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IS THE SCARRING FROM UNEMPLOYMENT WORSE FOR BLACK WORKERS?

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Abstract

This paper compares how Black and White workers with stable jobs fare after an unemployment shock. Using administrative earnings data from the *Continuous Work History Sample*, the analysis compares the earnings trajectories of Black and White workers who are displaced during three recessions (1990-1991; 2000-2001; and 2008-2009) to the trajectories of non-displaced workers of the same race.

The paper found that:

- The displaced workers experience large and persistent declines in earnings relative to the counterfactual, regardless of race.
- Relative to non-displaced workers of the same race, Black displaced workers experience a sharper percentage drop in earnings ("excess scarring") immediately following displacement, but the same percentage drop in the long run.
- However, Black workers still face substantial disadvantage, as even non-displaced Black workers experience slower earnings growth than White workers, a pattern that has not improved over time.

The policy implications are:

- The progressivity of Social Security benefits helps alleviate lifetime income shocks due to unemployment.
- This progressivity is particularly important to Black workers because of their disproportionate risk of displacement and excess earnings losses immediately after displacement.
- Similarly, having the early eligibility age remain at 62 is protective against the lower long-run employment rates of displaced workers.

Introduction

Widespread job loss during the COVID-19 pandemic was not equally distributed across racial groups, with Black workers displaced at higher rates than White workers.[1] While much prior research documents the negative impact of a job loss on long-run earnings, the recent literature has rarely addressed how the effect of displacement might vary by race.[2] On the one hand, displaced Black workers may have a harder time recovering earnings than similar White workers because of discrimination in hiring. On the other hand, displaced Black workers may have higher productivity than displaced White workers because employers discriminate in termination decisions. Additionally – due to persistent disparities in education and employment opportunities – Black workers may be less likely to hold the type of "career ladder" jobs that offer large experience premiums.

This study considers how job displacement during three recessionary periods (1990-1991; 2000-2001; and 2008-2009) affected the subsequent earnings of Black and White workers. We adopt a research design that has become standard in the literature on displacement; namely, comparing the earnings trajectories of displaced workers whose jobs were stable prior to the downturn to observably similar workers who were not displaced – five years before and ten years after each recession. We then contrast the effect of displacement for Black and White workers using a triple-differences framework. The analysis uses the administrative *Continuous Work History Sample* (CWHS) maintained by the Social Security Administration (SSA).[3] The focus of the analysis is on male workers because White women appear much less attached to the labor force than Black women, particularly in the early recession, which complicates cross-race comparisons for this group.[4]

The results show that the displaced workers who are reemployed in our sample experience a large and persistent decline in earnings relative to non-displaced workers of the same race ("scarring"). By ten years following the initial job-loss, both Black and White

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[1] Cortes and Forsyth (2020); and Couch Fairlie and Xu (2020).

[2] A notable exception is Rose and Shem-Tov (2023).

[3] We attempted to replicate the analysis in the publicly available *Panel Study of Income Dynamics* (PSID). These results are not reported because of very small sample sizes, particularly for Black respondents, and because of substantial attrition raising doubts about the viability of the identification strategy. See Appendix A for the PSID sample attrition results.

[4] For completeness, the results for women are presented in Appendix B. Munnell, Liu, and Quinby (2022) show that Black women have always had higher labor-force participation than White women. Goldin (2006) argues that, historically, married women only worked if their household was poor, which would have been more common among Black households.

displaced workers have earnings roughly 30-40 percent lower than the same-race workers not displaced in the recession.

In terms of differences in scarring by race, the main finding is that Black displaced workers do not seem to experience significant excess scarring. Specifically, in the 1990-1991 recession, Black displaced workers suffered steeper earnings losses than White displaced workers relative to non-displaced workers of the same race, and the gap persisted for at least ten years following the recession. In contrast, the 2000-2001 recession and the 2008-2009 recession saw Black and White displaced workers experiencing similar percentage declines in earnings. While Black displaced workers had larger percentage declines in the short term, these gaps were eliminated by the end of the ten-year window. However, the triple-differences estimates are noisy, so we cannot rule out that, in all three recessions, Black and White displaced workers experienced the same degree of scarring on average.

Of course, Black workers still face substantial shortfalls relative to White workers for three reasons. First, Black workers, regardless of displacement, begin their earnings trajectories at a lower level than White workers on average. Second, even *non-displaced* Black workers experience slower earnings growth than non-displaced White workers, a pattern which has not improved over time. And third, Black workers are more likely to be displaced to begin with.

A caveat to these results is that, in the face of discrimination, conditioning the analysis on stable employment prior to the recession could select Black workers who are unobservably more productive than their White counterparts. Consequently, the earnings penalty we estimate for re-employed Black workers may understate the true extent of racial disparities in unemployment scarring.

The rest of the paper proceeds as follows. The next section reviews what is known about labor market conditions and unemployment scarring for Black and White workers. The third section introduces the dataset and methodology used for the analysis, and the fourth section presents results. The fifth section concludes with avenues for future research.

Background

Even before the pandemic, Black workers were much more likely to be unemployed or underemployed than their White counterparts (Cajner et al. 2017; and Kijakazi, Smith, and Runes 2019); were the first to be laid off from struggling firms (Elvira and Zatzick 2002; and

Couch and Fairlie 2010); and had longer duration unemployment spells (U.S. Bureau of Labor Statistics 2020). Yet, while it is well known that job loss hurts the long-run earnings of displaced workers, recent research does not generally address how the effect might vary across racial groups.[5]

Theoretically, workers who lose their jobs due to macroeconomic or industry shocks may have trouble recouping lost earnings because their human capital depreciates while they are unemployed, or because they lose an employer-employee relationship with unusually high productivity.[6] This "scarring" is particularly pronounced for workers who – by dint of their occupation – require significant firm-specific knowledge or skills to be productive, as well as those whose prior jobs disproportionately rewarded long tenure at the firm (career-ladder jobs). In addition, unemployment is often a negative signal of productivity on the job market, carrying a wage penalty.

Black workers may be differentially affected by layoffs for four reasons – two of which suggest more scarring from unemployment, and two of which suggest less. First, Black workers who are laid off might fare worse than identical White workers due to discrimination in the labor market.[7] Since qualified Black job-seekers typically receive fewer callbacks and interviews than similarly qualified Whites, the cost of conducting a job search is higher, and they can either search longer to achieve the same reservation wage, with potential negative consequences, or end the search earlier by accepting a lower reservation wage.[8] Secondly, these differences

[5] For example, the canonical papers in this field do not examine earnings losses by race, including Ruhm (1991); Jacobson, LaLonde, and Sullivan (1993); Stevens (1997); Farber, Haltiwanger, and Abraham (1997); Farber (2003); Davis and Von Wachter (2011); Von Wachter, Handwerker, and Hildreth (2009); Von Wachter, Song, and Manchester (2009); Cooper (2013); and Lachowska, Mas, and Woodbury (2020). Guvenen et al. (2017) consider heterogeneity in scarring but not by race, and not in the spirit of the mass-layoff literature. Rose and Shem-Tov (2023) consider heterogeneity by race in a sample of low-wage workers and find results similar to ours in the more recent period, albeit with wide standard errors. Their analysis is complementary to the current setting in that we consider the more strongly-attached workers more typically considered to be vulnerable to scarring.

[6] For a recent study considering the former mechanism from the perspective of non-employed workers missing out on remaining up-to-date with technological change, see Braxton and Taska (2023).

[7] Additionally, older Black workers may be more susceptible to unemployment-induced early retirement because they often suffer from worse health, and layoffs cause health shocks that push workers out of the labor force (Quinby and Wettstein 2024). Differences in population health stem from myriad factors, including lack of access to quality health care, lower levels of financial wealth, and a higher probability of incarceration. Sullivan and Von Wachter (2009) show that job displacement harms health and increases mortality. Dwyer and Mitchell (1998) argue that health is a stronger predictor of early retirement than economic factors. Diette et al. (2018) find that the adverse psychological effects of unemployment are worse for Black job seekers.

[8] Neumark (2018) shows that Black job-seekers receive fewer callbacks and interviews than similarly qualified Whites. The duration of unemployment has a theoretically ambiguous effect on re-entry wages because a longer search facilitates a higher reservation wage, but also leads to skill erosion and "scarring" (Nekoei and Weber 2017;

conditional on a job loss are compounded by the fact that Black workers are more likely to be laid off to begin with.

On the other hand, Black workers tend to have different employment situations than White workers, which could affect whether they recover lost earnings. In particular, Black workers are less likely to hold career-ladder jobs, which are most likely to generate unemployment scarring.[9] And lastly, since Black workers are typically the first to be laid off from struggling firms, unemployed Black workers may have higher productivity, on average, than unemployed Whites. This enhanced productivity could help displaced Black workers recover lost earnings more quickly.

Since all of these forces likely operate simultaneously, this paper explores whether certain ones dominate the others. We focus on Black workers for two reasons: first, because it is difficult to analyze many racial and ethnic groups in one paper, as they face unique challenges in the labor market; and second, because variables on race in the administrative data are less reliable for other groups.[10]

Data and Methodology

The CWHS contains administrative earnings records for a one-percent sample of the population, drawn from the SSA's *Master Earnings File*. Although earnings data are very reliable in the CWHS, it has only limited demographic information about workers.[11] The advantage of these data lies in their size, reliability, and in the fact that, because they cover virtually all U.S. workers, almost no attrition from the sample takes place.

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and Schmieder, Von Wachter, and Bender 2016). Couch and Fairlie (2010) and Forsythe and Wu (2021) show that displaced Black workers spend more time job searching and are less likely to become re-employed.

[9] Influential work by Altonji and Pierret (2001) shows that the earnings of Black workers have a lower return to tenure than those of otherwise similar White workers, suggesting that Black workers are not on the same career ladder as White workers. One possible explanation is that educational disparities push Black workers into lower-paying jobs without a career ladder (Thompson 2021).

[10] For example, the definition of Hispanic ethnicity in the CWHS has not been consistent over time.

[11] For example, the CWHS contains birth year, gender, and state of residence. Race is recorded on the application form for new Social Security numbers, and when beneficiaries interact with an SSA field office. Although often missing for younger birth cohorts, race is available for approximately 90 percent of the workers included in our analysis. However, the coding of Hispanic ethnicity has changed over time.

Identifying Displaced Workers

For comparability with prior studies, we set our sample using a procedure that has become standard in the literature on unemployment scarring. Specifically, the analysis first identifies a sample of workers ages 28-45 in three periods of high unemployment: 1990-1991; 2000-2001; and 2008-2009.[12] Throughout, we will refer to the 1990-1991, 2000-2001, and 2008-2009 with baseline years (which will be the omitted years in the regressions) of 1989, 1999, and 2007.

The analysis focuses on job loss during a recession in an attempt to identify workers whose termination was due to macroeconomic shocks, rather than low productivity.[13] In each period, we then limit the sample to workers with stable pre-recession jobs, where scarring is expected to be most pronounced; that is, we consider only workers who were employed with the same employer for five years prior to the recession. Lastly, we designate a treated group of workers who were displaced from their jobs and a control group who remained employed throughout the recession.

The CWHS lacks information on hours worked or employment status. Thus, we first select a group of workers who had positive earnings with the same employer during the years preceding each recession (1985-1989 for the first recession; 1995-1999 for the second; and 2003-2007 for the third).[14] Among this group, the control group is defined as those who remained with their pre-recession employer during the recession.[15] The treated group is defined as those who separated from their pre-recession employer during the recession and who also experienced a substantial drop in annual earnings at that time.[16]

Since most job separations are associated with a change in earnings (typically a gain), we define a "substantial drop" as relative to all separators in that year. Specifically, from the full

[12] Although the National Bureau of Economic Research dates the middle recession to 2001 only, we define it as occurring between 2000 and 2001 because earnings in the CWHS begin to decline in 2000. Conversely, while the NBER dates the Great Recession as starting in December 2007, labor market impacts began somewhat later and will be considered to start in 2008 in this analysis and are considered to persist through 2009.

[13] This analysis cannot rule out the possibility that the treated group is less productive than the control group. However, comparing the treatment effect across Black and White workers should alleviate this bias since displaced Black workers are not likely to be less productive than displaced White workers.

