Black-White Inequality in Job Tasks and Earnings Mobility After Job Displacement, 1984-2020

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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. I make two contributions towards that end. First, I offer the first historical accounting since the mid-1990s of racial inequalities in job search and earnings changes following job displacement. Second, I draw on matching models of the labor market and queueing theory to elaborate the labor market processes that disadvantage Black workers in recovering from job displacement. Using data from the 1984-2020 DWS, I demonstrate that Black-White inequality in job search and earnings recovery decreased from the 1980s to the mid-2000s before increasing again after the Great Recession. Further, I show that while White workers experience larger earnings losses than Black workers due to losing high quality jobs, these effects are outweighed by Black workers' disadvantage in re-sorting in the labor market after being displaced. While White workers are typically reemployed in new jobs similar to their lost jobs, Black workers sort into lower-paying jobs characterized by relatively high manual task intensity and relatively low abstract task intensity. Racial inequalities in the types of jobs that workers re-sort into, and consequently racial earnings inequalities post-displacement, are exacerbated by declining demand for routine labor.

Introduction

Job displacement – involuntary job loss resulting from economic conditions beyond the control of the worker – is an important dimension of economic precarity that negatively affects workers' short- and long-term economic wellbeing. Displaced workers experience negative health and psychological outcomes, lost earnings due to unemployment, and downward earnings and occupational mobility upon reemployment (Farber 1993; Stevens 1997; Kletzer 1998; Hall 2005; Burgard, Brand, and House 2007; Davis and von Wachter 2011; Brand 2015). In the long-run, job displacement can have negative scarring effects on workers' earnings that persist for up to two 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 re-employment, 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 devoted substantial attention to documenting racial stratification in labor market outcomes such as earnings and employment, racial inequalities in job loss and recovery have received much less attention. Just a few studies have systematically studied racial gaps in job displacement. Fairlie and Kletzer (1996, 1998) show that Black men experience job displacement at a rate 30 percent higher than White men and have reemployment rates 30 percent lower. Wrigley-Field and Seltzer (2020) extend this analysis to 2017 and document sharply rising racial gaps in job displacement. Even less work has systematically documented historical changes in the racial patterning of recovery after displacement. Previous research has either analyzed a single survey year of the Displaced

Workers Supplement (DWS) to the Current Population Survey (CPS) or pooled observations across survey years to examine racial gaps in the length of unemployment spells, re-employment, and earnings post-displacement (Fairlie and Kletzer 1998; Spalter-Roth and Deitch 1999; Farber 2017). While these studies offer important insights into racial inequalities related to job displacement, they do not describe how these inequalities change over time. No research since Fairlie and Kletzer (1996) has systematically documented historical patterns of racial inequality in recovery after job displacement.

There is ample reason to expect racial inequalities in post-displacement outcomes and to expect that these patterns change over time. A large body of research documents persistent racial gaps in hiring (e.g. Bertrand and Mullainathan 2004; Pager, Western, and Bonikowski 2009; Quillian et al. 2017) and in earnings (Cancio, Evans, and Maume 1996; Neal and Johnson 1996; Huffman and Cohen 2004; Carneiro, Heckman, and Masterov 2005; Fryer, Pager, and Spenkuch 2013; Bloome 2014; Mandel and Semyonov 2016; Bayer and Charles 2018). Because job displacement exposes workers to re-sorting in a labor market where Black jobseekers are disadvantaged relative to White jobseekers, I expect that Black workers experience longer periods of unemployment and lower quality employment upon finding new work, leading to greater earnings losses for Black workers following displacement.

Moreover, since Fairlie and Kletzer's analysis in the early 1990s, the US experienced significant economic restructuring that may have reshaped racial inequalities in the consequences of job displacement. Since 1990, employment decreased in middle-paying jobs characterized by easily automated routine tasks (e.g. clerical work and repetitive manufacturing production), and grew in both high-paying jobs characterized by abstract tasks (e.g. managers and professionals engaged in creative work and problem-solving) and low-paying jobs characterized by manual

non-routine tasks (e.g. retail workers providing customer service) (Autor, Katz, and Kearney 2006; Acemoglu and Autor 2011; Autor and Dorn 2013; Acemoglu and Restrepo 2022). Employment in declining middle-skill jobs provided particularly important economic opportunities for Black workers to earn decent wages (Wilson 1996). During this period of economic polarization, the costs of job displacement from routine jobs increased as displaced workers experienced substantial earnings losses and largely were reemployed in low-paying low-skill nonroutine occupations (Autor and Dorn 2009; Blien, Dauth, and Roth 2021). The combination of persistent racial economic inequality in hiring and earnings with economic restructuring that particularly disadvantages Black workers creates a set of economic conditions that may significantly amplify racial inequalities in the economic costs of job displacement.

I argue that changing demand for different types of tasks due to economic polarization is a key driver of post-displacement racial inequalities. Due to historical patterns of occupational segregation and labor market discrimination, I suggest that Black workers will be more likely to sort into jobs characterized by manual tasks while White workers will be more likely to sort into jobs characterized by abstract tasks. Further, I expect that the marked decline in middle-paying routine-task-intensive jobs amplifies racial inequalities in recovery from job loss. As the demand for routine labor declines, racial inequalities in the types of jobs that workers sort into after displacement, and consequently racial earnings inequalities, should increase.

This paper updates and refines our understanding of racial inequalities in the economic consequences job displacement. I offer the first historical accounting of racial gaps in post-displacement earnings and employment outcomes since the 1990s. I also estimate racial gaps net of differences in individual traits and local labor market characteristics, and account for differential selection into reemployment. After examining how the levels and determinants racial

inequalities in economic recovery after job displacement have evolved from the 1980s to present day, I turn to an analysis of how these inequalities are generated. I argue that the effect of job displacement on earnings can be decomposed into components specific to workers' lost jobs and workers' new jobs. Drawing on matching and queueing models of the labor market, I argue that White workers' labor market advantages should leave them with more to loses from job displacement but also better prospects for reemployment after being displaced. I test this model empirically by examining how the task composition of Black and White workers' jobs changes after job displacement, and in turn how re-sorting into jobs with different tasks shapes racial inequalities in the effect of displacement on earnings.

Using data from the 1984 to 2020 waves of the DWS, I update estimates of racial inequalities in economic recovery after job displacement and their trends over time, document changes in the determinants of these inequalities, and examine how changes to the structure of labor demand over time and across the US shape racial economic inequality after job loss. I demonstrate that in general, racial inequalities in job search length and change in weekly earnings follow a U-shaped pattern over time, declining between the 1980s and early 2000s before increasing again in the 2010s. Across periods, differences in pre-displacement job characteristics significantly disadvantage White workers in earnings losses following job displacement. However, this effect is significantly outweighed by Black workers' disadvantage in labor market matching, which leads to lower quality post-displacement employment. Further, I show that the task composition of workers' new jobs plays an outsized role in explaining Black workers' disadvantage in earnings recovery after job loss. Finally, I show that as the state-level employment share of jobs specializing in routine tasks decreases, Black workers increasingly sort into jobs with high levels of specialization in manual tasks and low specialization in abstract

tasks while White workers sort into jobs with similar task compositions as their lost job. As a result, racial inequalities in post-displacement earnings recovering increases significantly as the demand for routine labor decreases.

Background

Black-White inequality in job displacement and its consequences

The economic costs of job displacement

Job displacement refers to job loss that can be attributed to economic conditions beyond workers' control and are not tied to workers' individual performance, including mass layoffs, plant closures, or employers going out of business (Brand 2015). Displacement does not include job separations due to firing or quits. Job displacement has attracted particular attention from social scientists because it reflects how employers' business decisions, rather than employee performance or individual choices, affect workers' employment insecurity. Job displacement is therefore important to study because it reflects 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 has significant negative effects on displaced workers' economic wellbeing. Displaced workers typically experience a period of unemployment after losing their job (Howland and Peterson 1988; Ruhm 1991; Gardner 1995; Farber 2017). On average, displaced workers in the DWS take about 10 to 15 weeks to find a new job after being displaced and only about two-thirds of workers are reemployed by the survey date, which can be up to three years after displacement (Farber 2017). Reemployed displaced workers typically earn less at their new job than at their previous job. Estimates of earnings loss vary between studies, but

prior work generally suggest that short-run earnings losses amount to 25 to 33 percent and long-run earnings decrease by 10 to 15 percent (Jacobson et al. 1993; Gardner 1995; Fallick 1996; Kletzer 1998; Cha and Morgan 2010; Couch and Placzek 2010; Davis and von Wachter 2011; Farber 2017). However, earnings changes after job displacement vary considerably (Carrington and Fallick 2017). Schoeni and Dardia (1997) show that between 1989 and 1994, the bottom quartile of displaced workers in California experienced a roughly 50 percent reduction in earnings while the top quartile actually increased their earnings by about 20 percent. Similarly, Lachowska, Mas, and Woodbury (2020) estimate that the bottom quintile of Washington's displaced workers from 2008 to 2010 lost about 30 percent of their earnings while the top quintile experienced no change. Estimates of long-term earnings losses vary, but most evidence suggests that job displacement negatively affects workers' earnings for years after workers find new employment, and some studies suggest that scarring effects last up to two decades (Ruhm 1991; Jacobson et al. 1993; Couch and Placzek 2010; Davis and von Wachter 2011).

Job displacement and racial inequality from 1980 to 1990

Job displacement plays an important role in shaping economic stratification over workers' careers. Every year, millions of workers are displaced. These displaced workers experience substantial short- and long-run earnings losses. There is reason to expect that the consequences of job displacement are generally worse for Black workers than White workers. Cross-sectional analyses show that both the incidence and costs of job displacement are greater for Black workers than White workers. On average, Black workers experience longer spells of unemployment, lower rates of reemployment, and larger earnings losses following job

displacement (Moore 1990; Fairlie and Kletzer 1998; Spalter-Roth and Deitch 1999; Hu and Taber 2005; Farber 2017).

