# JOB DISPLACEMENT IN THE UNITED STATES BY RACE, EDUCATION, AND PARENTAL INCOME

Ariel Gelrud Shiro and Kristin Butcher



# ABSTRACT

An extensive literature in economics shows that workers experience large and persistent earnings losses following a job displacement. Given the millions of workers that were displaced during the COVID-19 recession and the high income inequality in the United States, it is important to understand the role that job displacements may play in driving inequalities across demographic and socioeconomic groups. In this paper, we use the Panel Study of Income Dynamics (PSID) to measure the frequency and earnings impact of job displacements by race, education, and parental income level. Focusing on displacements that occurred between 1989 and 2019, we find that Black workers are 67 percent more likely to be displaced than their white peers, on average. Workers without a bachelor's degree are also 67 percent more likely to be displaced than those with a bachelor's degree, and workers whose parents are in the bottom half of the income distribution are 27 percent more likely to be displaced than those with parents in the top half. Using an event study fixed effects model, we measure the impact of a given displacement on annual earnings by worker group. We find similarly large and persistent negative effects on earnings across all demographic and socioeconomic groups. Overall, we estimate a 57 percent decline in earnings for the year following a displacement and a 25 percent decline in the tenth year after a displacement.

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### DISCLOSURES

Kristin Butcher is Vice President and Director of Microeconomic Research at the Federal Reserve Bank of Chicago. The views expressed are those of the authors and do not necessarily represent the views of the Federal Reserve Bank of Chicago, the Board of Governors of the Federal Reserve System, or its staff.

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## I. INTRODUCTION

During the first months of the COVID-19 recession, an estimated 22 million Americans lost their jobs (Bartash, 2020) - roughly 13 percent of the U.S. workforce. The initial impact on employment was largest for women, Black workers, Latino workers, and less-educated workers (Lee et al., 2021). This negative employment shock occurred against a backdrop of long-term trends of declining intergenerational economic mobility (Aaronson and Mazumder, 2008; Chetty et al., 2017) and high income inequality across race (Akee et al., 2019) and education levels (Goldin and Katz, 2007).

Given these trends, it is important to understand if and how negative labor shocks contribute to economic inequality. To answer this question, we explore whether the frequency of job displacements and their impact on earnings vary by a worker's race, education, and parental income level. Job displacements refer to a specific type of job loss in which a worker who has held their job for a certain amount of time loses that job for reasons that are plausibly exogenous to their performance. While a large literature in economics has documented the sizeable and lasting negative effects of a job displacement on employment outcomes, few have explored its impact by demographic and parental socioeconomic status. Kaila et al. (2021) are a notable exception: they examine the earnings effects of job displacements by parental income in Finland and find that workers with low-income parents experience significantly larger earnings losses after a displacement than displaced workers with high-income parents.

In this paper, we explore how job displacements affect workers by race, education level, and parental income in the United States. We begin by presenting descriptive evidence of the impact of job displacements on earnings by showing earnings trajectories for workers in the years leading up to and following a displacement. Then we introduce an event study fixed effects model, which we use to estimate the causal effect of plausibly exogenous job displacements on annual earnings.<sup>1</sup> We focus on job displacements that have occurred between 1989 and 2019 among workers ages 25 to 55. Consistent with previous research, we find large adverse effects. In the first year after being displaced, workers experience a 57 percent decrease in earnings relative to their pre-displacement level. Strikingly, this impact lingers for many years; ten years after being displaced, workers' earnings are still 25 percent lower than those of non-displaced workers.

It is important to understand if and how negative labor shocks contribute to economic inequality.

Next, we turn to differences in the impact of job displacement by demographic and socioeconomic groups. We first show that workers who are Black, workers without a bachelor's degree, and workers whose parents have below-median incomes are more likely to experience a job displacement in any given year. Given the negative effects of a job displacement on earnings, these higher-frequency displacements are potentially important correlates of earnings gaps by race, education, and parental income. We then use our event study framework to explore whether job displacements have different effects on workers' employment outcomes by their demographic and socioeconomic characteristics. While workers with a bachelor's degree initially experience a slightly smaller impact on earnings, the negative effect of job displacement seems to persist longer than it does for their peers without a bachelor's degree. Unlike Kaila et al. (2022), we find that effects are fairly consistent by parental income.