[14] The year of the recession itself is included, since a worker laid off, for example, in the 1990 recession would still have positive earnings in that year from prior to their separation.

[15] Specifically, the control group remained with their previous employer through 1991, 2001, and 2009.

[16] Past studies of unemployment scarring have used mass layoffs as an instrument for job loss. Unfortunately, we cannot identify mass layoffs in the CWHS because it is only a one-percent sample of the population. Thus, only very large firms would even have the scope of showing multiple layoffs in a given year.

sample of male workers in the CWHS, we select the sub-sample of separators who left their employers during each recession. We then calculate average annual earnings in the five years pre-recession for this group, and find the percentage change between that five-year average and the separators' average earnings during the recession years.[17] Displaced workers are defined to be those whose percentage change in earnings falls below the 25th percentile of this distribution.

To illustrate the methodology, Table 1 displays the distribution of earnings growth among separators for each recession in our analysis. Displaced workers are those whose earnings drop by more than 51 percent, 37 percent, and 51 percent in the three recessions, respectively. We do not impose any limit on workers' earnings after this initial shock.

Some workers are ages 28-45 during multiple recessions, so for analytical clarity we split the sample such that each worker is only analyzed once. Specifically, we give preference to the recession where the worker is between ages 30-45 (prime working years); or, if that criterion does not help differentiate, we simply pick the worker's first recession.

Characteristics of the Analysis Sample

Before describing the regression analysis, it is helpful to first consider the characteristics of displaced and non-displaced workers, by race. To this end, Table 2 presents summary statistics for the core CWHS sample of men, tabulated by recession and displacement status.[18]

A number of points stand out. First, displaced workers have lower pre-recession earnings than non-displaced workers of the same race. Second, Black workers have lower annual earnings than White workers, on average.[19] Workers are around age 35 pre-recession. Notably, Black workers are somewhat disproportionally likely to be displaced during recessions, consistent with prior literature.[20]

[17] The pre-recession averaging periods include: 1985-1989; 1995-1999; and 2003-2007. Recession earnings are averaged from: 1990-1991; 2000-2001; and 2008-2009.
[18] For the comparable table for women, see Appendix Table A2.
[19] In contrast, among women in our sample, Black workers have slightly higher annual earnings than White workers for the earlier two recessions; only for women in The Great Recession do Black workers have lower annual earnings than White workers. This pattern is consistent with the generally stronger attachment to the labor market among Black women versus White women, historically.
[20] Again, this pattern is not apparent in the comparison of Black to White women.

Estimating the Impact of a Job Loss on Long-Run Earnings

Having set the sample and defined the treated and control groups, we then adopt the analysis framework in Lachowska, Mas, and Woodbury (2020) with regressions of the form:

$$Y_{i,t} = \beta_1 \gamma_t + \beta_{2,k} D_{i,t,k} + \beta_{3,k}(B_i * \gamma_t) + \beta_{4,k}\left(B_i * D_{i,t,k}\right) + \beta_4 Age_{i,t} + \beta_5 Age_{i,t}^2 + \beta_6 \delta_i + \varepsilon_{i,t}, \quad (1)$$

where $Y_{i,t}$ denotes the outcome of interest (earnings and employment) for person i in year t.[21] γ_t represents a vector of year fixed effects spanning five years pre-recession and ten years post, while $B_i * \gamma_t$ is an interaction of these year effects with a Black indicator allowing for differential time trends by race. δ_i is an individual fixed effect.[22] $D_{i,t,k}$ is a vector of k dummy variables each equal to one if, in year t, worker i was displaced k years earlier (or k years in the future). Similarly, $B_i * D_{i,t,k}$ reflects the interaction of an indicator for being Black (B_i) and the vector of laid-off dummies. Consequently, the vector of coefficients $\beta_{2,k}$ checks for differential pre-trends between displaced and non-displaced White workers five years prior to job loss, and then estimates the effect of unemployment on their outcomes up to 10 years post-layoff. Meanwhile, the vector of coefficients $\beta_{4,k}$ estimates the *differential* effect of displacement for Black workers.[23] Standard errors are clustered at the worker level.[24]

[21] Earnings are specified in logs to avoid disproportionately weighting the regression toward higher-earning White workers. However, the extensive margin of those transitioning out of work (and thus having zero earnings) is captured by separate equations with an indicator for positive earnings as the outcome.

[22] Note that this fixed effect controls for all the characteristics of the individual worker that do not vary over time, crucially including race and gender. For the vast majority of workers, this will also include education, which is generally completed before age 28.

[23] Since our analysis spans a period of rising income inequality, and displaced workers have lower pre-recession earnings than non-displaced workers, on average (see Table 2), we have also tested whether the results are sensitive to controlling for differential earnings growth based on pre-recession earnings by including the five-year average of the worker's pre-recession earnings interacted with the vector of year fixed effects (as in Lachowska, Mas, and Woodbury 2020) and with the race indicator. These additional controls had no significant impact on the results and are not included, for ease of interpretation, but are available upon request.

[24] Because all displaced workers in each recession are treated in the same period, the design here does not suffer from the methodological concerns raised in the recent two-way fixed effects literature (e.g., in Callaway and Sant'Anna 2021; and Sun and Abraham 2021).

Results

Dynamic triple interaction terms can be difficult to interpret, so we depict the regression results graphically in Figures 1-6.[25] In all these figures, the identifying assumption of parallel trends can be assessed by any pre-trends in the five years preceding each recession. Furthermore, to facilitate comparisons over time, each figure shows results for one of the treatment or control groups (non-displaced White workers, displaced White workers, non-displaced Black workers, and displaced Black workers) in all three recessions.

The Effect of Job Loss on the Earnings of Displaced White Workers

Figure 1 shows the effects of displacement on the earnings of re-employed White workers over the three recessions (i.e., comparing White displaced workers with White non-displaced workers). All three recessions show remarkably similar patterns, with several robust features standing out. First, a pre-trend of one or two years is apparent. In some sense this pattern is reassuring, as it is consistent with almost all prior work in this field: the earnings of workers who are soon to be displaced tend to fall in anticipation of the displacement (known as "Ashenfelter's dips"), though whether as a cause or a consequence of the subsequent separation is unclear.[26]

Second, in all three recessions, White displaced workers experience a 55 to 66 percent drop in earnings in the year of separation. However, this drop arises in part by definition from the way the displaced groups are identified in the CWHS. After all, to distinguish displaced workers from voluntary job-switchers, we define displacement as leaving a long-term employer *and* experiencing a change in earnings in the bottom quartile of the full distribution of earnings changes for job-switchers. More meaningfully, earnings tend to fall *even further* for the displaced workers in the year subsequent to separation, bottoming out at declines of 79 to 88 percent. This decline is no longer mechanical and reflects a real and devastating loss of earnings.

Third, these earnings losses are long-lasting. Echoing prior work, we find that the earnings of White displaced workers start to recover in the second year after job loss, and then generally trend closer and closer to the earnings of non-displaced White workers as time goes by.

[25] Full regression results are in Appendix Tables C1 and C2.
[26] Some recent analyses that find pre-trends for displaced workers' earnings include Davis and von Wachter (2011); Hendren (2017); and Lachowska, Mas, and Woodbury (2020).

However, White displaced workers never recover their counterfactual earnings within the ten-year window we examine after each recession. By the final year, White displaced workers still have earnings 28 to 40 percent lower than they would have otherwise had.

When interpreting these estimates, it is important to keep in mind that the CWHS reports annual earnings. Particularly in the year of separation, these earnings losses thus also reflect parts of the year in which displaced workers had zero or very low earnings while looking for new employment or working odd jobs. However, the earnings estimates exclude workers who have zero earnings for the full year.

The Earnings Trajectories of Non-Displaced Black Workers

Next, we examine the experience of Black workers, starting with the non-displaced. Figure 2 shows the earnings trajectories of Black workers who kept their jobs during each recession, relative to the earnings of non-displaced White workers. As above, certain patterns appear very consistent across all three recessions.

First, unlike the case for White displaced workers, the pre-trends for non-displaced Black workers are very much parallel throughout the pre-recession period. Some of this consistency is mechanical: all workers, displaced or not, are selected to have been consistently employed by the same employer in the years preceding the recession. However, this restriction by no means guarantees parallel pre-trends, so the closeness of the earnings trajectories for Black and White non-displaced workers prior to the recessions, and the consistency across all three of the recessions, is reassuring for the research design focusing on racial differences. Of course, these parallel trends should not be mistaken for equality in levels. While the pre-recession earnings of Black non-displaced workers closely follow the trend of their White counterparts, they are always at a lower level, as shown in Table 2.

Of further substantive concern is the modest but highly significant decline in earnings for Black non-displaced workers relative to their White counterparts following the recession. This gap slowly widens for a few years before settling at a persistent 6-7 percent lower level for the final 5 years of each analysis window. These earnings losses reflect the modest but consistent excess risk of job-loss that Black workers face at all times as well as slower earnings growth with experience, both of which come into play once the sample restriction of stable employment with the same employer is relaxed following the recession.

The Effect of Job Loss on the Earnings of Black Displaced Workers

The key result of the analysis is the comparison of how displacement affects Black workers relative to White ones. Specifically, Figure 3 shows the amount of excess scarring, defined as: the impact of displacement for Black workers relative to their non-displaced Black counterparts, compared to the impact of displacement for White workers relative to their non-displaced White counterparts.

To begin, all three recessions display roughly parallel pre-trends. These trends suggest that there is no significant difference in the earnings trajectories of Black and White displaced workers prior to the layoff, relative to their same-race counterparts. (The one exception is two years prior to the 2000-2001 recession, although, given the number of coefficients being tested, these may reflect type-1 errors.)

Second, in all three recessions, Black displaced workers experienced sharper earnings declines following a layoff (or around the peak of a recession's unemployment).[27] Yet the persistence of this decline varies across the three recessions. In particular, following the 1990-1991 recession Black displaced workers experienced excess scarring of 21 percentage points in the year of the recession; this excess scarring proved remarkably stable throughout the ten-year post-recession analysis window, ending up at 23 percentage points by 1999. In contrast, the following two recessions show a pattern of recovery. In fact, the 2000-2001 recession does not display statistically significant excess scarring at any point, and in the 2008-2009 recession it is only significant at the 5-percent level in 2011 and 2013.[28] However, since the confidence intervals on the coefficients are wide, we cannot rule out the same pattern across all three recessions: namely, some excess scarring in the years immediately following displacement, with no excess scarring in the long run.

The Effect of Job Loss on the Employment of White Displaced Workers

Figure 4 shows how the probability of having positive earnings develops for displaced, relative to non-displaced, White workers. For this and the subsequent employment figures, little

[27] While the Great Recession officially started in 2007, the unemployment rate only peaked in 2010 and remained very elevated through 2011 (U.S. Bureau of Labor Statistics 2023), which is where we see evidence of the greatest gap in earnings between White and Black displaced workers.

[28] While the confidence intervals are wide, the point estimates even turn positive in the later years following the 2000-2001 recession.

information can be gleaned from the parallel pre-trends because the whole sample is selected to be employed throughout the pre-period. Despite this limitation, the analysis of employment outcomes after each recession provides complementary information for the prior analyses of earnings, which excluded individuals who had zero earnings in a given year.

The results in Figure 4 are disturbing in a way that mirrors the concerns highlighted in Figure 1. All three recessions show a pattern in which White workers who are laid off during a recession experience dramatically lower probabilities of having positive earnings in subsequent years. Because the measure of earnings in the CWHS is annual, virtually no member of the displaced group has zero earnings in the year of the layoff. However, by the following year, White displaced workers are 50 to 67 percent less likely to have worked at all during the year. As with earnings, the employment rate of White displaced workers slowly recovers relative to their non-displaced counterparts; however, this recovery is incomplete. Furthermore, it seems to taper off. By ten years out from the recession, White workers who were displaced are still 33 to 34 percent less likely to have positive earnings than White workers who were not displaced during the recession.[29]

The Employment Trajectories of Black Non-Displaced Workers

Turning to Black non-displaced workers, a similar picture emerges for employment as was found in earnings (see Figure 5). As time goes by, Black non-displaced workers face a greater risk of employment loss than White non-displaced workers.