By most prominent accounts, job displacement is highly countercyclical, reflecting broader patterns of macroeconomic and industrial restructuring (Kletzer 1998; Kalleberg 2009; Brand 2015; Farber 2017). In the 1980s and early 1990s, racial inequalities in job displacement and post-displacement outcomes were largely tied to how Black and White workers were distributed across jobs that were downsized due to economic restructuring. During the recession of the early 1980s, firms sought to reduce labor costs and improve efficiency by adopting new automation technologies, laying off production workers, and reducing their commitment to stable, long-term employment relations. Layoffs disproportionately affected blue-collar workers without college degrees (Gardner 1995; Farber 1996). Black workers experienced especially high rates of displacement in this era due to their relatively low education and concentration in production jobs (Fairlie and Kletzer 1996, 1998). The early-1990s recession spurred firms to "trim the fat" through downsizing initiatives that affected predominantly White, white-collar middle management positions (Cappelli 1992; Gardner 1995). As firms focused on leaning out, Black workers' disadvantage in reemployment rates narrowed and White workers experienced greater earnings losses than Black workers (Gardner 1995; Fairlie and Kletzer 1996).

Economic restructuring since 1990 and its effect on post-displacement racial inequalities
To the author's knowledge, no research has examined how trends in racial inequality in post-displacement outcomes have changed since the early-1990s. Yet, the United States has since undergone significant economic restructuring and cyclical fluctuations that may well have reshaped how job displacement affects racial economic inequality. While employment growth

between 1980 and 1990 was monotonically increasing with occupation average wages, employment growth after 1990 became highly polarized – employment increased somewhat in low-paying jobs such as retail and food service, decreased 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 et al. 2006). From 2000 onward, employment at the bottom and top of the labor market grew significantly while employment in the middle continued to decline (Autor and Dorn 2013). At the same time, union power further diminished and nonstandard, contingent, and precarious employment relations became more common, all contributing to polarization between the growing top and bottom of the labor market and a hollowing out of the middle (Kalleberg 2009; Western and Rosenfeld 2011). Declining employment in the middle of the occupational distribution had an outsized effect on Black workers, for whom employment in routine jobs such as manufacturing production or clerical work provided important economic opportunities that were challenging to find elsewhere (Wilson 1996; Acemoglu and Restrepo 2022).

Many of these inequalities resulting from economic polarization came to a head during the Great Recession beginning in December 2007. Rates of job displacement, unemployment among displaced workers, re-employment in part-time work, and earnings losses all rose to their highest levels since the 1980s (Song and Von Wachter 2014; Farber 2015). Displacement rates increased across the board, but were particularly high among younger, low-tenure, and less-educated workers, as well as 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; Rothstein 2017). While aggregate employment in routine jobs typically recovered after recessions before 1990, the Great Recession led to permanent reductions in

aggregate employment in routine jobs and an uptick in the creation of lower-quality jobs (Kahn and McEntarfer 2014; Kalleberg and Von Wachter 2017; Jaimovich and Siu 2020), potentially amplifying downward mobility among displaced workers. The Great Recession's combined effect of high rates of job displacement among workers in routine manual jobs where Black workers are concentrated and the funneling of displaced workers into lower-paying service jobs suggests that racial inequalities in the economic consequences of job displacement may have grown since the 1990s.

> *Hypothesis 1: Black workers' disadvantage relative to White workers in re-employment, job search, and earnings loss after displacement grew during recessions after 1990.*

Why earnings fall after job displacement and implications for racial inequality

Labor market matching and racialized labor queues

Understanding racial inequalities in the effect of job displacement on earnings requires considering how workers' earnings are determined at both their lost job and their new job. A displaced worker's earnings may decrease when they move to a new job because their earnings were especially high at the lost job, because the worker re-sorted into a lower-paying new job, or a combination of both. In what follows, I leverage matching and queuing models of the labor market to theorize why Black and White workers may experience different patterns of earnings mobility after job displacement and how those inequalities may change over time.

Matching models of the labor market can provide a helpful framework to understand why workers' earnings might decrease after job loss. Workers are matched to jobs in a sorting process where workers leverage their personal resources to compete for their most desired jobs and firms

offer wages and benefits to attract their most desired workers. Workers competing for jobs leverage a broad set of personal resources including their general skills, skills specific to an occupation or industry, educational credentials, work history, social capital, cultural capital, parental status, race, or gender. At the same time, firms evaluate job candidates based on their expected productivity at the job, but they also consider candidates' cultural fit within an organization, referrals and other social connections to the firm, educational credentials and prestige, and other factors that might affect match quality. Thus, workers' chances depend on their broadly defined personal resources, the resources of fellow jobseekers, and the set of available job openings (Sørensen 1977; Jovanovic 1979; Sørensen and Kalleberg 1981; Coleman 1991).

While workers and firms consider a broad set of factors in the matching process, one key characteristic of jobs that workers and firms consider is the bundle of tasks performed at the job. Tasks are specific work activities that produce some output. Examples of tasks include operating machinery, analyzing data, or preparing food. In task-based models of the labor market, worker-job matches are determined by the compatibility between jobs' task demands and workers' skills (Acemoglu and Autor 2011). Changes to the task-structure of the US labor market played an outsized role in shaping trends in employment and inequality over the last half century, explaining over half of the increase in overall inequality and driving patterns of how workers are distributed across jobs (Autor, Katz, and Kearney 2008; Autor and Dorn 2009; Acemoglu and Restrepo 2022). Tasks therefore provide a useful lens to understand the structure of job opportunities in the labor market, how workers' personal resources may match up with open jobs, and how jobs' economic rewards may vary. Later, I will elaborate how changes to the task structure of the US economy may affect racial inequalities in post-displacement outcomes.

Queueing theory is a useful framework for understanding Black workers' disadvantage in labor market matching processes (Thurow 1969; Hodge 1973; Weiss 1980; Reskin and Roos 1990). Queueing theory describes labor market 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). Firms attempt to fill a vacancy by making offers down the labor queue until the vacancy is filled. When applied to racial or gender inequality, 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; Campero and Fernandez 2019). In what follows, I consider how Black workers' relatively low position in the labor queue might affect racial inequalities in how job displacement affects earnings.

Inequalities due to devalued human capital investments and rents

Job displacement is likely to lead to earnings loss for several reasons. First, assuming efficient matching in workers' initial job search, workers are matched to their best possible job, given available alternatives and other job seekers. Even relaxing assumptions of optimal matching, it still makes intuitive sense that most workers are likely to choose the best jobs available to them. Second, once worker-job matches are achieved, workers may invest in skills that enhance their productivity at their job. These skills can be specific to their productivity at their current firm, their productivity in a specific occupation, or generally applicable across occupations and industries. Firm-, occupation-, and industry-specific skills that enhance workers' productivity and wages in their initial job may not fully transfer to a new job.

White workers are advantaged over Black workers in both job matching and human capital accumulation. Employers prefer to hire White workers over otherwise similar Black workers (Kirschenman and Neckerman 1991; Fernandez and Fernandez-Mateo 2006; Pager et al. 2009; Quillian et al. 2017; Pedulla 2020). Moreover, White workers accrue more human capital by accumulating more general experience and firm tenure than Black workers, and White workers also receive greater returns to labor market experience than Black workers (Duncan and Hoffman 1979; Tienda and Stier 1996; Bratsberg and Terrell 1998; Tomaskovic-Devey, Thomas, and Johnson 2005; Castilla 2008).

White workers' relative advantage in matching into high quality jobs and firms, as well as their advantage in accumulating investments in firm-specific human capital, could disadvantage White workers with respect to how their earnings change due to job displacement. In a sense, because White workers accumulate advantages from their positions at the top of the labor queue in both internal and external labor markets, they have more to lose when they are displaced. Consistent with this line of thought, some evidence suggests that White workers experience greater earnings loss after displacement due to lost firm-specific investments in human capital (Addison and Portugal 1989). Therefore, I expect that White workers' advantages in accumulated general (labor market experience) and specific (firm tenure) human capital, as well as characteristics of their lost job such as occupation, industry, and job tasks, *disadvantage* White workers, relative to Black workers, in earnings recovery after job displacement.

> *Hypothesis 2: Differences in Black and White workers' levels of pre-displacement labor market experience, firm tenure, and job characteristics are associated with larger earnings losses for White workers than Black workers after they are reemployed.*

Inequalities due to re-sorting in the labor market

Inequality in how workers' earnings change after job displacement also depends on the type of job they can obtain after being displaced. Little of the negative effect of job displacement on earnings is explained by workers moving into lower quality firms (i.e. firms with lower pay rates). Rather, far and away the most important factor that explains this effect is workers moving into lower quality matches (Lachowska et al. 2020). That is to say, displaced workers' earnings losses are largely explained by moving into jobs that are a worse fit between worker and job. This is consistent with matching models of the labor market because job displacements sever high quality matches and workers are then left to re-sort into their next-best alternative. Generally, matching and queueing models would predict that workers at the top of the labor queue would achieve the highest quality matches when re-sorting. If White workers disproportionately occupy the top of the labor queue, we would expect displaced White workers to be reemployed at better quality jobs than displaced Black workers.

Diminished match quality after job displacement can be explained by several factors. One source of lost earnings is the imperfect transferability of human capital investments made at workers' lost jobs. Some earnings loss can be explained by firm-specific human capital that was valuable at workers' initial jobs and is less valuable or not at all valuable at their new job (Becker 1962; Mincer 1962). In a similar vein, human capital investments specific to workers' initial occupation or industry diminish in value when workers move to dissimilar new jobs (Shaw 1984; Neal 1995). Moving into new firms, job types, or industries results in lower returns to the skills that workers acquired at their previous job.

Beyond lost investments in human capital, job displacement exposes Black workers to potential discrimination in hiring and wage offers. Prior research has shown that employers tend to rank White workers higher in labor queues than Black workers, giving rise to inequality in the jobs that White and Black workers can access (Hodge 1973; Lieberson 1980; Reskin and Roos 1990; Eliason 1995; Huffman and Cohen 2004; Fernandez and Mors 2008; Kornrich 2009; McTague, Stainback, and Tomaskovic-Devey 2009; Campero and Fernandez 2019). However, there is substantial between-firm variation in discrimination (Kline, Rose, and Walters 2022). Some evidence suggests that Black workers tend to sort into relatively non-discriminatory firms, and that job displacement causes Black workers to then re-sort into more discrimination-prone firms (Hu and Taber 2005). All told, if employers rank Black workers lower in the labor queue than otherwise similar White workers, and Black workers are displaced from relatively non-discriminatory firms, Black workers will experience disproportionate losses in earnings and job quality due to job displacement.