The paper proceeds as follows. Section II provides a brief overview of the job displacement literature and intergenerational mobility literature. Section III explains the data and methods used in this paper. In Section IV, we introduce our empirical model and present our findings for the full sample of displaced workers. Section V explores the variation in the impact of job displacements across race, education, and parental income. Finally, Section VI provides a brief discussion and conclusion.

## II. PREVIOUS WORK

This paper contributes to a large literature in economics that documents the large and persistent effects of job displacements on employment and earnings. In a seminal paper, Jacobson et al. (1993) use a difference-in-differences design to measure the effect of a job displacement on earnings and find long-term annual earnings losses of 25 percent for displaced workers. Since then, a number of papers have found similarly large effects using both survey and administrative data (See Couch and Placzek, 2010 for a review).

Several studies explore how the effects of job displacements vary by workers' demographic and socioeconomic characteristics. For example, Hoynes et al. (2012) show that during the Great Recession, male, Black, Hispanic, and less-educated workers were more affected by job loss. Recently, East and Simon (2020) find that low-income workers are less-well insured against the impact of a job displacement on earnings than middle- and high-income workers. Several studies also find that the impact of a job displacement is larger for older workers (See Couch and Placzek, 2010 for a review). We contribute to this literature by documenting the frequency and impact of job displacements over the last 30 years on several employment outcomes by race and educational attainment.

A subset of the job displacement literature explores the intergenerational effects of displacements, but generally focuses on the effects of a displacement on the children of displaced workers (Willage and Willén, 2020; Huttunen and Riukula, 2019; Lindo, 2011; Rege et al., 2011; Oreopoulos et al., 2008). Few papers look at the impact of job displacements by a worker's parents' characteristics. In a recent paper, Coate et al. (2017) find that workers who live near their parents experience stronger earnings recoveries after a job displacement than those whose parents live farther away.

In this paper, we look at how labor market outcomes in adulthood are shaped by one's parents' incomes. Specifically, we ask whether the effects of a job displacement vary by the income level of a worker's parents. Kaila et al. (2021) are the first to explore this question using administrative data from Finland. They find that, following a job displacement, adults born to parents in the bottom quintile of the income distribution experience earnings losses that are over twice as large as those experienced by workers born to parents in the top quintile of the distribution.

We extend this question to the United States, where intergenerational income mobility is low relative to Nordic countries (Suoniemi, 2017; Jäntti et al., 2006). While lower intergenerational mobility and higher income inequality may suggest that the difference in the impact of a job displacement by parental income may be larger in the United States, it is also possible that the labor market, safety net, and overall economic conditions in the United States make it such that job displacements are less prominent drivers of intergenerational income correlations. Therefore, the impact of displacements by parental income in the United States remains an open question. Following previous studies (Ruhm, 1991; Stevens, 1997; Coate et al., 2017), we use the Panel Study of Income Dynamics (PSID) to measure the impact of job displacements on labor income, hourly wages, and total hours worked.

## III. DATA AND METHODS

The Panel Study of Income Dynamics (PSID) is a nationally representative longitudinal survey that tracks families across multiple generations and collects detailed information on employment, earnings, education, and demographic characteristics. The PSID includes a representative U.S. sample and an oversample of low-income individuals from the Survey of Economic Opportunity (SEO) as well as their descendants each year from 1968 to 1997, and every odd year from 1997 to 2019 - the most recent year in our sample. To keep pace with changing demographics, the PSID added additional Latino families to the sample in 1990 and 1992, as well as immigrant families periodically after 1968. Our sample includes members of the original sample, the SEO sample, the Latino sample and the immigrant refresher samples. We rely on longitudinal weights provided by the PSID to ensure our sample remains representative of the U.S. population across time (Coate et al., 2017).