The Effect of Job Loss on the Employment of Black Displaced Workers

A surprising pattern emerges in the employment effects of job loss for Black workers (see Figure 6). Again, this analysis defines excess employment as the difference in employment rates between displaced and non-displaced Black workers, compared to the difference in employment rates between displaced and non-displaced White workers. Interestingly, Black displaced workers actually experienced positive – albeit modest – excess employment during the first few years of the 1990-1991 recession, before converging back to the same level as White displaced

[29] This impact is not trivial in the sense that the "non-displaced" groups, both Black and White, are only non-displaced by definition during the recession year. They can become displaced in subsequent years, while still remaining in the respective control groups.

workers. The same pattern is discernible in the 2000-2001 recession, although the excess scarring is only marginally statistically significant, but has disappeared by the 2008-2009 recession (to the extent that the sign even flips in one year of that post-recession period, although this is possibly just random variation).

One possible interpretation, when coupled with the evidence on earnings, is that Black displaced workers historically had lower reservation wages than White workers due to expected discrimination in hiring. In addition, it could reflect that Black displaced workers continue to have lower personal reserves of assets to sustain prolonged job-search.[30] In either case, the results here are in line with past work showing that displaced workers can benefit in the long run from longer job searches.[31]

Conclusion

This study considers whether the effect of displacement on earnings and employment is worse for Black than for White workers, focusing on men who were stably employed pre-displacement. To answer this question, the analysis combines a series of natural experiments with administrative earnings data from the SSA. Specifically, it compares the earnings trajectories of Black and White workers who were displaced during three recessionary periods (1990-1991; 2000-2001; and 2008-2009) to workers of the same race who were not displaced.

The results show that displaced male workers experience large and persistent declines in earnings and employment relative to the counterfactual, regardless of race. While Black workers tend to lose more in percentage terms immediately following a job loss, this excess scarring dissipates in the long run. Nevertheless, Black workers still face significant labor-market headwinds as they start off at lower levels of earnings and employment than their White peers. The disproportionate risk of displacement for Black workers also does not seem to be declining.

One caveat to these results is that, in the face of discrimination, conditioning the analysis on stable employment (as is standard in the literature on displacement) may select a sample of Black workers who are more productive than the comparison sample of White workers. Hence, our findings may understate the true extent of racial disparities in unemployment scarring. We leave this important question for future research.

[30] Racial wealth disparities are well documented. For example, see Hou and Sanzenbacher (2021).
[31] For example, Nekoei and Weber (2017).

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Tables and Figures

Table 1. *Distribution of Annual Earnings Growth in the CWHS, by Recession, Nominal Dollars*

	25th percentile	Median	75th percentile
1990-1991 Recession	-51%	-6%	20%
2000-2001 Recession	-37	6	29
2008-2009 Recession	-51	7	21

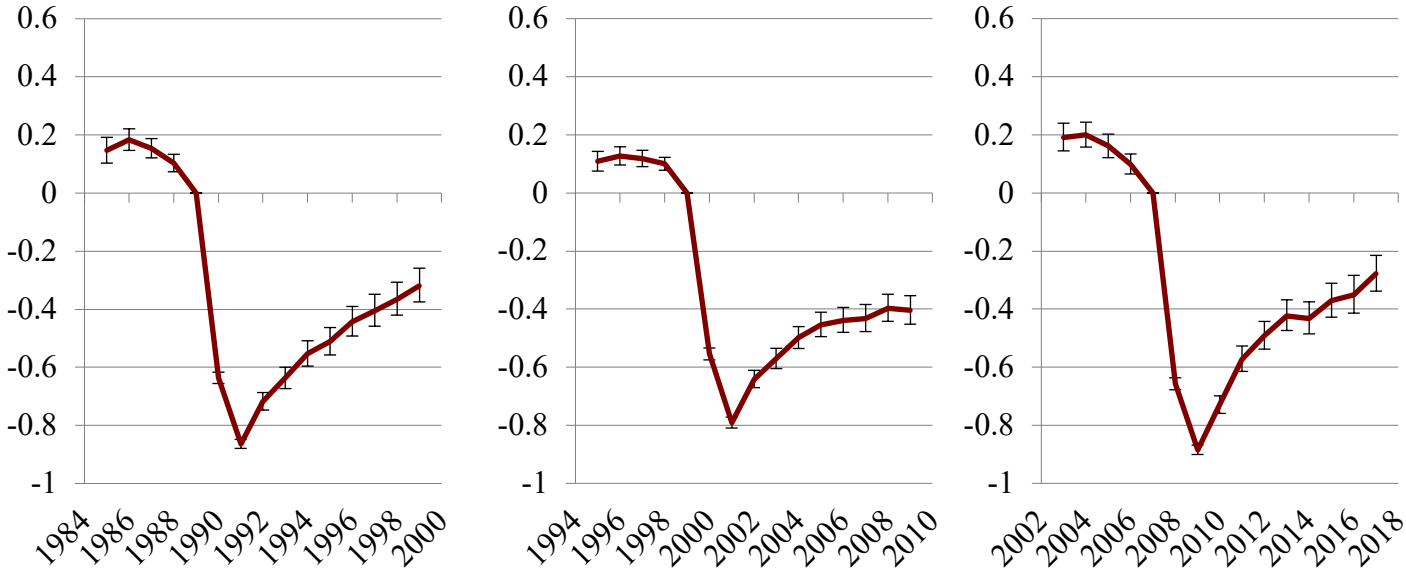
Source: Authors' calculations from the U.S. Social Security Administration, *Continuous Work History Sample* (CWHS) (1985-2017).

Table 2. *Mean Characteristics of Male Workers in the CWHS Sample, by Recession, Nominal Dollars*

	1990-1991 Recession		
	Non-displaced	Displaced	Total
Observations	52,174	1,502	53,676
Pre-recession earnings	$26,752	$22,349	$26,629
Pre-recession earnings of Black workers	$23,100	$19,458	$22,970
Pre-recession earnings of White workers	$27,241	$22,866	$27,123
Share Black	12%	15%	12%
Age in 1989	36	36	36
	2000-2001 Recession		
	Non-displaced	Displaced	Total
Observations	50,527	1,807	52,334
Pre-recession earnings	$33,044	$27,754	$32,861
Pre-recession earnings of Black workers	$29,178	$25,234	$28,988
Pre-recession earnings of White workers	$33,579	$28,280	$33,406
Share Black	12%	17%	12%
Age in 1999	36	36	36
	2008-2009 Recession		
	Non-displaced	Displaced	Total
Observations	41,545	1,354	42,899
Pre-recession earnings	$42,190	$34,018	$41,932
Pre-recession earnings of Black workers	$36,814	$29,754	$36,474
Pre-recession earnings of White workers	$42,947	$35,027	$42,716
Share Black	12%	19%	13%
Age in 2007	36	36	36

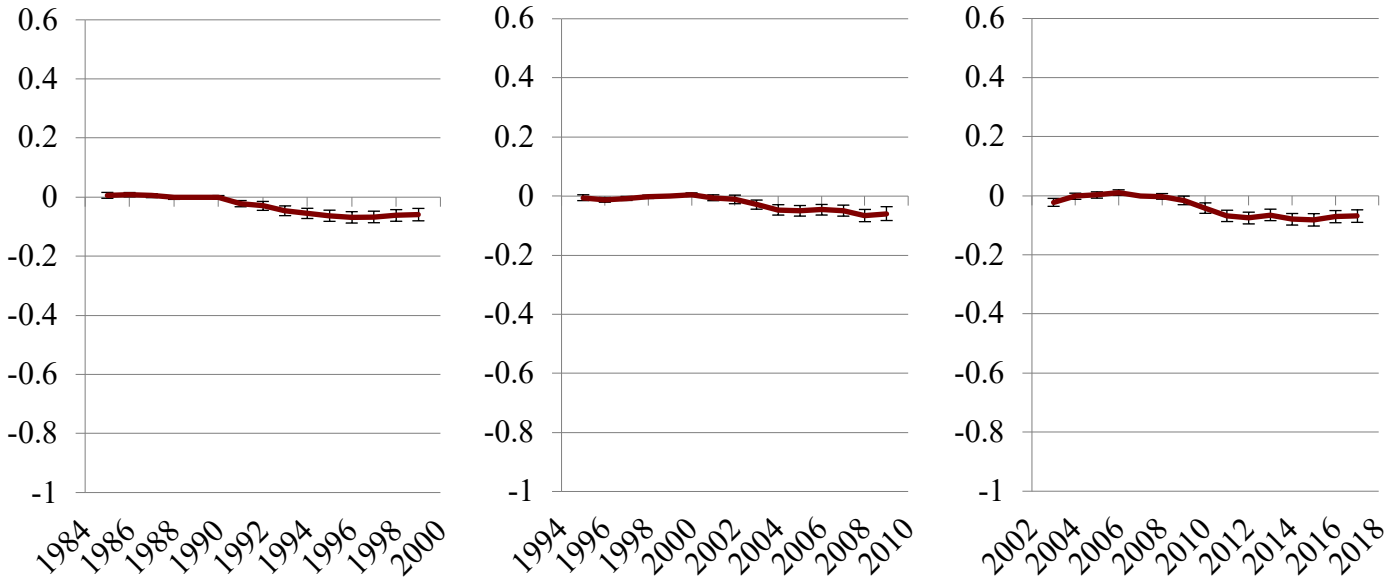
Source: Authors' calculations from the CWHS (1985-2017).

Figure 1. *Earnings Trajectories of Displaced White Male Workers Relative to Non-Displaced White Male Workers in the 1990-1991, 2000-2001, and 2008-2009 Recessions*



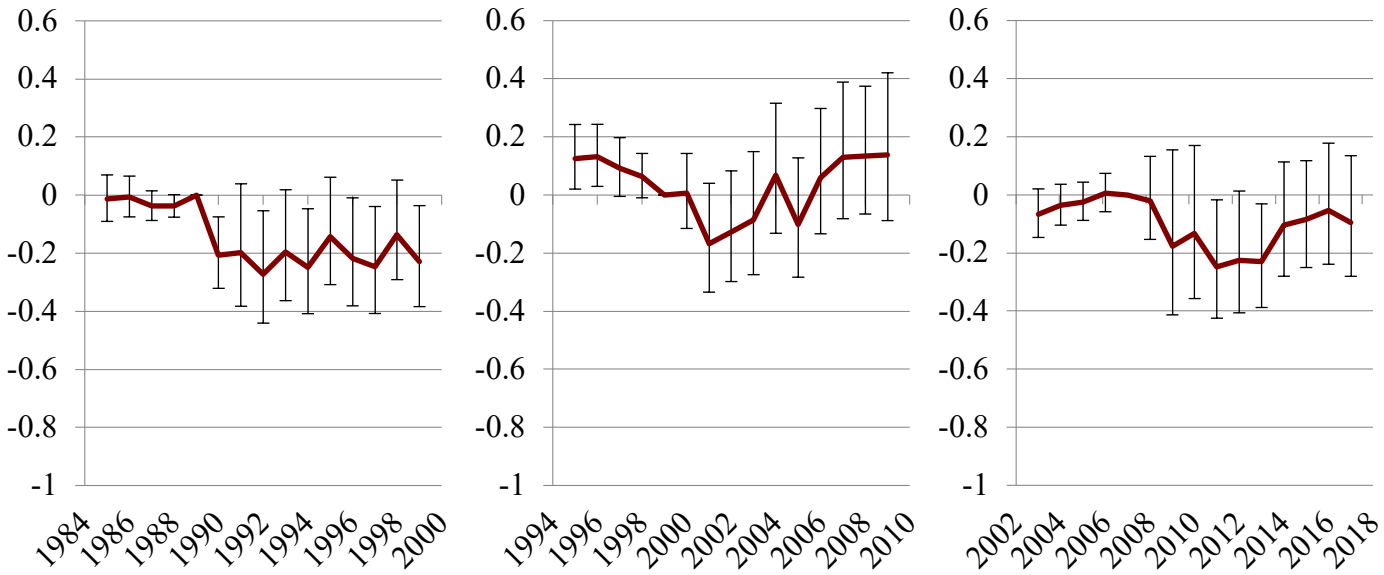
Note: The whiskers depict 95-percent confidence intervals.
Source: Authors' estimates from the CWHS (1985-2017).