> *Hypothesis 3: Differences in the characteristics of the jobs that Black and White workers sort into after being displaced disadvantage Black workers relative to White workers in the effect of job displacement on earnings.*

Changing job tasks and earnings loss

To gain a firmer grasp on how job displacement might cause Black workers to re-sort into disproportionately lower quality jobs and lead to racial inequalities in earnings loss, I consider how the task composition of workers' jobs changes after job loss. Jobs can be characterized by their bundle of tasks, or the activities that workers perform to produce an output. Viewing jobs through this task model, Autor, Levy, and Murnane (ALM) develop a typology of job tasks along

two dimensions (Autor, Levy, and Murnane 2003). The first dimension distinguishes between routine and nonroutine tasks. Simply put, routine tasks are those than can be carried out by machines following programmable rules. These tasks might include cutting sheet metal or processing forms. Nonroutine tasks might include strategic planning or providing customer service. The second dimension of ALM's task model is manual versus cognitive (or abstract) tasks. Manual tasks are carried out physically (e.g. cleaning) while cognitive tasks involve processing information and reasoning (e.g. managing employees).

The task-based approach offers substantial explanatory power when examining changes in employment and inequality over the last 40 years. Unlike occupation-based analyses that have trouble capturing trends in income inequality (Kim and Sakamoto 2008; Sakamoto and Wang 2020), analyses of the tasks that workers perform and changes to the task composition of jobs and occupations explain at least half of the changes in US wages and wage inequality over the last few decades (Autor et al. 2003; Acemoglu and Autor 2011; Firpo, Fortin, and Lemieux 2011; Acemoglu and Restrepo 2022). Job tasks offer a conceptually grounded and empirically validated link between occupations and wages.

Automation and changing demand for routine job tasks have played a central role in rising economic polarization since 1980. Technological advances over the last few decades have allowed employers to automate routine tasks, leading to a decline in demand for labor in middle-skill, middle-paying jobs like clerical work, manufacturing production, and monitoring jobs. At the same time, demand rose both for lower-paying non-routine manual tasks such as those that involve interpersonal interaction, driving, or cooking, and for higher-paying abstract tasks that involve creativity, quantitative reasoning, or problem solving (Acemoglu and Autor 2011; Autor and Dorn 2013). Acemoglu and Restrepo (2022) demonstrate that the wages of a given

demographic group are strongly tied to the extent to which they experience task displacement, or the share of tasks that a demographic group loses due to automation. When workers are displaced from routine jobs, some move into higher-paying abstract-task-intensive jobs, but most typically move into lower-paying jobs that are more manual-task-intensive (Autor and Dorn 2009). Net of any other differences between Black and White workers, one might expect that Black workers are more likely to sort into jobs characterized by manual tasks due to their relatively low position in the labor queue. As a result, I expect that Black workers experience disproportionate earnings loss following job displacement largely due to racial differences in the task composition of workers' new jobs.

> *Hypothesis 4a: After job displacement, Black workers sort into more nonroutine-manual-task-intensive jobs than otherwise similar White workers.*
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> *Hypothesis 4b: After job displacement, Black workers sort into less nonroutine-abstract-task-intensive jobs than otherwise similar White workers.*
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> *Hypothesis 4c: The relationship between race and change in earnings after job displacement is mediated by the task composition of workers' new jobs.*

Changing demand for routine labor

Displaced workers' economic recovery is significantly influenced by labor market conditions. Earnings losses among displaced workers are highly countercyclical, ranging from about 5 percent during periods with strong labor markets to almost 40 percent during the Great Recession (Gardner 1995; Davis and von Wachter 2011; Farber 2015, 2017). These effects are felt strongly at the local labor market level. Previous work has shown that local economic downturns exacerbate earnings losses among displaced workers (Howland and Peterson 1988; Carrington

1993; Jacobson et al. 1993). There is also some evidence that the economic downturn has disproportionately negative effects on Black displaced workers (Couch and Fairlie 2010; Chattopadhyay and Bianchi 2021), suggesting that Black displaced workers may be especially vulnerable to changes in the structure of labor demand.

Historically, Black employment in routine-intensive jobs in sectors like manufacturing and public administration was an important factor in promoting the formation of Black working and middle classes (Landry 1987; Wilson 1996; Wilson, Roscigno, and Huffman 2013). The decline of US manufacturing played a significant role in amplifying racial inequality in earnings and employment (Wilson 1987; Wilson, Tienda, and Wu 1995; Western and Pettit 2005). Because Black workers have limited access to high-paying jobs (Anderson and Shapiro 1996; Grodsky and Pager 2001; Huffman and Cohen 2004) and are at greater risk of downward occupational mobility (McBrier and Wilson 2004; Wilson and Roscigno 2010; Wilson et al. 2013), I expect that declining demand for routine labor within workers' local labor markets exacerbates Black-White inequalities in both the types of jobs (job tasks) and earnings that workers attain after job displacement:

> *Hypothesis 5: Black-White inequality in the effect of job displacement on post-displacement job tasks and earnings is exacerbated by declining local demand for routine labor.*

Data and Methods

The Displaced Workers Supplement

This study uses data from the 1984 to 2020[1] waves of the Displaced Workers Supplement (DWS) to the Current Population Survey (CPS) obtained from IPUMS (Flood et al. 2023). The DWS records information from individuals who lost their job in the previous several years about their earnings and employment at their lost job and current job. CPS respondents 20 years and older who meet the criteria of a "displaced worker" are included in the sample. The definition of "displaced worker" varies between survey years. In order to make consistent comparisons across survey years, I limit the sample to the most restrictive definition, which defines displaced workers as respondents who lost or left a job due to layoffs or shutdowns within the past three years, were not self-employed, and did not expect to be recalled to work within the next six months. This definition has been in place since 1998 and can be applied back to previous survey years. I limit the sample to Black and White individuals in civilian occupations between the ages of 25 and 54 who lost a full-time job. 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). I also drop respondents who are missing data on the analytic variables. All analyses use weights specific to the DWS.

Key Variables

Dependent variables

This study examines three outcomes: reemployment, change in earnings, and change in job tasks. Respondents are coded as *reemployed* if they obtained any type of employment after

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[1] 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).

displacement. *Weekly earnings* are standardized to year-2000 US dollars. Top-coded values are multiplied by 1.4, as is a standard practice in labor economics (e.g. Lemieux 2006). The difference in the logarithm of weekly earnings at respondents current and lost job is used as the outcome variable in earnings analyses. *Change in job task intensity* is the difference in (abstract, routine, or manual) task intensity at respondents' current and lost job. The coding of occupational tasks and task intensity is described below.

Occupations and tasks

The CPS records respondents' occupations using US Census occupational coding schemes. Between 1984 and 2020, the US Census updated their occupation codes five times. With each change in coding schemes, some occupations disappear, some new occupations appear, some occupations are merged, and others are broken apart. These coding changes make it difficult to examine changes within occupations over time. Because this study matches job tasks to detailed occupation codes, I use a standardized occupational coding scheme developed by David Dorn (Dorn 2009; Autor and Dorn 2013) and subsequently used in numerous economic studies of occupations and inequality. The Dorn occupation codes provide a balanced panel of occupations that are consistently defined across US Census occupation coding schemes, allowing analysts to make consistent comparisons within and between occupations over time. These codes result primarily from aggregating detailed occupation codes. These analyses use both detailed occupation codes at the 3-digit level and aggregate 1-digit occupation codes.

    Job tasks are measured using task scores from the Dictionary of Occupational Titles and matched to Dorn occupations (Autor and Dorn 2013). Each occupation is scored on a scale of 0 to 10 in its use of *abstract, routine,* and *manual* tasks (Autor et al. 2003; Dorn 2009; Autor and

Dorn 2013). Following Autor and Dorn (2013), *task intensity* is defined as the difference between the logarithm of a detailed occupation's score on the focal job task and the logarithm of the occupation's score on other job tasks. For example, routine task intensity is the logarithm of an occupation's routine task score minus the logarithm of its abstract task score minus the logarithm of its manual task score. A state's *routine employment share* is defined at the state-year level and refers to the proportion of employees within a state who are employed in jobs with a routine task intensity above the 66th percentile.

Control variables

Race is coded using an indicator variable for if a respondent is *Black*. *Female* is coded 1 for female respondents. *Married* is coded 1 for all married respondents, regardless of if the spouse is present in the household. *Education* is coded as "less than high school", "high school degree", or "more than high school". Analyses also control for the *number of children* in the respondent's household, years of *tenure* at the respondent's lost job, *potential experience* (age – years of education – 6), *years since job displacement*, and whether the respondent *moved* since displacement. Cox proportional hazards models define analysis time as *weeks unemployed* after displacement. Heckman-corrected models use two selection variables: an indicator for whether the respondent *received unemployment benefits* and the respondent's *dependency ratio*, which is defined as the ratio of number of children in the household to total household size.

Analytic approach

Time periods

For most analyses, respondents are divided into five-year time periods (1984-1989, 1990-1994, and so on) to examine how racial inequalities in post-displacement outcomes vary over time.

Job search

I first examine how Black and White displaced workers differ in their length of job search from 1984 to 2020. Racial inequalities in job search are modeled using Cox proportional hazards models specified as follows:

$$h(t; z) = h_0(t)exp(\delta Black + \eta_t + X\beta) \qquad (1)$$

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. η_t are year fixed effects. X represents a vector of control variables including individual characteristics, lost job characteristics, and state-year economic characteristics.