#### Job Displacements

We consider a worker to be displaced if they lose their job involuntarily. In the PSID, workers who have recently changed jobs are asked what happened to their previous job. Like previous papers that use the PSID to examine job loss, we consider displaced workers to be those who select "plant closed/employer moved" or "laid off/fired" as their reason for losing their job. As several papers contend (Oreopoulos et al., 2008; Page et al., 2009; Sullivan and von Wachter, 2009; and Lindo, 2010), job displacements provide a plausibly exogenous shock to income after controlling for individual fixed effects. Since it is more likely that a displacement caused by a plant closure or employer relocation (rather than one caused by a layoff or firing) is exogenous to a worker's characteristics, we conduct our main analysis using a more restrictive definition of displacements (only those who select "plant closed/ employer moved" are considered displaced) as a robustness check and find gualitatively similar earnings losses.<sup>2</sup>

To ensure that the workers in our sample have strong attachments to the labor force, we require them to be between the ages of 25 and 55 when they are displaced. We also require workers to have worked at least two years full time with their employer before being displaced.

#### **Employment Outcomes**

We focus on annual labor income as our main employment outcome, which is composed of wages and salaries, any separate reports of bonuses, overtime, tips, commissions, professional practice or trade, miscellaneous labor income and extra job income.<sup>3</sup> We also look at annual hours worked, which we observe in the PSID, and we construct an hourly income variable by dividing annual labor income by hours worked. These results are reported in Appendix Figures 1 and 2.

#### Parental Earnings

There is a large technical literature focused on measurement related to intergenerational mobility. The way in which income is measured and compared across generations can affect the estimated rates of mobility (Deutscher and Mazumder, 2021; Ward, 2021). In this context, we are interested in comparing the income levels of parents across our sample of displaced and non-displaced workers. To do so, we take a similar approach to the one used by Kaila et al. (2021) and measure the labor income of both parents up until their adult child is displaced or non-displaced.<sup>4</sup> For example, if a worker is displaced in 1988 and we observe their parents in the PSID starting in 1970, we will combine the parents' labor incomes from 1970 to 1988.<sup>5</sup> We use the same labor income definition for parents' incomes as the one used for the workers in our sample. We only include observations for parents when they are between the ages of 25 and 55.

We then rank parents' earnings to assign each displaced and non-displaced worker in our sample their parental income percentile rank. To account for earnings differences across ages, we construct the parent income percentiles by comparing a parent's income to the incomes of other parents at a similar age. We separate the parent income observations into three ten-year life stage periods – from ages 25 to 35, 35 to 45, and 45 to 55 – and assign parents an income percentile for each of the periods in which they are observed prior to their child's displacement based on their average income in those years.<sup>6</sup> For instance, if a parent is observed from ages 45 to 55 and they are assigned an income percentile of 90, that means their average income from ages 45 to 55 was greater than 90 percent of all other average incomes for parents in our sample between the ages of 45 and 55. If a parent is observed across more than one ten-year period before their child is displaced, we average the percentiles from the ten-year periods to get the final parent income percentile that is assigned to their child.<sup>7</sup>

#### Sample Construction

Since the PSID began in 1968, and we want to link displaced workers to their parents, we focus on displacements that have occurred from 1989 to 2019.8 Our sample consists of reference persons – formerly "heads of household" - and spouses who are displaced between the ages of 25 to 55. To measure the causal effect of a job displacement on earnings, we need to construct treatment and control groups consisting of displaced and non-displaced workers, respectively. While there are several ways to do so, we follow the methodology employed by Coate et al. (2017) most closely. For a given age (which we refer to as the "base age" throughout the paper), we include all individuals who are displaced at that age in the treatment group and those who meet the two-year tenure requirement but are not displaced at that age into the control group. This creates the sample for that base age. We then repeat the process for each base age until we have 30 samples - one for each age between 25 and 55. To track the effects of a displacement over time, we include individuals' observations for five years leading up to their displacement and ten years following their displacement.<sup>9</sup> Therefore, the base age 25 sample will contain individuals' observations from ages 20 to 35, the base age 26 sample will contain individuals' observations from ages 21 to 36, and so on. We refer to these years as relative years. For base age 25, relative year -1 refers to the year when the individual is 24, relative year 1 refers to the year when the individual is 26, and so on. Finally, we stack all the treatment and control groups for each base age to create our final data set.