Figure 2. *Earnings Trajectories of Non-Displaced Black Male Workers Relative to Non-Displaced White Male Workers in the 1990-1991, 2000-2001, and 2008-2009 Recessions*



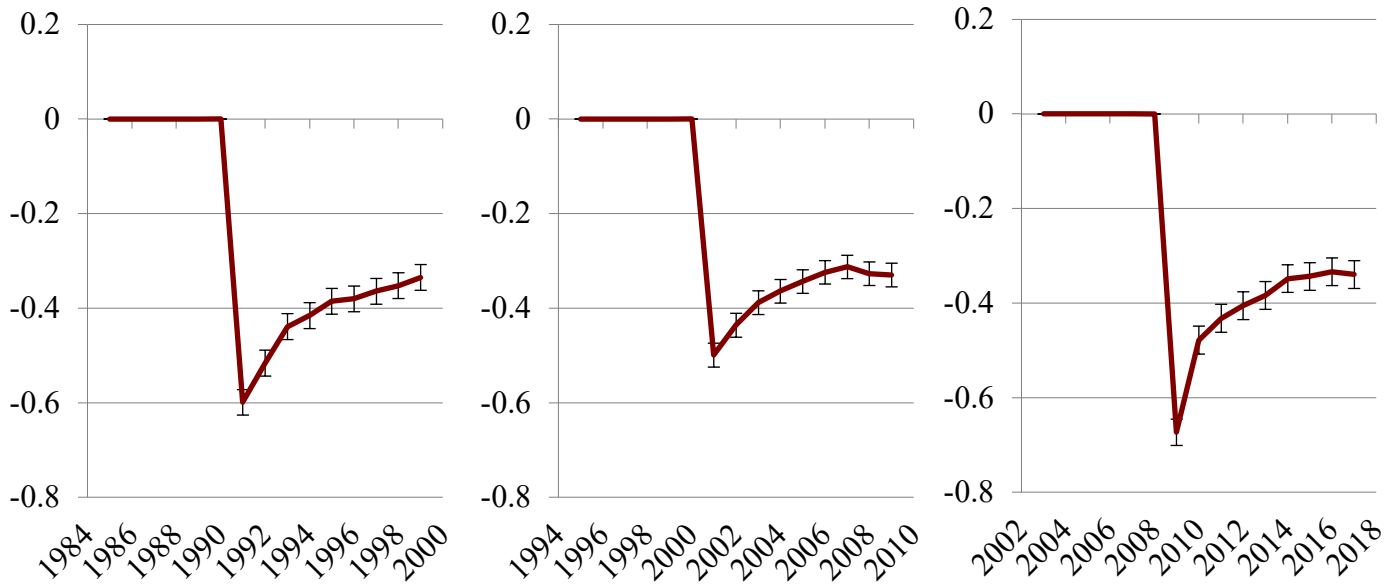
Note: The whiskers depict 95-percent confidence intervals.
Source: Authors' estimates from the CWHS (1985-2017).

Figure 3. *Effect of Displacement on Earnings for Black Male Workers, Relative to the Effect for White Male Workers, in the 1990-1991, 2000-2001, and 2008-2009 Recessions*



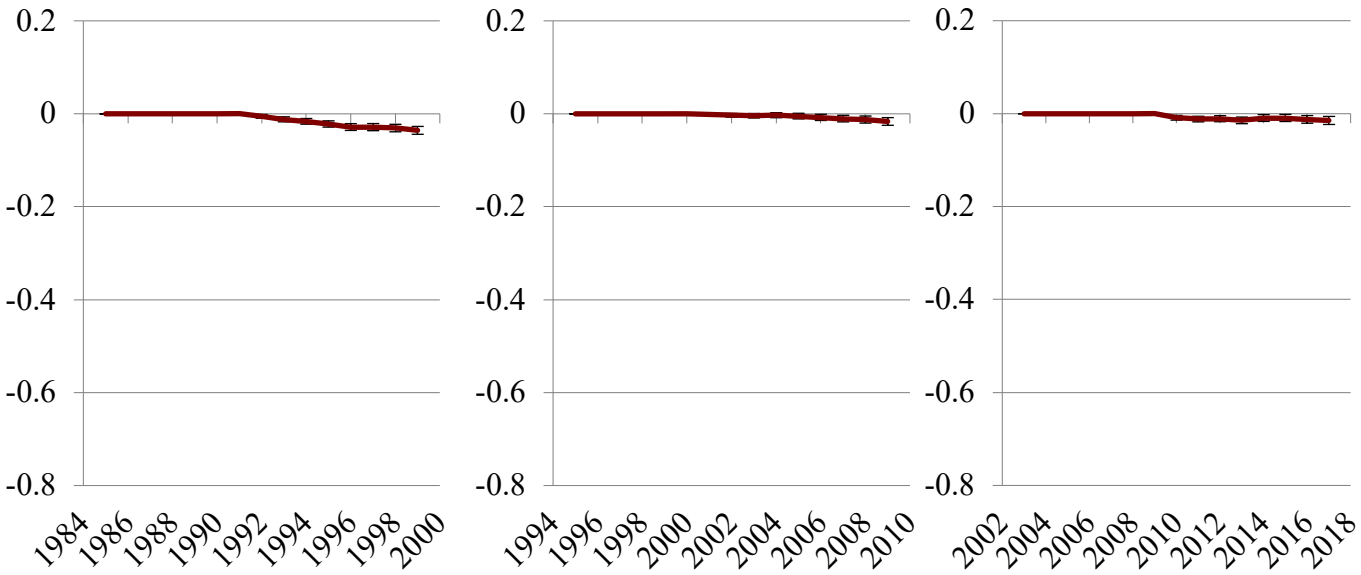
Note: The whiskers depict 95-percent confidence intervals.
Source: Authors' estimates from the CWHS (1985-2017).

Figure 4. *Employment Trajectories of Displaced White Male Workers Relative to Non-Displaced White Male Workers in the 1990-1991, 2000-2001, and 2008-2009 Recessions*



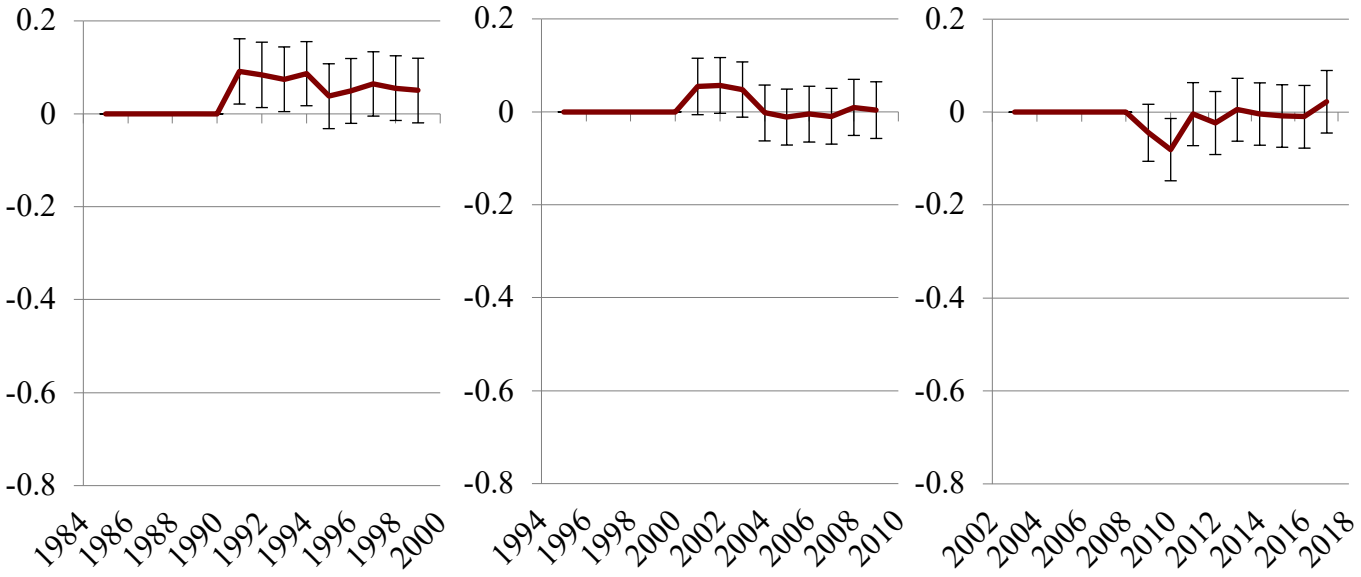
Note: The whiskers depict 95-percent confidence intervals.
Source: Authors' estimates from the CWHS (1985-2017).

Figure 5. *Employment Trajectories of Non-Displaced Black Male Workers Relative to Non-Displaced White Male Workers in the 19901991, 2000-2001, and 2008-2009 Recessions*



Note: The whiskers depict 95-percent confidence intervals.
Source: Authors' estimates from the CWHS (1985-2017).

Figure 6. *Effect of Displacement on the Employment of Black Male Workers, Relative to the Effect for White Male Workers, in the 1990-1991, 2000-2001, and 2008-2009 Recessions*



Notes: The whiskers depict 95-percent confidence intervals.
Source: Authors' estimates from the CWHS (1985-2017).

Appendix A

Table A1. *Sample Attrition in the PSID, by Race, Displacement Status, and Recession*

	Share in sample after 10 years				Sample size			
	All	1990	2000	Great Recession	All	1990	2000	Great Recession
White, non-displaced	82.7%	79.8%	84.9%	87.1%	1,528	782	359	387
White, displaced	71.4	67.5	77.4	72.4	100	42	20	38
Black, non-displaced	79.3	75.8	81.9	82.3	496	261	120	115
Black, displaced	82.7	74.2	97.6	81.2	51	30	10	11
Total	81.9	78.9	84.5	85.5	2,175	1,115	509	551

Source: Authors' estimates from the University of Michigan, *Panel Study of Income Dynamics* (1985-2016).

Table A2. *Mean Characteristics of Female Workers in the CWHS Sample, by Recession, Nominal Dollars*

	1990-1991 Recession		
	Non-displaced	Displaced	Total
Observations	32,734	1,207	33,941
Pre-recession earnings	$16,609	$14,820	$16,545
Pre-recession earnings of Black workers	$16,966	$15,100	$16,915
Pre-recession earnings of White workers	$16,545	$14,782	$16,480
Share Black	15%	12%	15%
Age in 1989	36	35	36
	2000-2001 Recession		
	Non-displaced	Displaced	Total
Observations	40,808	1,652	42,460
Pre-recession earnings	$23,178	$20,219	$23,063
Pre-recession earnings of Black workers	$23,240	$20,056	$23,156
Pre-recession earnings of White workers	$23,166	$20,239	$23,045
Share Black	16%	11%	16%
Age in 1999	36	35	36
	2008-2009 Recession		
	Non-displaced	Displaced	Total
Observations	38,738	1,261	39,999
Pre-recession earnings	$30,104	$25,359	$29,954
Pre-recession earnings of Black workers	$29,328	$24,365	$29,185
Pre-recession earnings of White workers	$30,267	$25,548	$30,116
Share Black	17%	16%	17%
Age in 2007	36	36	36

Source: Authors' calculations from the CWHS (1985-2017).