Earnings and task change regressions

Next, I examine how re-employed Black and White displaced workers earnings and job tasks change relative to their earnings and tasks at their previous jobs using OLS. The outcome of interest in the earnings regressions is the difference in the logarithm of respondents' weekly earnings at their current job and the logarithm of weekly earnings at their previous job. Task change regressions model the difference in the abstract, routine, and manual task intensity at workers' current and lost jobs. The models are specified as:

$$y_1 - y_0 = \beta_0 + \beta_1 Black + \beta_2 y_0 + \eta_t + X\gamma \qquad (2)$$

$$\text{A/R/MTI}_1 - \text{A/R/MTI}_0 = \beta_0 + \beta_1 \text{Black} + \beta_2 \text{A/R/MTI}_0 + \eta_t + X\gamma \qquad (3)$$

where y represents the logarithm of weekly earnings and its subscripts 0 and 1 refer to respondents' lost and current jobs, respectively. A/R/MTI refer to three outcomes: abstract task intensity, routine task intensity, and manual task intensity. The coefficient of interest β_1 describes Black-White inequality in respondents' average difference in log earnings (task intensity) upon reemployment after job displacement. Its value can be interpreted approximately as a percent change in earnings (change in task intensity). Similar to a lagged dependent variable approach, these models control for earnings (task intensity) at respondents' lost jobs. This approach addresses the potential spurious correlation between race and change in outcomes due to racial differences in earnings and job tasks. η_t are year fixed effects and X represents a vector of controls including years since job displacement, year fixed effects, individual characteristics, lost job characteristics, and state-year economic characteristics.

I also estimate models that use a Heckman correction (Heckman 1979) to address selection bias stemming from missing data for respondents who are unemployed at the time of the survey. This approach requires modeling selection into employment using at least one variable that predicts employment but does not directly affect earnings or job tasks. Selection is modeled using an indicator for receipt of unemployment benefits and respondents' dependency ratio, which is defined as the ratio of children in respondents' household to the total household size. Both receipt of unemployment benefits and number of children are expected to affect respondents' labor supply (Katz and Meyer 1990; Angrist and Evans 1998) but not directly affect earnings or job tasks. Heckman models are estimated via maximum likelihood.

Decomposition of racial inequality in change in earnings

To test how the characteristics of workers' pre-displacement and post-displacement jobs contribute to racial inequalities in the effect of displacement on earnings, I conduct a Kitagawa-Oaxaca-Blinder decomposition (Kitagawa 1955; Blinder 1973; Oaxaca 1973) of the Black-White gap in earnings change. Following Neumark (1988), I estimate the decomposition as follows:

$$\Delta y^W - \Delta y^B = [\bar{X}^W - \bar{X}^B]\beta^* + [\bar{X}^W(\beta^W - \beta^*) + \bar{X}^B(\beta^* - \beta^B)] \qquad (4)$$

where y represents the logarithm of weekly earnings 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 and β^* refers to coefficients from a pooled model. I use coefficients from a pooled model as the reference coefficient because discrimination can affect how both White and Black workers are treated in the labor market. The decompositions are estimated net of the logarithm of weekly earnings at workers' lost jobs, years since displacement, and year fixed effects.

The first component of the decomposition is the "explained" component. It allows us to observe how racial differences in average characteristics such as education, occupation, or job tasks affect racial inequality in how earnings change after job displacement. The second component describes how racial differences in coefficients contribute to differences in outcomes. This second component is the "unexplained" component and is often interpreted as evidence of discrimination.

Mediation by new job task composition

Next, I estimate how much of the Black-White gap in change in log earnings following job displacement can be explained by differences in the task composition of Black and White workers' new jobs. I use the Karlson, Holm, and Breen (Karlson, Holm, and Breen 2012) (KHB)

method to decompose the covariate-adjusted Black-White gap into direct effects of race and indirect effects of racial sorting into different job tasks. These analyses test if the coefficient on *Black* changes between Model (2) and the following model that controls for the task composition at respondents' new jobs:

$$y_1 - y_0 = \beta_0 + \beta_1 Black + \beta_2 y_0 + \beta_3 abstract_1 + \beta_4 routine_1 + \beta_5 manual_1 + \eta_t + X\gamma \quad (5)$$

where abstract, routine, and manual refer to the DOT derived task ratings for respondents' new occupation. Significant differences between the β_1 coefficients in Equations (2) and (5) indicate mediation by task sorting. Mediation analyses are implemented using the user-written -khb-command in Stata (Kohler, Karlson, and Holm 2011). Because the outcomes are continuous and modeled using linear regression, this approach is essentially the same as the standard Baron and Kenny (1986) approach to mediation analysis. The KHB procedure has the benefit of easily accommodating multiple mediators and determining their individual contribution to the overall level of mediation.

Local labor market task structure

Last, I examine how the task composition of respondents' local labor markets affects racial inequalities in patterns of task sorting and earnings changes by estimating the following models:

$$\Delta y = \beta_0 + \beta_1 Black + \beta_2 RSH_t + \beta_3 Black \, X \, RSH_t + \beta_4 y_0 + \alpha_i + \eta_t + X\gamma \quad (6)$$

$$\Delta(A/R/M)TI = \beta_0 + \beta_1 Black + \beta_2 RSH_t + \beta_3 Black \, X \, RSH_t + \beta_4 (A/R/M)TI_0 + \alpha_i + \eta_t + X\gamma$$

$$(7)$$

where *RSH* refers to the respondent's state's routine employment share in year *t* and (A/R/M)TI refers to the abstract, routine, or manual task intensity of their job. The coefficient β_3 describes how the Black-White gap in economic outcomes after job displacement change with local demand for routine labor. By including state (α_i) and year (η_t) fixed effects, these models

estimate how within-state racial inequalities change as states' demand for labor changes, net of time-invariant differences between states and national trends in economic recovery after job displacement.

Results

Descriptive statistics

The demographic composition of the DWS sample does not change substantially over time (Table 1a). Just over 10 percent of the sample is Black and around 40 percent is female. Marriage rates decline from just under 65 percent in 1984-1989 to about 53 percent in 2015-2020 and the percent of respondents with children in the household declines from 57 to 52 percent. Educational attainment increases significantly over time. While only 36 percent of displaced workers from 1984 to 1989 had an education beyond a high school degree, over 70 percent were educated past high school in 2015 to 2020. Potential experience and tenure at respondents' lost job are fairly steady over time. Reemployment rates are highly cyclical, sitting in the low 60s during the mid-late 1980s, early 1990s, and early 2010s, and in the mid 70s during the remaining periods.

[[Table 1a here]]

[[Table 1b here]]

Differences between workers' lost and current jobs are surprisingly consistent across time periods (Table 1b). A few clear trends emerge. First, workers consistently sort out of production and operator occupations and into either service or managerial, professional, and technical occupations. This corresponds to higher abstract task ratings at respondents' current jobs and lower routine task ratings. Similarly, reemployment rates are low in declining industries like

manufacturing and high in industries like retail trade and professional services. These trends reflect broader patterns of economic polarization in the late 20th and early 21st century: displaced workers leave middle-paying routine-intensive jobs for either lower-paying manual or service work or higher-paying abstract work. Across all periods, job displacement is associated with substantial earnings losses.

Reemployment

First, I examine racial inequalities in time to reemployment after job displacement. Table 2 presents coefficients from Cox proportional hazards models that describe Black displaced workers' hazard of becoming reemployed relative to that of White workers. Column (1) adjusts for survey year fixed effects. Column (2) includes individual-level controls such as demographics, education, experience, and lost job characteristics. Column (3) adds state-year level controls including the state's industrial composition, unemployment rate, and routine employment share. Across all time periods, Black workers' hazard of becoming reemployed after job displacement is significantly lower than that of White workers (Table 2; Figure 1). Racial inequality in the rate of becoming reemployed is especially high between 1984 and 1989, where the hazard of finding a new job is about 30 percent lower for Black workers than White workers. Consistent with Hypothesis 1, the next highest rates of racial inequality in reemployment since 1990 are in the two other time periods that immediately follow large recessions. Black workers' hazard of becoming reemployed is about 23 percent lower from 1995 to 1999 and 20 percent lower from 2010 to 2014. During periods of rising unemployment (1990-1994 ($p<0.10$), 2000-2004, 2005-2009), we observe smaller but still significant racial inequalities in rates of

reemployment. Estimates of Black-White inequality in reemployment are not particularly sensitive to the inclusion of control variables.

[[Table 2 here]]

[[Figure 1 here]]

Change in earnings

Next, I examine racial inequality in the difference in earnings at respondents' lost and current jobs. Figure 2 plots observed changes in log weekly earnings for Black and White DWS respondents. In almost every year, Black displaced workers experience greater earnings losses than White displaced workers. Consistent with prior literature, the Black-White gap in earnings losses narrows between the mid-1980s and the mid-1990s. This gap continues to narrow and eventually disappear altogether by the mid-2000s. However, consistent with Hypothesis 1, the Black-White gap in earnings loss rapidly expands following the Great Recession in 2008, far surpassing inequality observed in the 1980s.

[[Figure 2 here]]

Regression analyses presented in Table 3 and Figure 3 show a similar pattern. Coefficients reported in Table 3 describe the difference in expected changes in log earnings for Black and White workers. Separate models are run for each five-year period and each row reports results from period-specific models. The first column reports coefficients from models that adjust for survey year fixed effects, years since job displacement, and the respondent's log earnings at their lost job. The second column also adjusts for individual- and state-year-level controls. From Column 1, we see that from 1984 to 1989, Black workers' earnings losses are about 12 percent [exp(-0.133)-1] greater than White workers' losses. This gap narrows and becomes statistically insignificant by the 2005 to 2009 period. The Black-White gap in earnings

losses after displacement then expands to 16 percent [exp(-0.177)-1] in 2010 to 2014 and 19 percent [exp(-0.205)-1] in 2015 to 2020.

Coefficients in Column 2 indicate that controlling for individual characteristics, lost job characteristics, and state-year economic characteristics somewhat attenuates estimates of racial inequalities in earnings loss in most periods. This is especially notable between 2015 and 2020, where including controls reduces the point estimate on the Black coefficient by over 50 percent and renders the coefficient not statistically significant. In this model, Black-White inequalities in earnings loss are highest in the periods immediately following economic recessions (1984-1989, 1995-1999, and 2010-2014).