Given this design, it is possible for the same individual

to appear multiple times in the final sample. Consider an individual who we observe first at age 25. If they are displaced at age 25, they will enter the sample in the base age 25 treatment group. Later, if the same individual is employed for several years and then is displaced again at age 30, they will appear in the base age 30 sample. Using the same logic, an individual can appear as both a displaced and a non-displaced observation in separate base ages. In our results, we cluster standard errors at the individual level to account for the fact that the same individual can appear multiple times throughout the sample.

While 40 percent of non-displaced workers have a bachelor's degree, only 29 percent of displaced workers do.

Table 1 shows demographic characteristics and employment outcomes for the displaced and non-displaced sample groups in the relative year -2.10 The average age and share who are male is nearly identical for both groups. The displaced group is disproportionately Black and has a has a lower educational attainment level.<sup>11</sup> While 40 percent of non-displaced workers have a bachelor's degree, only 29 percent of displaced workers do. Displaced workers also have lower annual and hourly earnings in the year before their displacement, although both groups work a similar number of hours. The difference in annual earnings between the groups is likely driven by the differences in their demographic and socioeconomic characteristics.<sup>12</sup> In the next section, we present the earnings trajectories for the displaced and non-displaced groups and estimate the causal impact of a job displacement.

### TABLE 1

Summary statistics for displaced and non-displaced workers two years before being displaced or non-displaced

		Not Displaced	Displaced
Demographic and Socioeconomic Characteristics	Age	38.7	39.0
	Male	50%	53%
	Bachelor's degree*	40%	29%
	White*	78%	71%
	Black*	12%	18%
Employment	Earnings*	\$ 54,343	\$ 44,583
	Hourly Earnings*	\$ 26.52	\$ 21.95
	Hours Worked	2,061	2,030

**NOTE:** \* indicates that the difference is statistically significant at the  $p \le .05$  level.

## IV. EFFECTS OF A JOB DISCPLACEMENT ON EARNINGS

In this section, we present preliminary descriptive evidence that job displacements have large and lasting negative effects on employment outcomes. We then introduce our event study model, which we use to estimate the causal effect of a job displacement on earnings.

Figure 1 plots log annual earnings for displaced and non-displaced workers in the years before and after their displacements. There are several important trends to note. First, workers experience a sharp decline in earnings immediately following a displacement. Second, non-displaced workers experience consistent growth in earnings over time. Third, although displaced workers eventually return to pre-displacement earnings levels, the earnings gap between displaced and non-displaced workers is larger ten years after a displacement event than in the years leading to the displacement. Finally, it is important to note that the two groups show similar earnings trends in the years leading to the displacement event despite the level difference.



Log annual earnings for displaced and non-displaced workers

**Note:** The figure plots average earnings for each year relative to the displacement by group in 2019 dollars (PCE). Standard errors are clustered at the individual level.

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FIGURE 1

**Earnings Trajectories** 

#### **Empirical Model**

To formally measure the impact of a job displacement on employment outcomes, we introduce an event study fixed effects model similar to the ones used by Kaila et al. (2021) and Coate et al. (2017):

$$Y_{ibt} = \alpha_{ib} + \sum_{j=-5}^{10} \delta^j D^j_{ibt} + \pi_b + \gamma_t + \varepsilon_{ibt}$$

In our model, Y\_ibt is the outcome variable for worker i in base age b and calendar year t. The indicator variables D\_ibt^j capture whether individual i at base age b and calendar year t was displaced j periods ago. We let j range from -5 to 10. The  $\delta$ 'j coefficients represent the causal effect in relative year j of being displaced. The relative year -1 is used as the baseline period, so the displacement dummy for that year is dropped.