Appendix B

Table B1. *Regression Results for the Impact of Job Displacement on Women's Earnings in the CWHS, by Race and Recession, 1985-2016*

	1990-1991	2000-2002	2008-2009
Intercept	7.951574***	9.021142***	10.12563***
	(0.0498)	(0.0296)	(0.0513)
Recession Year - 5	-0.27942***	-0.24467***	-0.31567***
	(0.0109)	(0.0104)	(0.0091)
Recession Year - 4	-0.15032***	-0.13859***	-0.19129***
	(0.0083)	(0.0079)	(0.0069)
Recession Year - 3	-0.08928***	-0.08293***	-0.12868***
	(0.0058)	(0.0055)	(0.0048)
Recession Year - 2	-0.04396***	-0.03436***	-0.06162***
	(0.0032)	(0.0030)	(0.0026)
Recession Year	0.042053***	0.029112***	0.052974***
	(0.0032)	(0.0031)	(0.0027)
Recession Year + 1	0.023193***	0.015471**	0.040316***
	(0.0065)	(0.0061)	(0.0054)
Recession Year + 2	0.023463**	0.002065	0.041845***
	(0.0095)	(0.0091)	(0.0079)
Recession Year + 3	0.014265	-0.0007	0.058725***
	(0.0126)	(0.0121)	(0.0104)
Recession Year + 4	0.008094	0.006433	0.081637***
	(0.0158)	(0.0151)	(0.0129)
Recession Year + 5	0.010822	0.009023	0.115817***
	(0.0191)	(0.0183)	(0.0155)
Recession Year + 6	0.002176	0.029501	0.153999***
	(0.0225)	(0.0214)	(0.0182)
Recession Year + 7	0.024994	0.046981*	0.199081***
	(0.0258)	(0.0245)	(0.0210)
Recession Year + 8	0.038501	0.059527**	0.235937***
	(0.0292)	(0.0279)	(0.0238)
Recession Year + 9	0.046364	0.04848	0.274725***
	(0.0327)	(0.0311)	(0.0266)
Recession Year - 5 * Black	0.041509***	-0.00502	0.007268
	(0.0069)	(0.0058)	(0.0061)
Recession Year - 4 * Black	0.020217***	-0.01466***	0.000942
	(0.0050)	(0.0043)	(0.0046)
Recession Year - 3 * Black	0.014501***	-0.00929**	-0.00248
	(0.0048)	(0.0037)	(0.0041)
Recession Year - 2 * Black	0.008065**	-0.00638**	-0.00024
	(0.0038)	(0.0030)	(0.0034)
Recession Year * Black	-0.00148	0.012353***	-0.00563
	(0.0037)	(0.0034)	(0.0036)

Recession Year + 1 * Black	-0.00212	0.011002*	-0.01998***
	(0.0066)	(0.0056)	(0.0066)
Recession Year + 2 * Black	-0.00053	0.000198	-0.0384***
	(0.0080)	(0.0074)	(0.0079)
Recession Year + 3 * Black	-0.02224**	-0.01088	-0.06319***
	(0.0096)	(0.0084)	(0.0092)
Recession Year + 4 * Black	-0.02812***	-0.00128	-0.06684***
	(0.0105)	(0.0087)	(0.0094)
Recession Year + 5 * Black	-0.02382**	-0.00634	-0.08233***
	(0.0107)	(0.0094)	(0.0098)
Recession Year + 6 * Black	-0.0112	-0.01139	-0.09039***
	(0.0110)	(0.0095)	(0.0101)
Recession Year + 7 * Black	-0.03348***	-0.00214	-0.08093***
	(0.0121)	(0.0096)	(0.0100)
Recession Year + 8 * Black	-0.02897**	-0.01343	-0.07165***
	(0.0120)	(0.0104)	(0.0098)
Recession Year + 9 * Black	-0.03504***	-0.03585***	-0.07346***
	(0.0129)	(0.0113)	(0.0102)
Recession Year - 5 * Displaced	0.255987***	0.254874***	0.294855***
	(0.0263)	(0.0198)	(0.0275)
Recession Year - 4 * Displaced	0.269943***	0.245744***	0.281933***
	(0.0252)	(0.0177)	(0.0235)
Recession Year - 3 * Displaced	0.219932***	0.211742***	0.227887***
	(0.0248)	(0.0161)	(0.0218)
Recession Year - 2 * Displaced	0.167514***	0.160211***	0.157624***
	(0.0202)	(0.0130)	(0.0177)
Recession Year * Displaced	-1.28116***	-1.12458***	-1.23815***
	(0.0343)	(0.0283)	(0.0335)
Recession Year + 1 * Displaced	-2.09216***	-2.12088***	-2.29242***
	(0.0727)	(0.0673)	(0.0879)
Recession Year + 2 * Displaced	-1.52591***	-1.42274***	-1.50007***
	(0.0741)	(0.0596)	(0.0717)
Recession Year + 3 * Displaced	-1.1181***	-1.17136***	-1.05589***
	(0.0685)	(0.0562)	(0.0657)
Recession Year + 4 * Displaced	-0.98283***	-0.90871***	-0.87645***
	(0.0631)	(0.0512)	(0.0653)
Recession Year + 5 * Displaced	-0.88241***	-0.77242***	-0.6889***
	(0.0633)	(0.0492)	(0.0585)
Recession Year + 6 * Displaced	-0.72582***	-0.73366***	-0.69896***
	(0.0616)	(0.0519)	(0.0623)
Recession Year + 7 * Displaced	-0.64252***	-0.61179***	-0.5566***
	(0.0634)	(0.0486)	(0.0555)
Recession Year + 8 * Displaced	-0.51659***	-0.58557***	-0.48111***
	(0.0592)	(0.0502)	(0.0574)
Recession Year + 9 * Displaced	-0.41714***	-0.55103***	-0.434***
	(0.0569)	(0.0509)	(0.0552)

Recession Year - 5 * Displaced * Black	-0.13314**	-0.15697***	-0.077
	(0.0524)	(0.0551)	(0.0601)
Recession Year - 4 * Displaced * Black	-0.14533***	-0.10968***	-0.04925
	(0.0442)	(0.0405)	(0.0508)
Recession Year - 3 * Displaced * Black	-0.09555**	-0.09043***	-0.03259
	(0.0438)	(0.0347)	(0.0490)
Recession Year - 2 * Displaced * Black	-0.05902	-0.09169***	-0.01662
	(0.0384)	(0.0278)	(0.0426)
Recession Year * Displaced * Black	-0.0208	-0.03799	0.04907
	(0.0881)	(0.0833)	(0.0824)
Recession Year + 1 * Displaced * Black	-0.21649	-0.09142	0.127728
	(0.1969)	(0.1594)	(0.1731)
Recession Year + 2 * Displaced * Black	0.11821	0.112261	0.033745
	(0.1553)	(0.1354)	(0.1678)
Recession Year + 3 * Displaced * Black	0.148929	-0.06994	0.07706
	(0.1527)	(0.1650)	(0.1250)
Recession Year + 4 * Displaced * Black	0.198411	-0.05082	0.067043
	(0.1345)	(0.1375)	(0.1241)
Recession Year + 5 * Displaced * Black	-0.06675	-0.10561	-0.01695
	(0.1690)	(0.1352)	(0.1152)
Recession Year + 6 * Displaced * Black	0.099589	0.138845	0.091327
	(0.1293)	(0.1098)	(0.1280)
Recession Year + 7 * Displaced * Black	-0.05286	-0.12396	0.079948
	(0.1511)	(0.1375)	(0.1033)
Recession Year + 8 * Displaced * Black	0.014735	-0.06251	-0.01491
	(0.1388)	(0.1311)	(0.1187)
Recession Year + 9 * Displaced * Black	-0.14415	-0.22973	0.023196
	(0.1497)	(0.1419)	(0.1043)
Age Squared	0.000219***	0.000221***	-0.00011***
	(0.0000)	(0.000037)	(0.000032)

Note: *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' estimates from the CWHS (1985-2016).

Table B2. *Regression Results for the Impact of Job Displacement on Women's Employment in the CWHS, by Race and Recession, 1985-2016*

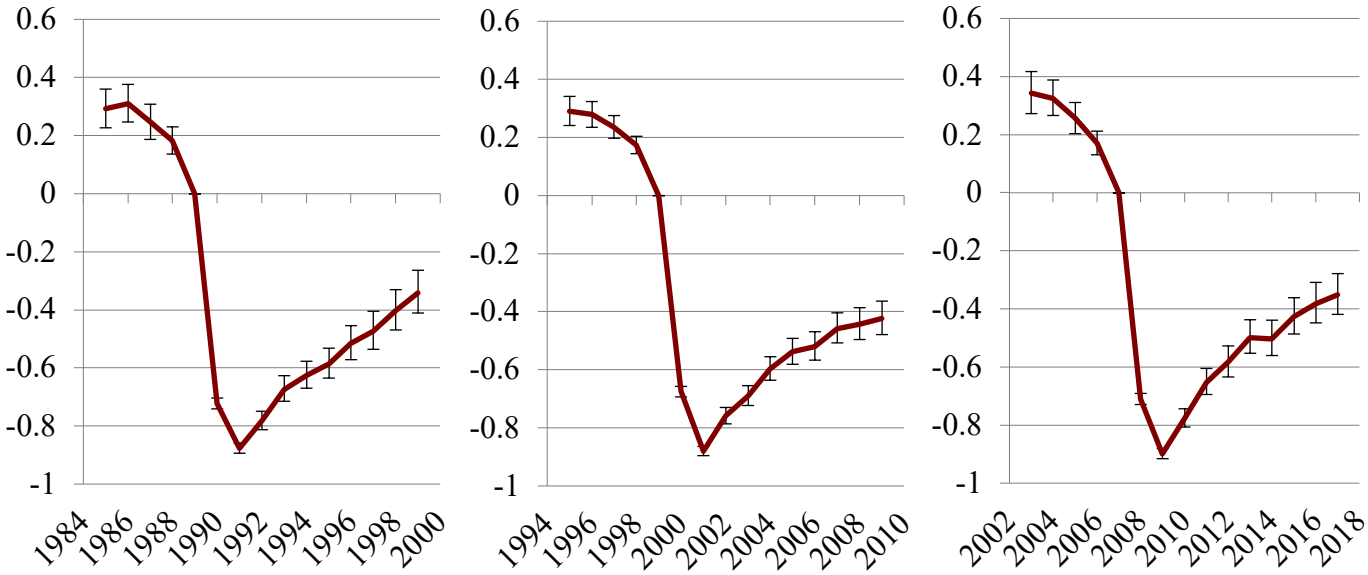
	1990-1991	2000-2001	2008-2009
Intercept	0.986281***	0.902289***	1.168522***
	(0.0191)	(0.0109)	(0.0204)
Recession Year - 5	0.011084***	0.021487***	-0.0227***
	(0.0040)	(0.0037)	(0.0035)
Recession Year - 4	0.008435***	0.01635***	-0.01727***
	(0.0031)	(0.0029)	(0.0026)
Recession Year - 3	0.005705***	0.011057***	-0.01168***
	(0.0021)	(0.0019)	(0.0018)
Recession Year - 2	0.002893***	0.005607***	-0.00592***
	(0.0011)	(0.0010)	(0.0009)
Recession Year	-0.00297***	-0.00576***	0.006088***
	(0.0011)	(0.0010)	(0.0009)
Recession Year + 1	-0.00783***	-0.01527***	0.012091***
	(0.0022)	(0.0021)	(0.0019)
Recession Year + 2	-0.03652***	-0.04606***	-0.00738**
	(0.0035)	(0.0032)	(0.0030)
Recession Year + 3	-0.05689***	-0.06992***	-0.01609***
	(0.0047)	(0.0044)	(0.0040)
Recession Year + 4	-0.07283***	-0.08856***	-0.02079***
	(0.0059)	(0.0055)	(0.0050)
Recession Year + 5	-0.08789***	-0.10509***	-0.02576***
	(0.0071)	(0.0067)	(0.0061)
Recession Year + 6	-0.10382***	-0.11981***	-0.02571***
	(0.0084)	(0.0079)	(0.0071)
Recession Year + 7	-0.11807***	-0.13406***	-0.02685***
	(0.0097)	(0.0091)	(0.0082)
Recession Year + 8	-0.1311***	-0.14761***	-0.02657***
	(0.0110)	(0.0102)	(0.0093)
Recession Year + 9	-0.14345***	-0.16905***	-0.02631**
	(0.0123)	(0.0115)	(0.0104)
Recession Year - 5 * Black	0.00004	0.000031	-0.00019
	(0.0000)	(0.0000)	(0.0001)
Recession Year - 4 * Black	0.00003	0.000023	-0.00014***
	(0.0000)	(0.0000)	(0.0000)
Recession Year - 3 * Black	0.00002	0.000016	-0.0001***
	(0.0000)	(0.0000)	(0.0000)
Recession Year - 2 * Black	0.00001	0.00000781	-0.00005***
	(0.0000)	(0.0000)	(0.0000)
Recession Year * Black	-0.00001	-0.00000781	0.000048***
	(0.0000)	(0.0000)	(0.0000)
Recession Year + 1 * Black	0.000778	-0.00224**	0.000198
	(0.0005)	(0.0010)	(0.0002)