[[Table 3 here]]

It is possible that we observe Black-White inequalities in earnings losses following job displacement because Black and White workers differentially select into reemployment. I showed earlier that White workers become reemployed more quickly than Black workers. Estimates from the Heckman-corrected models allow us to examine what racial inequality in earnings loss after job displacement might look like if all displaced workers became reemployed (Table 3, Column 3). Across all periods, the Black-White gap in post-displacement changes in earnings is not significant at conventional thresholds. This suggests that racial inequalities in earnings loss after job displacement are largely driven by racial differences in who becomes reemployed and who remains not working.

[[Figure 3 here]]

Decomposition analysis: the role of pre- and post-displacement job characteristics

Hypotheses 2 and 3 propose that pre- and post-displacement job characteristics play different roles in shaping Black-White inequality in how job displacement affects workers' earnings. Specifically, racial differences in pre-displacement jobs should *reduce* racial inequality in the effect of displacement on earnings while post-displacement jobs should *increase* racial inequality.

I test these hypotheses through a decomposition analysis of Black-White inequality in the change in log earnings among reemployed displaced workers. Results from the decomposition are reported in Table 4. Each column in Table 4 corresponds to a separate decomposition analysis for DWS respondents in the survey years corresponding to the column label. The top section of the table reports average Black and White changes in log earnings, adjusted for log earnings at their lost job. The row labeled "Difference" reports the difference between White and Black workers' average change in log earnings. The row labeled "Explained" describes the component of that difference that is attributable to differences in Black and White workers' values on covariates used in the decomposition. It can be interpreted as how much the gap would change if Black workers had the same characteristics as White workers. The "Unexplained" component reflects how much the gap would change if Black and White workers had the same coefficients, i.e. if they received the same returns to education, experience, etc. The explained and unexplained components are then further decomposed in the second and third sections of the table. In the "Explained" section of the table, individual cells describe how much the Black-White gap in how displacement affects log earnings would change in the counterfactual where Black workers had the same average value on that covariate as White workers (e.g. if Black workers had the same average educational attainment as White workers). Cells in the "Unexplained" section of the table describe how the gap in change in log earnings would change

in the counterfactual where Black and White workers have the same coefficient on a covariate (e.g. if an additional year of experience had the same effect on earnings for Black and White workers).

Consistent with Hypothesis 2, the "Lost job characteristics" row of the Explained section of Table 4 indicates that differences in lost-job characteristics – occupation, industry, and task composition – reduce racial inequality in post-displacement earnings changes (Table 4). The negative and significant values reported in this row indicate that if Black workers' lost jobs followed the same occupational, industrial, and task distribution as those of White workers, racial inequality in earnings losses would have been even greater. Point estimates for the lost-job component of the decomposition are negative in every time period and statistically significant between 1984 and 1999. Racial inequalities in labor market experience follow a similar pattern. If Black workers had the same amount of experience as White workers, they would have experienced even greater earnings losses. Trends regarding job tenure are more ambiguous. From 1984 to 1994, if Black workers lost jobs with the same level of tenure as White workers, they would have experienced smaller earnings losses. However, from 1995 onward, equalizing Black and White workers' average tenure would exacerbate Black workers' earnings losses following displacement.

[[Table 4 here]]

In line with Hypothesis 3, the explained component of the decomposition corresponding to workers' current jobs is positive in every period and statistically significant in all periods except 2010-2014. These values indicate that if Black workers sorted into jobs with the same occupational, industrial, and task composition as White workers, the Black-White gap in change in log earnings after job displacement would shrink. Instead, because Black displaced workers

become reemployed in different types of jobs than White displaced workers, they experience greater losses in log earnings upon reemployment. Altogether, these results strongly support the expectation that White workers have more to lose at their pre-displacement jobs, but Black workers lose more because they find relatively low-quality employment post-displacement.

Earnings and task sorting

In most periods, controlling for workers' pre-displacement characteristics explains relatively little of the Black-White gap in earnings losses after job displacement. Because much of racial inequality in earnings is due to the allocation of Black and White workers to different segments of the labor market, it seems likely that racial inequality in post-displacement earnings changes might be explained by racial differences in the types of work that displaced workers sort into when reentering the labor market.

Change in job tasks

Table 5 presents results from regressions modeling racial inequalities in how the task composition of workers' jobs changes after displacement. Headings in Table 5 correspond to three outcome variables: change in abstract task intensity, change in routine task intensity, and change in manual task intensity. Each column under the heading corresponds to different model specifications: OLS with controls for survey year, years since displacement, and task intensity at the lost job, OLS with additional individual and state-year controls, and Heckman-corrected models. Each row reports coefficients from separate models for each five-year period. Coefficients describe the difference in how the task intensity of Black displaced workers' new jobs changes upon reemployment relative to White workers.

Hypothesis 4a predicts that Black workers will disproportionately sort into manual-task-intensive work after displacement. Consistent with this hypothesis, the manual task intensity of Black workers' jobs increases significantly and substantially more than for White workers after displacement. This trend holds after controlling for differences in observables and accounting for selection into employment in all periods except for 1990-1994 and 2010-2014. This trend is strongest from 1984 to 1989, where OLS and Heckman models indicate that Black workers experience an additional 0.5-point increase in manual task intensity (0.25 SDs) relative to White workers. This difference in change in manual task intensity diminishes to about 0.25 points (0.12 SDs) from 2000 to 2004 before increasing to about 0.4 points (0.2 SDs) in the period of 2015 to 2020.

Hypothesis 4b predicts that White workers disproportionately sort into abstract-task-intensive work after displacement. I find evidence consistent with this hypothesis in the periods 1984-1989, 1995-1999, and 2015-2020. Negative estimates of the Black coefficient (OLS (2)) indicate that, relative to White workers, Black workers experience a reduction in abstract task intensity after displacement of 0.25 points (0.13 SDs) from 1984 to 1989, 0.3 points (0.16 SDs) from 1995 to 1999, and 0.44 points (0.23 SDs) from 2015 to 2020. While point estimates on the Black coefficient are also negative in other periods, they are not statistically significant.

[[Table 5 here]]

Does task sorting explain racial differences in how job displacement affects earnings?

The previous analyses show that after job displacement, net of other observable differences, Black workers sort into jobs with relatively high manual task intensity and relatively low abstract task intensity. Hypothesis 4c predicts that these racial patterns to task sorting explain a significant amount of racial inequality in how job displacement affects earnings. Table 6 presents

results from mediation analyses that estimate how much of the Black-White gap in earnings losses, net of pre-displacement controls, is explained by the task composition of the jobs that workers sort into after being displaced. The total effect describes the Black-White gap in earnings losses net of differences on observables in pre-displacement characteristics. The indirect effect describes how much of this difference is explained by the task composition of workers' new jobs. The direct effect describes the remaining difference. The right-hand column describes the proportion of the total effect that can be explained by differences in each type of task by race.

[[Table 6 here]]

From 1984 to 2004 and 2015 to 2020, the task composition of workers' new jobs explains between a quarter and a third of the adjusted Black-White gap in earnings. Between 2005 and 2009, the Black-White gap is very small, and new job task composition explains 96 percent of the gap. But its effect on the coefficient in log points, rather than percent change, is comparable to other periods. New jobs' abstract task score explains a significant proportion of racial inequality in post-displacement earnings. In most periods, abstract task scores explain between one-fifth and one-third of the total Black-White gap. The explanatory power of new jobs' routine task score declines over time. The routine task score is the strongest mediator from 1984 to 1989, explaining about 20 percent of the adjusted Black-White gap in earnings change. From 2000 to 2009, the routine task score of workers' new job plays a smaller but meaningful role in explaining racial inequalities in how earnings change after displacement. All told, racial differences in task sorting explain a substantial proportion of racial inequalities in earnings changes after job displacement.

Local demand for routine labor

Hypothesis 5 predicts that declining demand for routine labor will exacerbate racial inequalities in task sorting and earnings changes after job displacement. I test these hypotheses by examining how racial differences in job tasks and earnings change within states as their demand for routine labor changes. Table 7 reports results from regression analyses where changes in task intensity and log earnings are predicted by race, state-year-level routine task share, and their interaction. The coefficient on the interaction is of interest, and it describes differences in the effect of state-level demand for routine labor on outcomes for Black and White workers.

Regression results presented in Table 7 and Figure 4 provide strong evidence in favor of Hypothesis 5. First, as a state's routine employment share declines, both Black and White workers see similar declines in the routine task intensity of their new jobs. Major inequalities emerge when we consider the other tasks that characterize workers' new jobs. Black-White gaps in the abstract task intensity of workers' new jobs grow substantially as the demand for routine labor declines. While White workers' abstract task intensity is not sensitive to their state's routine task share, Black workers' average new job abstract task intensity declines significantly compared to their old job. At the same time, Black workers' new job manual task intensity grows substantially as the demand for routine labor declines, while White workers' manual task intensity does not change. Taken together, these trends suggest that while White workers are able to find reemployment in jobs with relatively similar manual and abstract task structures after losing their jobs, Black workers sort away from jobs with higher-paying abstract tasks and into jobs characterized by lower-paying manual tasks.

[[Table 7 here]]

[[Figure 4 here]]

These trends are consistent with how racial differences in earnings are affected by changes in local demand for routine labor. As states' routine task share declines, Black workers experience greater earnings losses while White workers remain unaffected. Altogether, these results suggest that among displaced workers, the costs of declining demand for routine labor are borne disproportionately by Black workers.

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. This paper makes two contributions towards that end. First, I examine trends in Black-White inequality in the effect of displacement on job search and earnings for the first time since Fairlie and Kletzer's analyses of job displacement in the 1980s and 1990s (Fairlie and Kletzer 1996, 1998). I show that while racial inequalities in post-displacement outcomes narrowed through the mid-2000s, they widened considerably after the Great Recession.