The model includes calendar year dummies ( $\gamma t$ ) and base age fixed effects ( $\pi b$ ) to ensure that the outcomes of displaced workers are compared to those of

non-displaced workers in the same base age. Finally, we include individual-base-age fixed effects (aib) to control for permanent differences in the outcome variable between displaced and non-displaced workers in base age b. Standard errors are clustered at the individual level to allow for the error terms, sibt, to be correlated across base age and year for a given individual. The identifying assumption is that earnings trends would be similar for displaced and non-displaced groups in the absence of the displacement event. As we show in Figure 2, none of the point estimates for the five years leading up the displacement are significantly different from zero, suggesting that our identifying assumption holds.

#### Results

Figure 2 plots the results from our model, showing the effects of a job displacement on log annual earnings using our entire sample of displaced and non-displaced workers. There are several key takeaways from this figure. First, as we noted in the previous section, the point estimates for the five years

#### FIGURE 2 **Effect of Job Displacement on Log Annual Earnings** All workers, ages 25 to 55



**Note:** The figure plots the coefficients on the relative year dummies that result from estimating equation (1), which includes year dummies, base-age fixed effects, and individual-base-age fixed effects. Values are in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level. BROOKINGS

leading up to the displacement are all small and not statistically different from zero. Second, in line with previous displacement studies, we find a significant and immediate drop in earnings in the year following the displacement. We estimate a 57 percent decline in earnings in the year following a displacement. In years two through five, earnings begin to rebound but they never fully recover. By year ten, displaced workers still experience a roughly 25 percent decrease in earnings relative to their non-displaced peers. In other words, the impact of a displacement on earnings is large and persistent.

By year ten, displaced workers still experience a roughly 25 percent decrease in earnings relative to their non-displaced peers.

We also estimate equation (1) using log hourly earnings and total hours worked as the outcome variables and show the results in Appendix Figures 1 and 2, respectively. As Appendix Figure 1 shows, hourly wages drop in the first year after a displacement by 13 percent and remain somewhere between nine and 18 percent lower than the non-displaced group's wages over the next nine years. In Appendix Figure 2, we see that the number of hours worked annually drops sharply before returning to a level that is not significantly different from the non-displaced group's level by the fifth year following a displacement. In combination, these figures indicate that the longer-term, lingering effect of a job displacement on annual earnings is driven by displaced workers finding lower-paying jobs after displacement, rather than by working less.

## V. IMPACT OF JOB LOSS BY RACE, EDUCATION, AND PARENTAL INCOME

Now we turn to the question of whether the impact of job displacements varies by a worker's race, educational attainment, and parental income rank. There are two important ways in which workers could be affected differentially by job displacements. The first is the probability of being displaced in a given year and the second is the earnings effect of a given displacement. We begin by measuring the probability of being displaced in a given year and the second is the earnings effect of a given year by a worker's race, education level, and parental income to see if some workers are more likely to experience a job displacement than others. Then, we estimate the event study model from equation (1) separately by demographic and socioeconomic group to test for heterogeneous effects.

#### Frequency of Job Displacement

The share of workers that are displaced in our overall sample across all years is roughly two percent. This is consistent with the displacement rates found in previous research (Fernandez and Campbell, 2019).<sup>13</sup> However, this rate varies significantly by year, with displacement rates approaching four percent during recession years in our sample. Appendix Figure 3 plots the overall displacement rate by calendar year across our sample. The displacement rate also varies significantly by race and education, and to a lesser extent by parental income. Table 2 shows the share of displaced workers across all our sample years by demographic and socio-economic group.

#### TABLE 2

#### **Share Displaced**

	Demographic and Socioeconomic Group	Share Displaced	Displaced and Non-displaced observations
Race	Black	2.5 %	20,449
	White	1.5 %	34,156
Education	No Bachelor's	2.0 %	39,368
	Bachelor's	1.2 %	20,382
Parental income	Low-income parents	1.9 %	30,153
	High-income parents	1.5 %	29,707
	All	1.7 %	59,860

**NOTE:** Differences in the share displaced between all mutually exclusive pairs of demographic and socioeconomic groups are statistically significant at the  $p \le .05$  level. Individuals may appear multiple times in our sample. There are 10,976 unique individuals in our full sample. The sum across two mutually exclusive demographic or socioeconomic categories may not add up to the total number of displaced and non-displaced observations due to missing values.

