182	0.103	0.125+
	(0.0539)	(0.0751)	(0.511)	(0.0475)	(0.295)	(0.138)	(0.236)	(0.0695)
	(+102.05%)	(+252.19%)	(-65.89%)	(+6.33%)	(+61.07%)	(-570.53%)	(+602.34%)	(+344.35%)
Labor market segment	-0.0613	0.0305	-0.153	-0.00255	0.639	-0.0915	0.107	0.0914
	(0.0584)	(0.0678)	(0.370)	(0.0408)	(0.684)	(0.0766)	(0.207)	(0.0799)
	(-31.44%)	(+102.69%)	(-154.86%)	(-3.53%)	(+1625.95%)	(-286.83%)	(+625.73%)	(+251.79%)
Cumulative labor market advantage	-3.433***	0.303	0.427	-0.264	-2.226	1.585*	-2.860	0.300
	(0.419)	(0.445)	(2.170)	(0.386)	(2.395)	(0.738)	(2.608)	(0.490)
	(-1760.51%)	(+1020.20%)	(+432.19%)	(-365.15%)	(-5664.12%)	(+4968.65%)	(-16725.15%)	(+826.45%)
Institutional controls	-0.364***	-0.0709	-0.863	0.0157	0.177	0.00551	0.352	-0.0944
	(0.0893)	(0.100)	(0.670)	(0.0863)	(0.478)	(0.151)	(0.559)	(0.105)
	(-186.67%)	(-238.72%)	(-873.48%)	(+21.72%)	(+450.38%)	(+17.27%)	(+2058.48%)	(-260.06%)
Labor market transitions	-0.0703	0.0159	0.0377	-0.0130	0.0769	-0.0268	-0.0851	-0.0297
	(0.417)	(0.483)	(2.047)	(0.405)	(2.192)	(0.707)	(2.492)	(0.542)
	(-36.05%)	(+53.54%)	(+38.16%)	(-17.98%)	(+195.67%)	(-84.01%)	(-497.66%)	(-81.82%)
Constant	3.707***	-0.278	0.420	0.372	1.297	-1.253+	2.401	-0.325
	(0.417)	(0.483)	(2.047)	(0.405)	(2.192)	(0.707)	(2.492)	(0.542)
	(+1901.03%)	(-936.03%)	(+425.10%)	(+514.52%)	(+3300.25%)	(-3927.90%)	(+14040.94%)	(-895.32%)
N	347	2205	689	2633	552	1693	675	1506

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors. General human capital includes education and potential experience. Labor market segement includes occupation and industry of lost job. Cumulative labor market advantage includes tenure and log weekly earnings at lost job. Institutional controls include year of job displacement, years since job displacement, and state fixed effects. Labor market transitions include indicators for changing occupations, changing industries, and whether the new job is full-time. All analyses use DWS weights.

Appendix 5: Lost Job Occupations and Industries

Table A5.1. Analytic sample lost job characteristics

	Male		Female	
	White	Black	White	Black
Lost job characteristics				
Occupation				
Executive administrative and managerial	10.77	6.03	12.75	6.39
Management related	3.6	2.2	6.31	4.38
Professoinal specialty	9.84	6.07	10.91	7.29
Technicians and related support	3.58	1.75	3.21	2.64
Sales	10.04	5.17	12.34	8.54
Administrative support	5.37	10.48	27.6	27.27
Housekeeping and cleaning	0.11	0.54	0.64	1.83
Other service	4.52	9.35	8.63	14.08
Mechanics and repairers	7.7	4.99	0.57	0.8
Construction trades	12.55	7.73	0.56	0.45
Precision production	5.44	4.5	1.82	1.79
Machine operators assemblers and inspectors	11.73	16.95	11.81	19.36
Transportation and material moving	14.74	24.24	2.85	5.19
Industry				
Mining quarrying, and oil and gas extraction	2.71	0.54	0.79	0.04
Utilities	0.79	0.54	0.41	0.31
Construction	18.13	13.17	3.35	1.43
Manufacturing	30.17	31.16	24.31	28.43
Wholesale trade	5.54	4.27	4.28	2.64
Retail trade	9.1	9.22	12.32	8.67
Transportation and warehousing	5.67	7.96	3.11	2.82
Information	2.38	1.84	2.6	2.82
Finance and insurance	3.38	2.83	8.33	7.06
Real estate and rental and leasing	1.07	1.44	2.14	1.43
Professional scientific and technical services	6.64	3.91	7.88	5.41
Administrative support	3.64	6.74	4.51	7.96
Educational services	1.13	1.71	3.63	3.13
Health care and social assistance	1.93	4.32	10.78	14.8
Arts entertainment and recreation	0.8	1.03	1.27	0.76
Accommodation and food services	2.88	4.59	6.01	6.39
Other services	3.14	3.28	2.84	3.67
Public administration	0.9	1.44	1.42	2.24