Second, this paper's main contribution is a theoretical and empirical elaboration of the mechanisms that explain why Black and White workers' earnings are differently affected by job displacement. I draw on matching and queueing models of the labor market to suggest that we can better understand the consequences of job displacement by considering what workers lose by being displaced from their old job and what workers gain through reemployment at their new job. I argue that due to their advantages in labor market matching processes and firm internal labor markets, White workers have more to lose from being displaced. Conversely, due to Black workers' relative

disadvantage in the labor queues, I argue that Black job seekers have less to gain after being displaced. In line with this argument, I show that White workers experience significant and disproportionate earnings losses relative to Black workers because they are displaced from higher quality jobs on average. I also show that net of differences in pre-displacement individual and job characteristics, Black workers consistently sort into lower quality jobs after being displaced and experience significant earnings losses as a result. All told, White workers' disproportionate earnings losses attributable to their pre-displacement jobs are outweighed by Black workers' disadvantage in re-sorting after displacement, leading Black workers to experience greater earnings losses after job displacement.

These analyses also highlight the importance of job tasks for explaining patterns of economic stratification. Over the last half century, economic restructuring and automation combined to dramatically change the structure of labor demand in the United States. A major consequence of these changes was reduced demand for routine labor and increased demand for nonroutine manual (typically low paying) and abstract labor (typically high paying). While previous work has shown that declining demand for routine labor led to significant earnings losses for Black workers because of their disproportionate representation in routine-intensive jobs, I also show that reduced demand for routine labor disproportionately funnels Black workers into lower paying nonroutine manual jobs compared to otherwise similar White workers. I demonstrate that job displacement triggers this racial pattern of task sorting, thereby exacerbating racial economic inequality by reallocating Black and White workers to different segments of the labor market.

More broadly, these analyses highlight Black workers' precarious position in the labor market and the real challenges that Black workers face in finding high quality employment. I have demonstrated that Black workers' lower position in the labor queue poses a significant

disadvantage in finding high quality employment after being displaced. These findings are consistent with prior work suggesting that job loss may be particularly harmful for Black workers because they are likely to initially be employed at (and displaced from) relatively nondiscriminatory firms, and will have to search for a new job among firms with heterogeneous tastes for discrimination that are likely to be more discriminatory than their former employer (Hu and Taber 2005). In the face of a discriminatory labor market, maintaining durable employment relations may be especially important for Black workers' career trajectories and long-run economic wellbeing.

While this paper only examines racial inequalities in the short-run consequences of job displacement, future work should investigate how racial inequalities after job displacement change in the long-run. It may be the case that scarring effects are particularly strong for Black workers. This seems likely if Black workers sort into jobs where the returns to experience are relatively low (as is the case with much nonroutine manual work) or if Black workers cannot effectively switch jobs further down the road to find employment in less-discriminatory firms. In addition, future work may be interested in examining racial inequalities in the psychological and health effects of job displacement (see Burgard et al. 2007; Brand, Levy, and Gallo 2008; Black, Devereux, and Salvanes 2015; Brand 2015). If Black workers indeed experience a more difficult and less fruitful search for high quality employment after displacement, they may experience worse psychological and health outcomes as a result.

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Tables and Figures

Table 1a. Descriptive statistics of analytic sample

	1984-1989	1990-1994	1995-1999	2000-2004	2005-2009	2010-2014	2015-2020
Black	11.64	10.79	10.1	11.11	12.43	13.37	13.25
Female	35.54	40.58	43.49	41.94	43.26	38.56	41.1
Married	64.68	61.45	61.16	58.44	57.44	53.48	53.49
Has kids	57.18	55.06	55.5	54.25	54.14	52.47	52.2
Education							
Less than HS	17.78	10.87	7.57	5.68	5.54	5.28	3.54
High school	46.15	41.74	35.33	33.24	33.54	31.79	25.55
More than HS	36.07	47.4	57.1	61.07	60.92	62.94	70.91
Potential experience	17.27	18.07	19.1	19.78	20.56	20.18	19.37
Tenure (lost job)	4.56	4.74	5.15	4.85	5.23	4.87	4.71
Currently employed	62.62	65.85	77.54	72.08	74.63	60.67	75.93
Moved since displacement	17.12	15.66	17.34	13.78	14.19	12.75	13.64
Years since displacement	1.85	1.82	1.84	1.79	1.86	1.85	1.81
N	6401	6220	3357	5806	2728	5342	2090

Table 1b. Lost and current job characteristics

	1984-1989		1990-1994		1995-1999		2000-2004		2005-2009		2010-2014		2015-2020	
	Lost job	Current job	Lost job	Current job	Lost job	Current job	Lost job	Current job	Lost job	Current job	Lost job	Current job	Lost job	Current job
Occupation														
Manager professional technical	24.61	25.33	29.47	31.42	35.42	37.88	38.7	40.14	36.47	40.18	37.35	40.45	45.93	46.5
Admin support and retail sales	16.15	21.29	21.01	23.34	22.28	22.74	20.67	21.65	22.84	21.46	19	20.18	16.27	17.77
Service	6.59	10.56	6.5	9.11	7.63	8.61	6.05	9.1	7.37	9.23	8.69	12.28	9.52	10.21
Precision production and craft	5.17	4.54	4.15	3.39	2.74	2.61	3.58	2.05	2.64	2.41	2.92	2.01	1.72	1.7
Operators assemblers inspectors	19.09	10.36	14.31	9.2	9.5	7.41	10.33	5.9	9.49	6.04	7.81	4.5	5.69	3.84
Transportation construction mechanics mining agriculture	28.39	27.93	24.57	23.54	22.43	20.75	20.67	21.15	21.19	20.68	24.24	20.58	20.86	19.97
Task intensity														
Abstract	-0.32	-0.06	0.08	0.24	0.3	0.39	0.39	0.44	0.43	0.5	0.33	0.42	0.55	0.49
Routine	1.13	1.21	1.21	1.23	1.15	1.14	1.05	0.99	1.14	1.05	1	0.93	0.83	0.76
Manual	-2.46	-2.62	-2.82	-2.86	-2.91	-2.94	-2.96	-2.9	-3	-2.96	-2.86	-2.8	-2.92	-2.81
Industry														
Agriculture forestry and fisheries	1.77	1.47	1.11	1.15	1.37	1.15	0.93	1.31	0.92	1.13	1.29	1.45	1.48	1.51
Mining	4.97	1.92	2.07	1.34	1.1	0.69	1.21	0.69	0.62	0.79	1.42	1.3	3.4	1.76
Construction	11.28	11.63	13.36	10.38	11.62	9.72	10.44	9.61	11.4	10.56	14.51	10.61	11.44	10.21
Manufacturing	39.24	24.83	30.63	22.27	24.64	19.13	26.16	16.08	23.68	15.96	18.68	12.28	15.84	12.48
Transportation and other public utilities	7.84	8.08	6.37	7.2	7.36	7.15	9.06	7.57	8.98	8.69	7.47	7.87	7.32	8.19
Wholesale trade	5.78	5.39	5.68	5.05	4.8	4.73	4.98	4.9	3.67	4.17	3.2	3.09	3.3	2.77
Retail trade	9.95	14.77	13.3	15.36	14.18	13.95	12.3	14.19	13.53	12.97	13.72	15.12	13.06	13.74
Finance insurance and real estate	3.47	5.89	7.11	7.35	7.57	7.11	6.44	8.12	9.13	9.72	7.94	7.93	7.13	7.69
Business and repair services	5.19	5.94	6.05	7.67	7.33	10.3	11.28	12	9.53	9.87	9.92	10.68	11.53	11.66
Personal services	1.56	2.67	2.06	2.69	1.7	2.31	1.71	2.08	1.43	2.46	1.72	2.01	1.67	2.27
Entertainment and recreation services	0.92	0.8	1.16	1.07	1.58	1.96	1.27	1.79	1.39	1.77	1.68	2.31	1.96	1.45
Professional and related services	6.73	13.62	9.84	15.6	14.3	19.17	13.02	19.5	14.63	19.65	16.94	22.34	20	23.13
Public administration	1.3	2.99	1.29	2.88	2.47	2.65	1.21	2.15	1.1	2.26	1.5	3.02	1.87	3.15
Weekly earnings (2000 $)	544.51	515.05	587.77	546.14	633.73	600.35	739.31	670.48	708.29	679.52	714.82	648.54	796.64	770.65
N	6401	4008	6220	4096	3357	2603	5806	4185	2728	2036	5342	3241	2090	1587

Table 2. Cox proportional hazard models of time to re-employment

	(1)	(2)	(3)	N
Black-White gap in hazard ratios				
1984-1989	0.705***	0.729***	0.709***	5663
1990-1994	0.915+	0.899+	0.876*	3441
1995-1999	0.801***	0.797***	0.772***	4033
2000-2004	0.916*	0.922*	0.916*	6105
2005-2009	0.900*	0.866*	0.845**	3006
2010-2014	0.821***	0.827***	0.811***	5198
2015-2020	0.880*	0.869**	0.872*	2886
Controls				
Year fixed effects	Yes	Yes	Yes	
Individual	No	Yes	Yes	
State-year	No	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. Individual controls include gender, marital status, number of children, educational attainment, potential experience, potential experience squared, years tenure (lost job), occupation (lost job), industry (lost job), task composition of lost job, and moved since job displacement. State-year controls include year-specific industry composition, unemployment rate, and routine employment share.