While the absolute differences in job displacement rates are small, the relative differences are large. Black workers are 67 percent more likely to experience a job displacement in any given year than their white peers. At the same time, workers without a bachelor's degree are also 67 percent more likely to be displaced than those with a bachelor's degree. Meanwhile, workers whose parents are in the bottom quintile of the income distribution are 27 percent more likely to be displaced than those with parents in the top income quintile.

#### Effect of Job Displacement by Subgroup

Clearly, Black workers, less-educated workers, and those with low-income parents are more likely to be displaced in a given year. But once they are displaced, do these workers experience worse outcomes than their white, more-educated, and high-income-parent peers who also experience a displacement? We estimate our event study model separately by demographic and socioeconomic group to explore this question. As in Section III, we first plot earnings trajectories for displaced and non-displaced workers by subgroup. Appendix Figures 4, 5, and 6 show earnings trajectories separately by bachelor's degree attainment, race, and parental income level, respectively. As in Figure 1, displaced and non-displaced workers seem to follow similar earnings trends in the years leading up to the displacement event.

We begin by looking at differences by educational attainment. Figure 3 shows the results of our event study model for workers who have a bachelor's degree and those who do not.

While the relatively large and overlapping standard errors suggest we should be cautious in drawing strong conclusions, there are still some notable differences between the two groups. In the first year after a displacement, workers without a bachelor's degree experience a 59 percent loss in earnings while those

#### FIGURE 3

### Effect of Job Displacement on Log Annual Earnings

Log annual earnings for workers with a **bachelor's degree** and those with **no bachelor's degree**, ages 25 to 55



**Note:** The figure plots the coefficients that result from estimating equation (1) separately for those with and without a bachelor's degree in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level. BROOKINGS

with a bachelor's degree experience a 49 percent loss relative to their non-displaced peers. However, by the second year on, displaced workers without a bachelor's recover a greater share of their earnings compared to non-displaced workers with degrees. By the tenth year after the displacement event, individuals without a bachelor's earn 18 percent less than their non-displaced peers, while for workers with a bachelor's, the number is 36 percent.

It is important to remember that the event study model estimates the impact of a displacement by comparing displaced workers to non-displaced workers of the same demographic or socioeconomic group. This is different to comparing earnings levels across groups. Therefore, even though the negative effect of a displacement on earnings ten years after the event is larger for workers with a bachelor's degree, that does not mean that the average worker with a bachelor's has lower annual earnings than a worker without a bachelor's degree. It means that a displaced worker with a bachelor's degrees than a displaced workers with bachelor's degrees than a displaced worker without a degree earns relative to non-displaced workers without degrees.

Our data do not allow us to fully explore the mecha-

In the year after a displacement, non-displaced white workers earn roughly \$11,500 more than their Black peers, on average.

displacement by education level on hourly wages and annual hours worked, respectively. While there is no clear difference between the two groups in terms of effects on hourly wages, displaced workers with a bachelor's degree seem to experience more pronounced effects on annual hours worked than their displaced peers without degrees. In the year following a displacement, workers without a bachelor's degree experience a roughly 600-hour decrease in annual hours worked, while those with a bachelor's degree see a 1,000-hour decline.<sup>14</sup>

When we look at Black and white workers separately, we find nearly identical effects on earnings across the five years leading up to a displacement and the ten that follow. Figure 4 shows the effects of a displacement on earnings by race. While the effects are similar

nisms that drive the apparent differences between displaced workers with a bachelor's degree and those without one. It is possible that returns to labor market experience and job tenure are higher for those with a bachelor's degree, so the disruption caused by a job displacement may be particularly costly for those with a degree. However, we can measure the impact of displacements on hourly wages and annual hours worked to better understand the impact on annual earnings. In Appendix Figures 7 and 8 we show the effect of a job





Note: The figure plots the coefficients that result from estimating equation (1) separately for Black and white workers in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level. BROOKINGS for both race groups, large differences in earnings levels still exist across all relative years. In the year after a displacement, non-displaced white workers earn roughly \$11,500 more than their Black peers, on average.