Recession Year + 2 * Black	0.00243	0.00533***	-0.00316
	(0.0024)	(0.0021)	(0.0022)
Recession Year + 3 * Black	0.01074***	0.010553***	-0.0035
	(0.0028)	(0.0026)	(0.0028)
Recession Year + 4 * Black	0.014144***	0.014691***	-0.0034
	(0.0032)	(0.0028)	(0.0031)
Recession Year + 5 * Black	0.015973***	0.015788***	0.000986
	(0.0035)	(0.0031)	(0.0033)
Recession Year + 6 * Black	0.010968***	0.016766***	0.000672
	(0.0040)	(0.0033)	(0.0034)
Recession Year + 7 * Black	0.018248***	0.013431***	0.004219
	(0.0041)	(0.0035)	(0.0036)
Recession Year + 8 * Black	0.012588***	0.00879**	0.00459
	(0.0044)	(0.0037)	(0.0037)
Recession Year + 9 * Black	0.012996***	0.004844	0.001155
	(0.0046)	(0.0041)	(0.0039)
Recession Year - 5 * Displaced	-0.00056***	-0.00096***	0.00033***
	(0.0002)	(0.0002)	(0.0001)
Recession Year - 4 * Displaced	-0.00042***	-0.00072***	0.000247***
	(0.0002)	(0.0001)	(0.0001)
Recession Year - 3 * Displaced	-0.00028***	-0.00048***	0.000165***
	(0.0001)	(0.0001)	(0.0001)
Recession Year - 2 * Displaced	-0.00014***	-0.00024***	0.000082***
	(0.0001)	(0.0000)	(0.0000)
Recession Year * Displaced	0.00014***	0.000239***	-0.00008***
	(0.0001)	(0.0000)	(0.0000)
Recession Year + 1 * Displaced	-0.7059***	-0.68996***	-0.74614***
	(0.0139)	(0.0120)	(0.0134)
Recession Year + 2 * Displaced	-0.59383***	-0.57749***	-0.55901***
	(0.0149)	(0.0128)	(0.0152)
Recession Year + 3 * Displaced	-0.53146***	-0.50807***	-0.48814***
	(0.0152)	(0.0130)	(0.0154)
Recession Year + 4 * Displaced	-0.46703***	-0.45826***	-0.42867***
	(0.0154)	(0.0131)	(0.0154)
Recession Year + 5 * Displaced	-0.42329***	-0.42905***	-0.39422***
	(0.0154)	(0.0131)	(0.0154)
Recession Year + 6 * Displaced	-0.38627***	-0.395***	-0.37218***
	(0.0154)	(0.0131)	(0.0153)
Recession Year + 7 * Displaced	-0.34914***	-0.36567***	-0.34407***
	(0.0153)	(0.0131)	(0.0152)
Recession Year + 8 * Displaced	-0.32457***	-0.35008***	-0.3323***
	(0.0153)	(0.0131)	(0.0152)
Recession Year + 9 * Displaced	-0.31766***	-0.33761***	-0.3062***
	(0.0153)	(0.0131)	(0.0151)
Recession Year - 5 * Displaced * Black	0.000474 **	0.000727***	-0.0006**
	(0.0002)	(0.0003)	(0.0003)

Recession Year - 4 * Displaced * Black	0.000355**	0.000546***	-0.00045**
	(0.0002)	(0.0002)	(0.0002)
Recession Year - 3 * Displaced * Black	0.000237**	0.000364***	-0.0003**
	(0.0001)	(0.0001)	(0.0001)
Recession Year - 2 * Displaced * Black	0.000118**	0.000182***	-0.00015**
	(0.0001)	(0.0001)	(0.0001)
Recession Year * Displaced * Black	-0.00012**	-0.00018***	0.000151**
	(0.0001)	(0.0001)	(0.0001)
Recession Year + 1 * Displaced * Black	0.136524***	0.184655***	0.059859*
	(0.0438)	(0.0394)	(0.0354)
Recession Year + 2 * Displaced * Black	0.132866***	0.128704***	0.081196**
	(0.0446)	(0.0396)	(0.0384)
Recession Year + 3 * Displaced * Black	0.100483**	0.105439***	0.090754**
	(0.0446)	(0.0395)	(0.0384)
Recession Year + 4 * Displaced * Black	0.073476*	0.063798	0.057664
	(0.0445)	(0.0395)	(0.0383)
Recession Year + 5 * Displaced * Black	0.046636	0.071605*	0.055712
	(0.0444)	(0.0393)	(0.0380)
Recession Year + 6 * Displaced * Black	0.013015	0.067128*	0.036155
	(0.0446)	(0.0389)	(0.0380)
Recession Year + 7 * Displaced * Black	0.05678	0.054183	0.052797
	(0.0434)	(0.0389)	(0.0374)
Recession Year + 8 * Displaced * Black	0.040246	0.055432	0.018057
	(0.0436)	(0.0388)	(0.0379)
Recession Year + 9 * Displaced * Black	0.048629	0.07246*	0.012773
	(0.0435)	(0.0386)	(0.0377)
Age Squared	0.000041***	0.000078***	-0.00008***
	(0.000015)	(0.000014)	(0.000013)

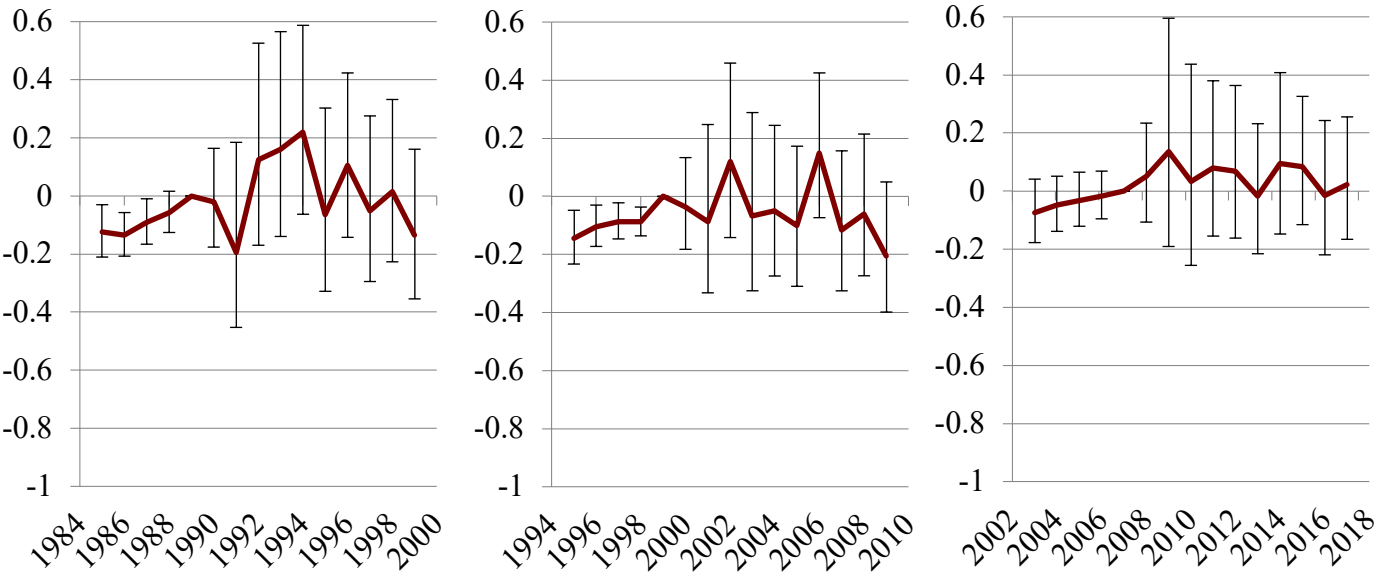
Note: *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' estimates from the CWHS (1985-2016).

Figure B1. *Earnings Trajectories of Displaced White Female Workers Relative to Non-Displaced White Female Workers in the 1990-1991, 2000-2001, and 2008-2009 Recessions*



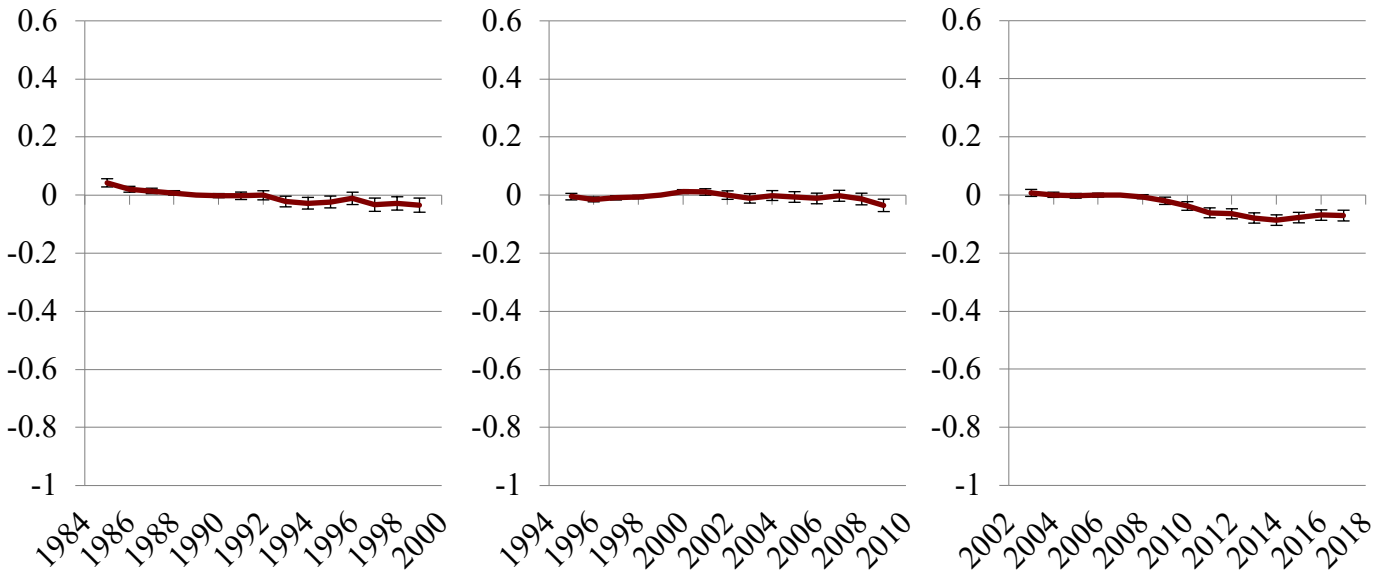
Note: The whiskers depict 95-percent confidence intervals.
Source: Authors' estimates from the CWHS (1985-2017).