Figure 1. Time to reemployment by race

Time to Re-Employment by Race (First Year Post-Displacement)

Proportion Re-Employed

Weeks

Note: p-value indicates significance of log-rank test of equality of Black and White survivor functions
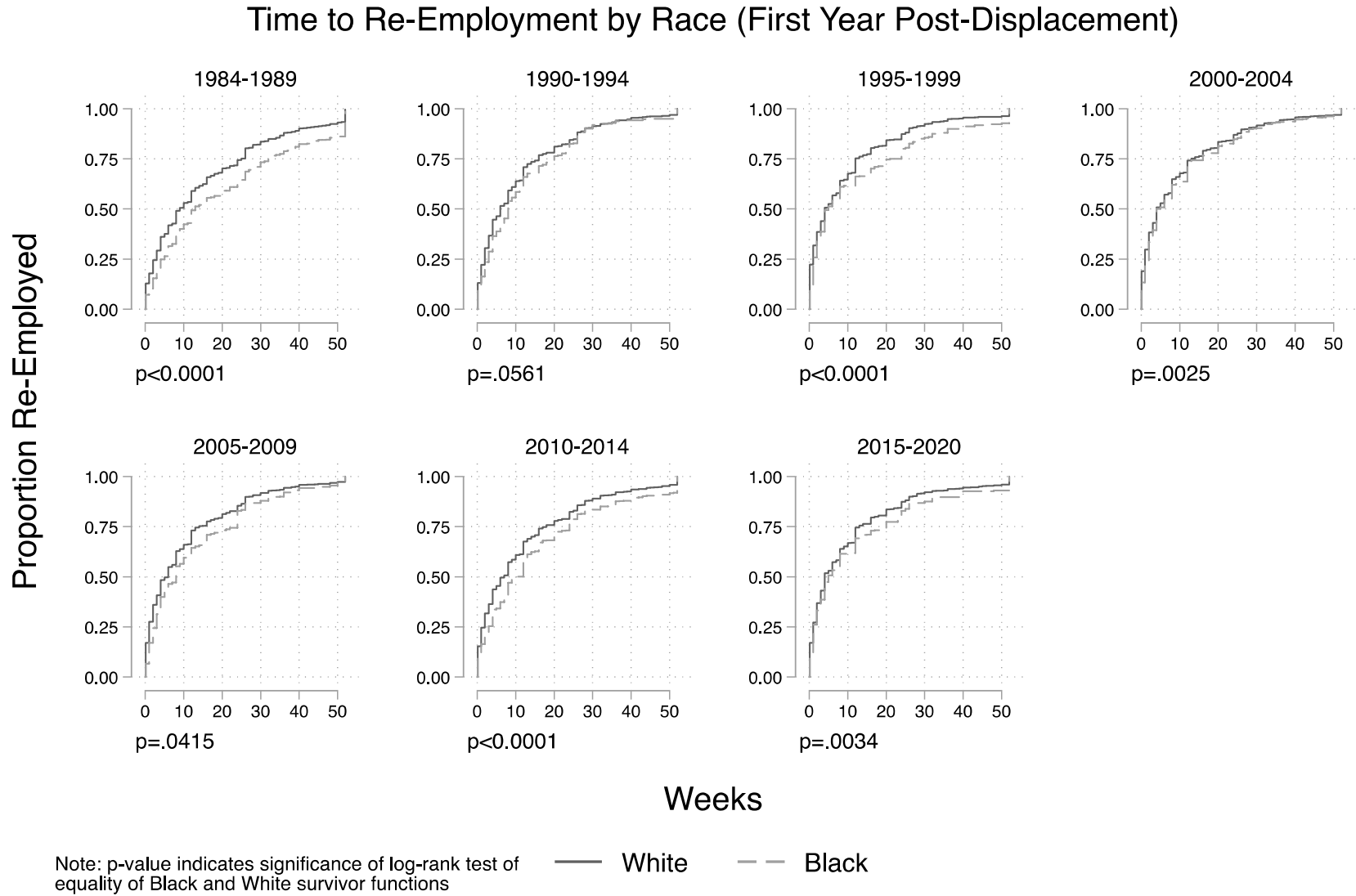
—— White   – – Black

Figure 2. Change in log earnings after job displacement by race
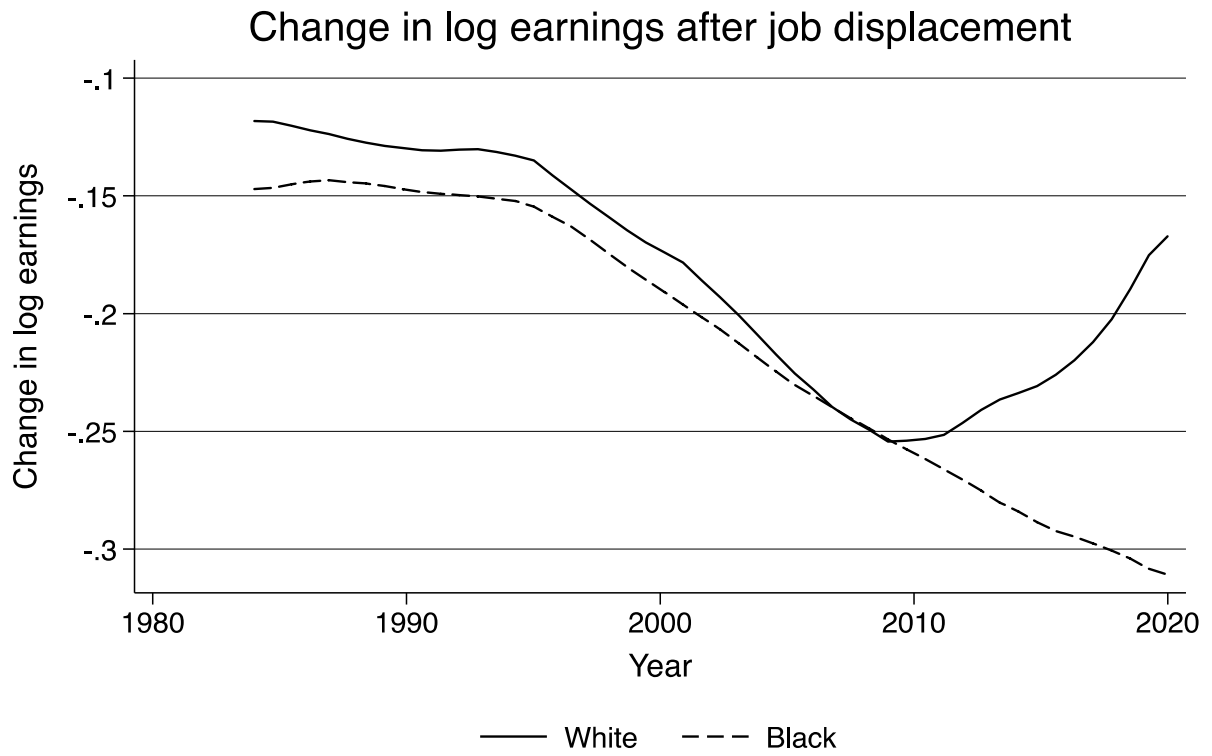
Table 3. Racial inequality in change in log earnings after job displacement

	OLS (1)	OLS (2)	Heckman
Black-White inequality in change in log earnings			
1984-1989	-0.133***	-0.117***	0.00839
1990-1994	-0.0723*	-0.0467	0.0692+
1995-1999	-0.113**	-0.122**	-0.0374
2000-2004	-0.112**	-0.0714*	0.0300
2005-2009	-0.0501	-0.0314	0.0902
2010-2014	-0.177**	-0.146*	0.0113
2015-2020	-0.205*	-0.0993	0.0106
Controls			
Log weekly earnings (lost job)	Yes	Yes	Yes
Years since job displacement	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Individual	No	Yes	Yes
State-year	No	Yes	Yes

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors. Coefficients on indicator variable for race (reference=white) obtained from OLS and Heckman-corrected models. Heckman selection variables include dependency ratio and receipt of unemployment benefits. Individual controls include gender, marital status, number of children, educational attainment, potential experience, potential experience squared, years tenure (lost job), occupation (lost job), industry (lost job), task composition of lost job, and moved since job displacement. State-year controls include year-specific industry composition, unemployment rate, and routine employment share.

Figure 3. Predicted Black-White inequality in change in log earnings after job displacement
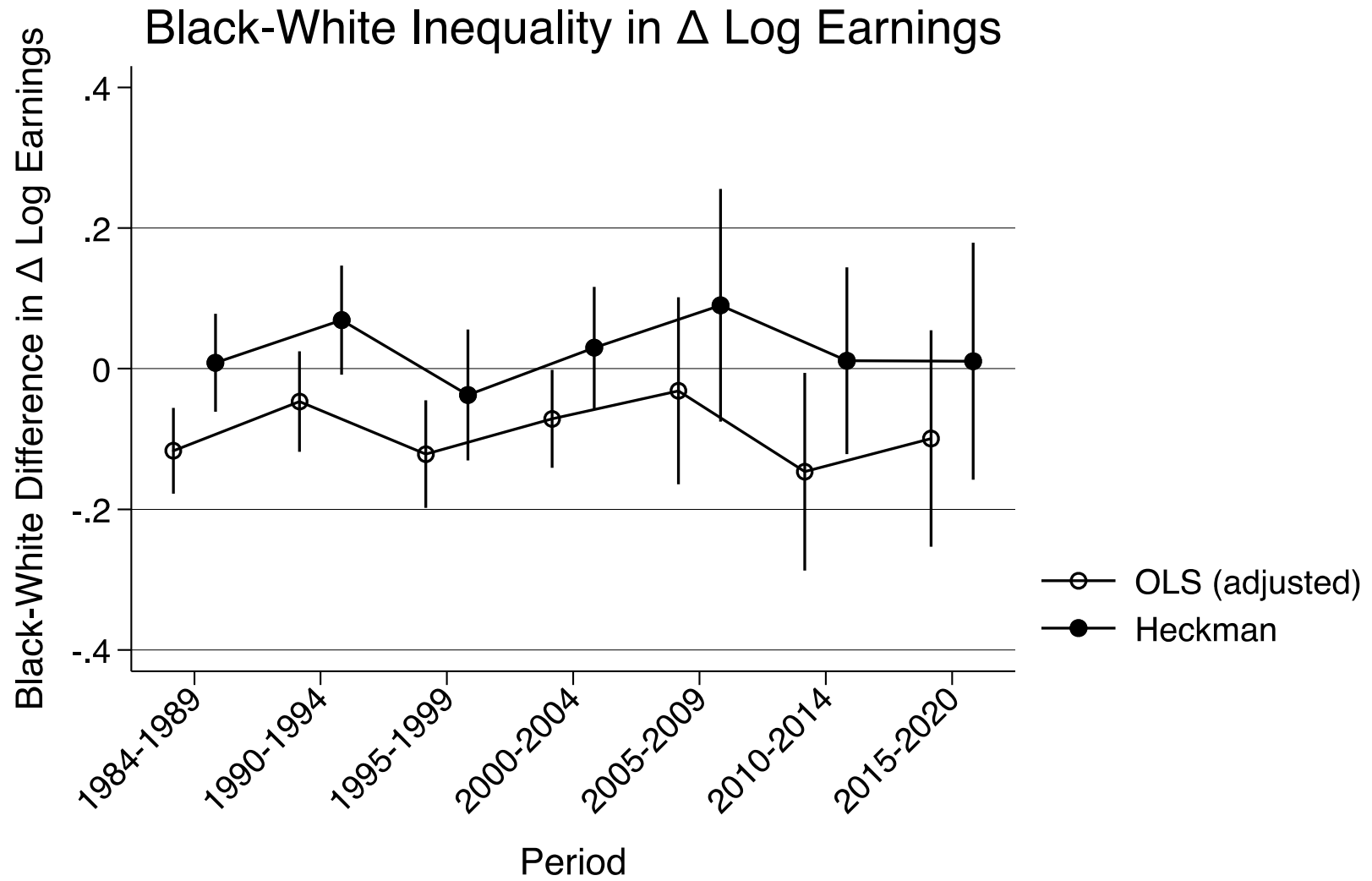
Table 4. Decomposition of Black-White inequality in change in log earnings