Figure B2. *Earnings Trajectories of Non-Displaced Black Female Workers Relative to Non-Displaced White Female Workers in the 1990-1991, 2000-2001, and 2008-2009 Recessions*



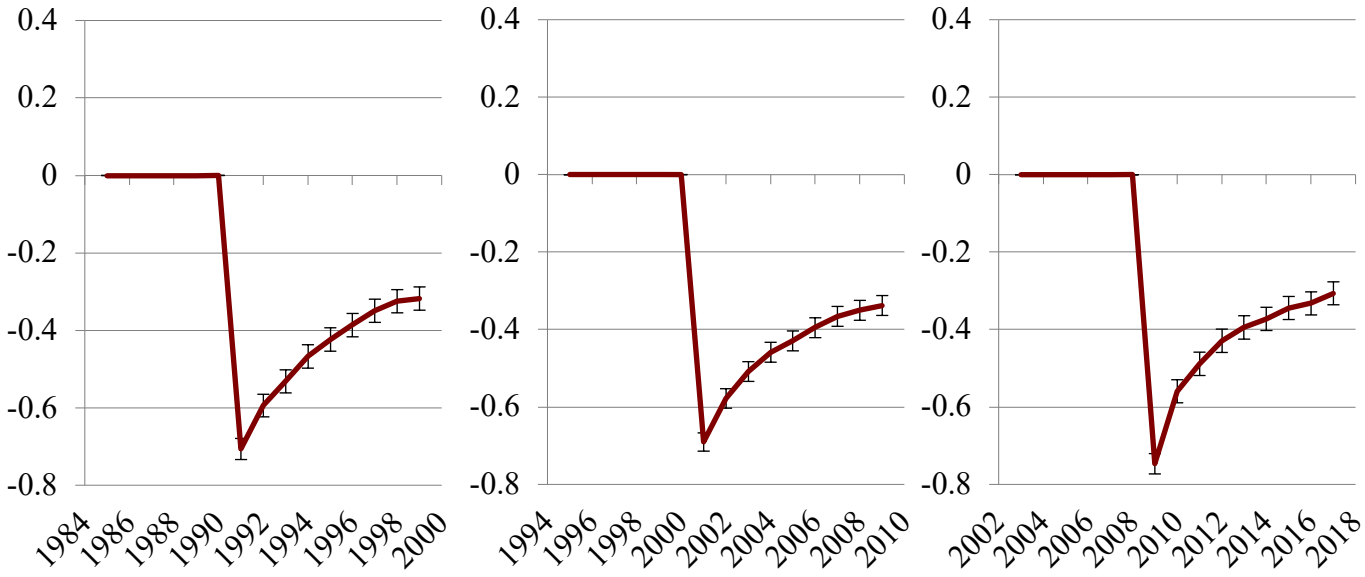
Notes: The whiskers depict 95-percent confidence intervals.
Source: Authors' estimates from the CWHS (1985-2017).

Figure B3. *Effect of Displacement on Earnings for Black Female Workers, Relative to the Effect for White Female Workers, in the 1990-1991, 2000-2001, and 2008-2009 Recessions*



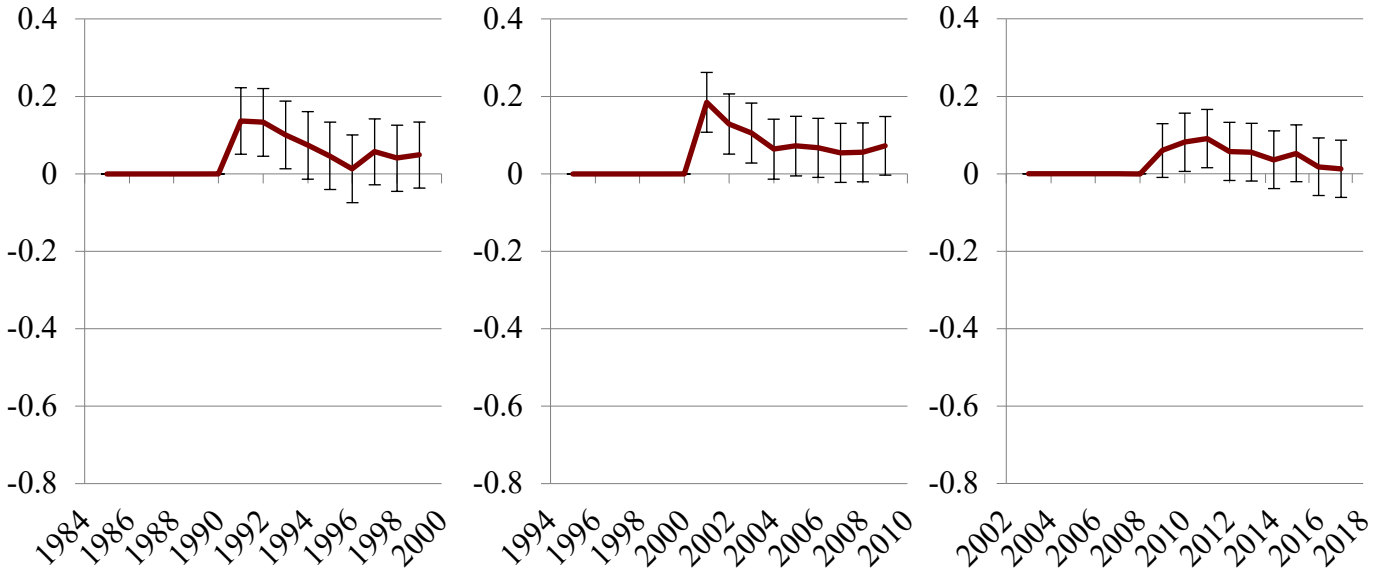
Note: The whiskers depict 95-percent confidence intervals.
Source: Authors' estimates from the CWHS (1985-2017).

Figure B4. *Employment Trajectories of Displaced White Female Workers Relative to Non-Displaced White Female Workers in the 1990-1991, 2000-2001, and 2008-2009 Recessions*



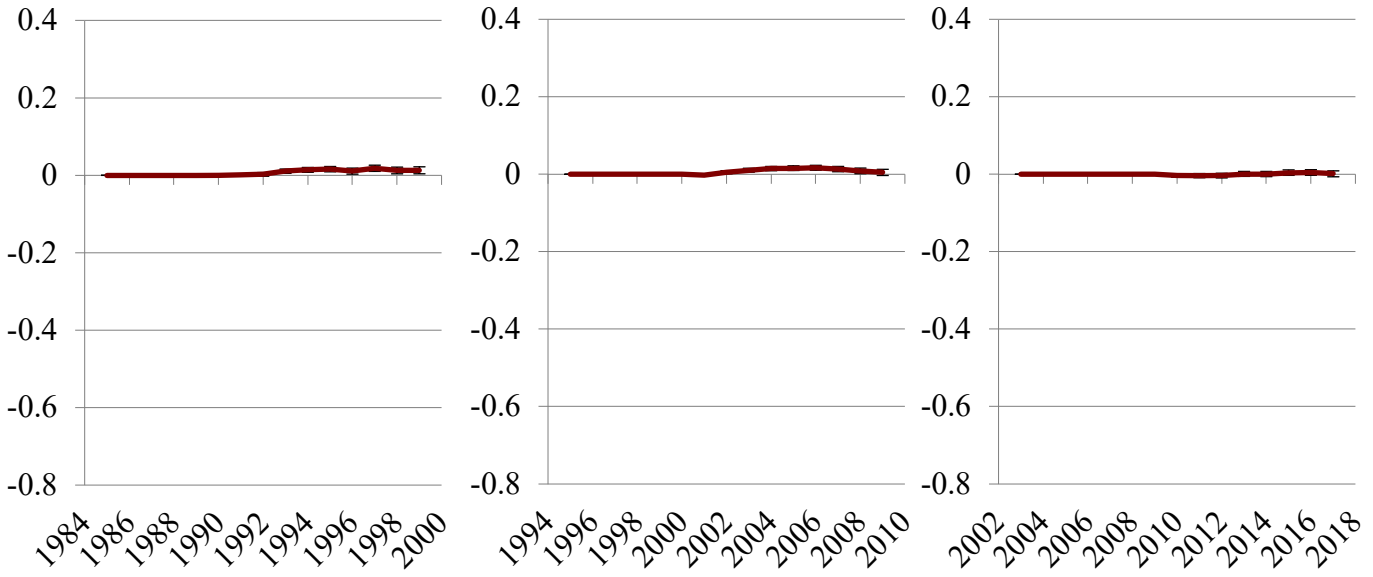
Note: The whiskers depict 95-percent confidence intervals.
Source: Authors' estimates from the CWHS (1985-2017).

Figure B5. *Employment Trajectories of Non-Displaced Black Female Workers Relative to Non-Displaced White Female Workers in the 1990-1991, 2000-2001, and 2008-2009 Recessions*



Notes: The whiskers depict 95-percent confidence intervals.
Source: Authors' estimates from the CWHS (1985-2017).

Figure B6. *Effect of Displacement on the Employment of Black Female Workers, Relative to the Effect for White Female Workers, in the 1990-1991, 2000-2001, and 2008-2009 Recessions*



Note: The whiskers depict 95-percent confidence intervals.
Source: Authors' estimates from the CWHS (1985-2017).

Appendix C

Table C1. *Regression Results for the Impact of Job Displacement on Men's Earnings in the CWHS, by Race and Recession, 1985-2016*

	1990-1991	2000-2001	2008-2009
Intercept	11.42768***	12.14069***	12.5798***
	(0.0451)	(0.0462)	(0.0455)
Recession Year - 5	-0.5019***	-0.51535***	-0.50114***
	(0.0074)	(0.0079)	(0.0077)
Recession Year - 4	-0.35178***	-0.36376***	-0.34267***
	(0.0057)	(0.0060)	(0.0059)
Recession Year - 3	-0.2254***	-0.23433***	-0.22996***
	(0.0039)	(0.0041)	(0.0041)
Recession Year - 2	-0.11106***	-0.11388***	-0.11431***
	(0.0021)	(0.0022)	(0.0024)
Recession Year	0.106457***	0.115145***	0.099865***
	(0.0021)	(0.0023)	(0.0024)
Recession Year + 1	0.165124***	0.188708***	0.117454***
	(0.0042)	(0.0045)	(0.0046)
Recession Year + 2	0.2555***	0.256854***	0.185486***
	(0.0063)	(0.0068)	(0.0067)
Recession Year + 3	0.324431***	0.334836***	0.278929***
	(0.0083)	(0.0090)	(0.0088)
Recession Year + 4	0.41929***	0.442468***	0.374269***
	(0.0104)	(0.0112)	(0.0109)
Recession Year + 5	0.510323***	0.539939***	0.465855***
	(0.0124)	(0.0136)	(0.0131)
Recession Year + 6	0.60961***	0.646982***	0.574798***
	(0.0146)	(0.0159)	(0.0153)
Recession Year + 7	0.719187***	0.748785***	0.687055***
	(0.0168)	(0.0183)	(0.0176)
Recession Year + 8	0.829742***	0.844573***	0.777853***
	(0.0190)	(0.0207)	(0.0200)
Recession Year + 9	0.930954***	0.883039***	0.88405***
	(0.0213)	(0.0233)	(0.0224)
Recession Year - 5 * Black	0.006162	-0.00538	-0.02233***
	(0.0050)	(0.0051)	(0.0070)
Recession Year - 4 * Black	0.00849**	-0.01262***	-0.00137
	(0.0037)	(0.0042)	(0.0053)
Recession Year - 3 * Black	0.005124	-0.00789**	0.002882
	(0.0034)	(0.0035)	(0.0054)
Recession Year - 2 * Black	-0.0012	-0.00232	0.010826**
	(0.0032)	(0.0029)	(0.0048)
Recession Year * Black	-0.00057	0.004557	-0.00174
	(0.0031)	(0.0031)	(0.0048)

Recession Year + 1 * Black	-0.02216***	-0.00563	-0.01555**
	(0.0055)	(0.0051)	(0.0076)
Recession Year + 2 * Black	-0.02999***	-0.01127	-0.04255***
	(0.0079)	(0.0075)	(0.0094)
Recession Year + 3 * Black	-0.04725***	-0.02921***	-0.07037***
	(0.0088)	(0.0081)	(0.0105)
Recession Year + 4 * Black	-0.05655***	-0.04778***	-0.07827***
	(0.0093)	(0.0094)	(0.0110)
Recession Year + 5 * Black	-0.06505***	-0.05106***	-0.06677***
	(0.0103)	(0.0096)	(0.0106)
Recession Year + 6 * Black	-0.07076***	-0.04727***	-0.0827***
	(0.0105)	(0.0095)	(0.0108)
Recession Year + 7 * Black	-0.06939***	-0.05042***	-0.08481***
	(0.0107)	(0.0100)	(0.0116)
Recession Year + 8 * Black	-0.06395***	-0.06825***	-0.0732***
	(0.0107)	(0.0113)	(0.0113)
Recession Year + 9 * Black	-0.06103***	-0.06127***	-0.0712***
	(0.0114)	(0.0127)	(0.0116)
Recession Year - 5 * Displaced	0.136972***	0.103217***	0.175294***
	(0.0197)	(0.0156)	(0.0204)
Recession Year - 4 * Displaced	0.168512***	0.119788***	0.182411***
	(0.0160)	(0.0142)	(0.0182)
Recession Year - 3 * Displaced	0.143211***	0.111967***	0.149636***
	(0.0147)	(0.0128)	(0.0178)
Recession Year - 2 * Displaced	0.098116***	0.095509***	0.094659***
	(0.0139)	(0.0103)	(0.0160)
Recession Year * Displaced	-1.01106***	-0.80799***	-1.07021***
	(0.0273)	(0.0235)	(0.0307)
Recession Year + 1 * Displaced	-1.99357***	-1.56504***	-2.16131***
	(0.0579)	(0.0457)	(0.0713)
Recession Year + 2 * Displaced	-1.26528***	-1.02535***	-1.30918***
	(0.0542)	(0.0424)	(0.0570)
Recession Year + 3 * Displaced	-1.01518***	-0.84579***	-0.84982***
	(0.0518)	(0.0414)	(0.0521)
Recession Year + 4 * Displaced	-0.80699***	-0.69087***	-0.677***
	(0.0498)	(0.0383)	(0.0478)
Recession Year + 5 * Displaced	-0.71753***	-0.60488***	-0.54958***
	(0.0493)	(0.0392)	(0.0466)
Recession Year + 6 * Displaced	-0.5854***	-0.57683***	-0.56614***
	(0.0465)	(0.0389)	(0.0495)
Recession Year + 7 * Displaced	-0.52002***	-0.56594***	-0.46468***
	(0.0471)	(0.0419)	(0.0474)
Recession Year + 8 * Displaced	-0.45519***	-0.50563***	-0.43341***
	(0.0455)	(0.0394)	(0.0511)
Recession Year + 9 * Displaced	-0.38394***	-0.51829***	-0.32694***
	(0.0435)	(0.0420)	(0.0435)

Recession Year - 5 * Displaced * Black	-0.01357	0.11887**	-0.06888
	(0.0413)	(0.0503)	(0.0456)
Recession Year - 4 * Displaced * Black	-0.00698	0.123639**	-0.03677
	(0.0361)	(0.0481)	(0.0372)
Recession Year - 3 * Displaced * Black	-0.03808	0.087825*	-0.02434
	(0.0270)	(0.0472)	(0.0344)
Recession Year - 2 * Displaced * Black	-0.03835*	0.062166*	0.00601
	(0.0205)	(0.0366)	(0.0335)
Recession Year * Displaced * Black	-0.23206***	0.005837	-0.02079
	(0.0788)	(0.0653)	(0.0742)
Recession Year + 1 * Displaced * Black	-0.22171*	-0.18346	-0.1944
	(0.1327)	(0.1139)	(0.1727)
Recession Year + 2 * Displaced * Black	-0.31772**	-0.1368	-0.14214
	(0.1340)	(0.1106)	(0.1527)
Recession Year + 3 * Displaced * Black	-0.21629*	-0.09056	-0.28463**
	(0.1198)	(0.1173)	(0.1365)
Recession Year + 4 * Displaced * Black	-0.28592**	0.066705	-0.25367*
	(0.1215)	(0.1061)	(0.1363)
Recession Year + 5 * Displaced * Black	-0.15397	-0.10599	-0.26072**
	(0.1092)	(0.1155)	(0.1171)
Recession Year + 6 * Displaced * Black	-0.24437**	0.058769	-0.11051
	(0.1200)	(0.1031)	(0.1112)
Recession Year + 7 * Displaced * Black	-0.28135**	0.121674	-0.08806
	(0.1233)	(0.1055)	(0.1018)
Recession Year + 8 * Displaced * Black	-0.14634	0.125345	-0.05433
	(0.1006)	(0.0984)	(0.1114)
Recession Year + 9 * Displaced * Black	-0.26015**	0.1295	-0.10109
	(0.1141)	(0.1131)	(0.1162)
Age Squared	-0.00087***	-0.00088***	-0.00086***
	(0.0000)	(0.0000)	(0.0000)

Note: *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' estimates from the CWHS (1985-2016).

Table C2. *Regression Results for the Impact of Job Displacement on Men's Employment in the CWHS, by Race and Recession, 1985-2016*

	1990-1991	2000-2001	2008-2009
Intercept	1.200358***	1.192373***	0.795822***
	(0.0182)	(0.0184)	(0.0203)
Recession Year - 5	-0.02738***	-0.02639***	-0.03707***
	(0.0029)	(0.0030)	(0.0032)
Recession Year - 4	-0.02083***	-0.02009***	-0.02821***
	(0.0022)	(0.0023)	(0.0024)
Recession Year - 3	-0.01409***	-0.01359***	-0.01908***
	(0.0015)	(0.0016)	(0.0017)
Recession Year - 2	-0.00715***	-0.00689***	-0.00968***
	(0.0008)	(0.0008)	(0.0008)
Recession Year	0.007347***	0.007086***	0.009949***
	(0.0008)	(0.0008)	(0.0009)
Recession Year + 1	0.013265***	0.011687***	0.019402***
	(0.0016)	(0.0017)	(0.0018)
Recession Year + 2	0.003892	0.00346	0.007628***
	(0.0025)	(0.0026)	(0.0027)
Recession Year + 3	-0.00096	-0.00117	0.007138**
	(0.0033)	(0.0035)	(0.0036)
Recession Year + 4	-0.00193	-0.00342	0.009968**
	(0.0041)	(0.0044)	(0.0046)
Recession Year + 5	-0.00038	-0.00518	0.013429**
	(0.0050)	(0.0053)	(0.0055)
Recession Year + 6	-0.00167	-0.00722	0.016887***
	(0.0059)	(0.0062)	(0.0065)
Recession Year + 7	-0.00187	-0.00609	0.020838***
	(0.0068)	(0.0072)	(0.0075)
Recession Year + 8	-0.0026	-0.00659	0.023991***
	(0.0077)	(0.0081)	(0.0085)
Recession Year + 9	-0.0007	-0.01376	0.027802***
	(0.0087)	(0.0091)	(0.0096)
Recession Year - 5 * Black	0.000061	0.000098**	-0.00017**
	(0.0001)	(0.0000)	(0.0001)
Recession Year - 4 * Black	0.000046	0.000074**	-0.00013**
	(0.0000)	(0.0000)	(0.0001)
Recession Year - 3 * Black	0.000031	0.000049**	-0.00008**
	(0.0000)	(0.0000)	(0.0000)
Recession Year - 2 * Black	0.000015	0.000025**	-0.00004**
	(0.0000)	(0.0000)	(0.0000)
Recession Year * Black	-0.00002	-0.00002**	0.000042**
	(0.0000)	(0.0000)	(0.0000)
Recession Year + 1 * Black	0.000462	-0.0016*	0.000268
	(0.0005)	(0.0009)	(0.0004)

Recession Year + 2 * Black	-0.00534***	-0.00318	-0.00863***
	(0.0021)	(0.0020)	(0.0026)
Recession Year + 3 * Black	-0.01189***	-0.00409*	-0.01157***
	(0.0027)	(0.0025)	(0.0031)
Recession Year + 4 * Black	-0.0161***	-0.00295	-0.01073***
	(0.0031)	(0.0028)	(0.0033)
Recession Year + 5 * Black	-0.02182***	-0.00487	-0.01434***
	(0.0034)	(0.0031)	(0.0036)
Recession Year + 6 * Black	-0.0284***	-0.00762**	-0.00929**
	(0.0037)	(0.0034)	(0.0037)
Recession Year + 7 * Black	-0.02857***	-0.01025***	-0.00914**
	(0.0039)	(0.0036)	(0.0039)
Recession Year + 8 * Black	-0.03059***	-0.0122***	-0.01221***
	(0.0041)	(0.0039)	(0.0042)
Recession Year + 9 * Black	-0.03553***	-0.01639***	-0.0145***
	(0.0043)	(0.0042)	(0.0044)
Recession Year - 5 * Displaced	0.000167	0.000158	-0.00049***
	(0.0001)	(0.0001)	(0.0002)
Recession Year - 4 * Displaced	0.000125	0.000119	-0.00036***
	(0.0001)	(0.0001)	(0.0001)
Recession Year - 3 * Displaced	0.000084	0.000079	-0.00024***
	(0.0001)	(0.0000)	(0.0001)
Recession Year - 2 * Displaced	0.000042	0.00004	-0.00012***
	(0.0000)	(0.0000)	(0.0000)
Recession Year * Displaced	-0.00004	-0.00004	0.000121***
	(0.0000)	(0.0000)	(0.0000)
Recession Year + 1 * Displaced	-0.59892***	-0.49907***	-0.67296***
	(0.0137)	(0.0129)	(0.0142)
Recession Year + 2 * Displaced	-0.51591***	-0.43591***	-0.47797***
	(0.0140)	(0.0129)	(0.0151)
Recession Year + 3 * Displaced	-0.43879***	-0.3882***	-0.43189***
	(0.0140)	(0.0128)	(0.0151)
Recession Year + 4 * Displaced	-0.41557***	-0.36408***	-0.40529***
	(0.0140)	(0.0127)	(0.0150)
Recession Year + 5 * Displaced	-0.38527***	-0.34359***	-0.38362***
	(0.0139)	(0.0127)	(0.0150)
Recession Year + 6 * Displaced	-0.38017***	-0.32397***	-0.34797***
	(0.0139)	(0.0126)	(0.0149)
Recession Year + 7 * Displaced	-0.3642***	-0.31267***	-0.34359***
	(0.0139)	(0.0126)	(0.0149)
Recession Year + 8 * Displaced	-0.35219***	-0.32698***	-0.33358***
	(0.0139)	(0.0127)	(0.0149)
Recession Year + 9 * Displaced	-0.33477***	-0.32973***	-0.33947***
	(0.0139)	(0.0128)	(0.0150)
Recession Year - 5 * Displaced * Black	-0.00028	-0.00031	0.00008
	(0.0003)	(0.0002)	(0.0004)

Recession Year - 4 * Displaced * Black	-0.00021	-0.00023	0.00006
	(0.0002)	(0.0002)	(0.0003)
Recession Year - 3 * Displaced * Black	-0.00014	-0.00016	0.00004
	(0.0001)	(0.0001)	(0.0002)
Recession Year - 2 * Displaced * Black	-0.00007	-0.00008	0.00002
	(0.0001)	(0.0001)	(0.0001)
Recession Year * Displaced * Black	0.000071	0.000078	-0.00002
	(0.0001)	(0.0001)	(0.0001)
Recession Year + 1 * Displaced * Black	0.091348**	0.054662*	-0.0444
	(0.0358)	(0.0310)	(0.0313)
Recession Year + 2 * Displaced * Black	0.083901**	0.056877*	-0.08067**
	(0.0359)	(0.0306)	(0.0342)
Recession Year + 3 * Displaced * Black	0.074388**	0.048029	-0.0043
	(0.0355)	(0.0303)	(0.0346)
Recession Year + 4 * Displaced * Black	0.086456**	-0.00236	-0.02339
	(0.0352)	(0.0307)	(0.0346)
Recession Year + 5 * Displaced * Black	0.037986	-0.01109	0.005158
	(0.0356)	(0.0307)	(0.0345)
Recession Year + 6 * Displaced * Black	0.049332	-0.00483	-0.0041
	(0.0356)	(0.0306)	(0.0342)
Recession Year + 7 * Displaced * Black	0.064413*	-0.00936	-0.0083
	(0.0353)	(0.0306)	(0.0343)
Recession Year + 8 * Displaced * Black	0.055364	0.009643	-0.00998
	(0.0355)	(0.0308)	(0.0344)
Recession Year + 9 * Displaced * Black	0.050158	0.00377	0.022388
	(0.0355)	(0.0311)	(0.0343)
Age Squared	-0.0001***	-0.0001***	-0.00014***
	(0.0000)	(0.0000)	(0.0000)

Note: *** p<0.01, ** p<0.05, * p<0.1.
Source: Authors' estimates from the CWHS (1985-2016).

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