	1984-1989	1990-1994	1995-1999	2000-2004	2005-2009	2010-2014	2015-2020
White Δ log earnings	-0.113***	-0.139***	-0.117***	-0.197***	-0.206***	-0.281***	-0.141***
Black Δ log earnings	-0.169***	-0.127***	-0.130***	-0.186***	-0.143**	-0.372***	-0.261***
Difference (ΔWhite-ΔBlack)	0.0560+	-0.0114	0.0135	-0.0101	-0.0624	0.0910	0.120+
Explained	0.0508***	0.0127	0.0148	0.00239	0.00930	-0.0213	0.106**
Unexplained	0.00520	-0.0241	-0.00129	-0.0125	-0.0717	0.112+	0.0136
				Explained			
Female	0.00439+	0.00433	0.00639	0.00569*	-0.00138	-0.00522	-0.00252
Family structure	0.00480	0.000728	0.00132	0.00399	-0.00301	0.00751	0.0306**
Education	0.00169	-0.00363	-0.000470	-0.00630+	-0.00312	-0.00102	-0.00734
Potential experience	-0.00154	-0.00287	-0.00310	-0.00154	-0.00606	-0.0108**	0.000800
Years tenure (lost job)	0.00440	0.00746*	-0.0107*	-0.000844	-0.00635	-0.00344	-0.00351
Lost job characteristics	-0.0196**	-0.0247**	-0.0305*	-0.0133	-0.0319	-0.0113	-0.0277
Current job characteristics	0.0819***	0.0434***	0.0646***	0.0249*	0.0416+	0.00258	0.0755***
Moved since displacement	-0.00238	-0.000477	-0.00158	-0.000367	-0.000638	0.00439+	0.000267
State economic characteristics	-0.0229***	-0.0115*	-0.0111	-0.00985	0.0201	-0.00403	0.0402*
				Unexplained			
Female	-0.0322	-0.0429	0.0100	0.0213	-0.110+	-0.173*	-0.0717
Family structure	-0.0162	-0.0196	0.0556	-0.00994	-0.0316	0.143	0.121
Education	0.0212	0.112+	-0.0388	0.136	-0.0825	0.186	-0.485
Potential experience	-0.0433	0.0954	-0.0828	-0.162*	0.00627	0.225	-0.0684
Years tenure (lost job)	-0.0192	-0.0524+	0.0323	-0.00708	-0.00520	-0.0746	0.130
Lost job characteristics	0.191	-0.348	-0.515	0.968*	0.270	-0.600	-0.0187
Current job characteristics	0.101	0.698*	0.0628	0.331	1.433*	1.719+	-1.270
Moved since displacement	-0.0143	0.00371	-0.0254+	0.00556	-0.0513*	-0.0192	0.0801*
State economic characteristics	-0.466	-0.494	4.724+	-4.353	7.923+	4.198	-12.32*
Constant	0.0715	-1.354	-4.024	3.304	-9.450+	-4.833	14.33*
N	4007	4096	2603	4185	2036	3241	1587

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors; all models adjusted for log weekly earnings at lost job and survey year fixed effects. Family structure includes marital status and number of children. Lost and current job characteristics include occupation group, industry group, and task composition. State economic characteristics include industrial composition, unemployment rate, and routine employment share.

Table 5. Racial inequality in change in job tasks after job displacement

Dependent Variable	Change in abstract task intensity			Change in routine task intensity			Change in manual task intensity		
	OLS (1)	OLS (2)	Heckman	OLS (1)	OLS (2)	Heckman	OLS (1)	OLS (2)	Heckman
Black-White inequality in change in log earnings									
1984-1989	-0.224*	-0.250**	-0.231*	-0.218*	-0.171+	-0.131	0.522***	0.538***	0.498***
1990-1994	-0.0224	-0.0872	-0.0683	0.0792	0.0761	-0.304*	0.0223	0.0755	0.109
1995-1999	-0.176	-0.292*	-0.240+	0.0970	0.103	-0.215	0.300*	0.373*	0.365
2000-2004	-0.0899	-0.0905	-0.0619	0.00651	0.00660	0.0190	0.242*	0.232*	0.190+
2005-2009	-0.208	-0.216	-0.177	0.0216	-0.0308	-0.0240	0.271+	0.327*	0.313+
2010-2014	0.0533	-0.0849	-0.281*	0.0177	0.0364	0.0237	-0.0256	0.0426	0.0654
2015-2020	-0.320*	-0.438**	-0.450**	-0.105	-0.205	-0.410**	0.294+	0.420**	0.412**
Controls									
Task intensity (lost job)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Years since job displacement	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
State-year	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors. Coefficients on indicator variable for race (reference=white) obtained from OLS and Heckman-corrected models. Heckman selection variables include dependency ratio and receipt of unemployment benefits. Individual controls include gender, marital status, number of children, educational attainment, potential experience, potential experience squared, years tenure (lost job), occupation (lost job), industry (lost job), and moved since job displacement. State-year controls include year-specific industry composition, unemployment rate, and routine employment share.

Table 6. Mediation of racial inequality in change in log earnings by task sorting

	Total effect	Direct effect	Indirect effect	% of total effect explained
Black-White inequality in change in log earnings				
1984-1989	-0.117***	-0.0735*	-0.0433***	Manual tasks: -0.9% Routine tasks: 20.7% Abstract tasks: 17.3%
	100%	**63%**	**37%**	
1990-1994	-0.0467	-0.0354	-0.0113	Manual tasks: -0.4% Routine tasks: -0.3% Abstract tasks: 24.9%
	100%	**76%**	**24%**	
1995-1999	-0.122**	-0.0766+	-0.0450***	Manual tasks: -1.2% Routine tasks: 3.2% Abstract tasks: 35.0%
	100%	**63%**	**37%**	
2000-2004	-0.0714*	-0.0525	-0.0189**	Manual tasks: -0.1% Routine tasks: 7.8% Abstract tasks: 18.8%
	100%	**74%**	**26%**	
2005-2009	-0.0314	-0.00141	-0.0300*	Manual tasks: -2.0% Routine tasks: 22.8% Abstract tasks: 74.8%
	100%	**4%**	**96%**	
2010-2014	-0.146*	-0.142*	-0.00431	Manual tasks: -0.2% Routine tasks: -0.2% Abstract tasks: 3.3%
	100%	**97%**	**3%**	
2015-2020	-0.0993	-0.0761	-0.0232	Manual tasks: -2.9% Routine tasks: -2.3% Abstract tasks: 28.6%
	100%	**77%**	**23%**	

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; robust standard errors. All models control for gender, marital status, number of children, educational attainment, potential experience, potential experience squared, years tenure (lost job), occupation (lost job), industry (lost job), task composition of lost job, and moved since job displacement, year fixed effects, and state-year-specific industry composition, unemployment rate, and routine employment share.

Table 7. Effect of local routine employment share on inequality in post-displacement outcomes

Dependent Variable	Change in abstract task intensity			Change in routine task intensity			Change in manual task intensity			Change in log earnings		
	OLS (1)	OLS (2)	Heckman	OLS (1)	OLS (2)	Heckman	OLS (1)	OLS (2)	Heckman	OLS (1)	OLS (2)	Heckman
Black	-1.350**	-1.605**	-1.630**	-0.715	-0.730	-0.337	1.235*	1.472*	1.485*	-0.631*	-0.694*	-0.807*
Routine task share (state-year)	-0.408	-0.966	-0.949	2.056*	2.380**	2.103*	-0.481	0.121	0.112	-0.531	-0.803+	-0.739
Black X routine task share (state-year)	4.059*	4.710**	4.885**	2.339	2.300	-0.210	-3.340+	-4.006*	-4.097*	1.707+	1.954*	2.796**
Controls												
Log weekly earnings (lost job)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Years since job displacement	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
State-year	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes

Note: +p<0.10 *p<0.05 **p<0.01 ***p<0.001; cluster robust (state-year) standard errors (OLS) or robust standard errors (Heckman). Coefficients on indicator variable for race (reference=white) obtained from OLS and Heckman-corrected models. Heckman selection variables include dependency ratio and receipt of unemployment benefits. All models control for log earnings at lost job, years since job displacement, state fixed effects, and year fixed effects. Individual controls include gender, marital status, number of children, educational attainment, potential experience, potential experience squared, years tenure (lost job), occupation (lost job), industry (lost job), and moved since job displacement. State-year controls include year-specific industry composition and unemployment rate. Task intensity models control for the corresponding measure of task intensity at lost job. Log earnings model controls for task socres of the lost job.

Figure 4. Effect of state routine employment share on inequality in post-displacement outcomes

Effect of Routine Employment Share on Post-Displacement Outcomes