Finally, we compare workers with parents who have above-median incomes to those with parents who have below-median incomes. Figure 5 shows the effects of a displacement on earnings by parental income level. Unlike Kaila et al. (2022), we find strikingly similar effects for both groups across all years.<sup>15</sup>

To examine the mechanisms behind this effect, we look at the impact on hourly wages and annual hours worked separately for each group (Appendix Figures 11 and 12, respectively). We find that displaced workers with high-income parents work fewer hours than their peers with low-income parents in the two years after a displacement. However, when we look at the effects on log hours worked, there are no differences between the two groups, suggesting that the difference in the effect on hours worked is driven by differences in pre-displacement average hours worked for workers by parental income. In terms of wages, we find that workers with low-income parents experience a larger decline in their hourly wages in the two years after being displaced, though large standard errors make it difficult to discern any clear differences. Together, we find that the effects on hourly wages and hours worked do not differ significantly enough for the overall effect on annual earnings to vary by parental income.

### FIGURE 5 Effect of Job Displacement on Log Annual Earnings

Log annual earnings for workers with **high-income parents** and those with **low-income parents**, ages 25 to 55



**Note:** The figure plots the coefficients that result from estimating equation (1) separately for those with above-median-income parents and those with below-median-income parents in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level. BROOKINGS

# **VII. DISCUSSION AND CONCLUSION**

This report establishes three important facts related to job displacements over the last 30 years in the United States. First, as other studies have shown, the negative effects of a job displacement on earnings, hourly wages, and annual hours worked are large and persistent. Second, certain workers experience much higher rates of displacement than others in any given year. Namely, Black workers, those without a bachelor's degree, and those with low-income parents are much more likely to experience a displacement any given year than their white, degree-holding, and high-income-parent peers, respectively. Third, the negative effect of job displacement on earnings is fairly consistent across socioeconomic groups. While displaced workers with bachelor's degrees seem to experience less severe earnings losses in the year immediately following a displacement, they also experience larger lingering effects than their peers without degrees. However, large standard errors make it difficult to make any strong claims regarding differences by socioeconomic status. It is important to keep in mind that, despite the similar impact of job displacement across demographic and socioeconomic groups, there remain large gaps in average annual earnings across these groups - both before and after displacement events.

It may come as a surprise that the negative effect of a job displacement on earnings is relatively consistent across demographic and socioeconomic groups - especially when comparing workers with high-income parents to those with low-income parents. Households in the top 40 percent of the income distribution collectively account for over 84 percent of all wealth in the United States, whereas households in the bottom 40 percent of the income distribution account for less than eight percent (DFA 2022). Given the large differences in access to economic resources as well as the differential impact of displacements found by Kaila et al. (2021) in Finland, we expected to find a similar result in the United States. Future work should explore whether the mechanisms found to drive the differences by parental income in Finland - early childhood investments and direct investments following a displacement – are at play in the United States.

While our paper cannot speak to these potential mech-

anisms, we can look at the effects of displacements on hourly wages and annual hours worked to better understand the effect on annual earnings. For example, while we find that workers experience similar annual earnings losses across parental income groups, it seems as if the initial earnings losses in the two years following a displacement are mostly driven by a decline in hourly wages for workers with low-income parents, while for those with high-income parents, they are driven by a decline in annual hours worked.

A key implication of our findings is that job displacements may play a role in promoting racial, educational, and intergenerational inequality. Even though we do not find differences in the earnings effects of any given displacement across groups, we do find that certain groups experience displacements much more frequently. Black workers, those without bachelor's degrees, and those with low-income parents all have lower average earnings than their peers before experiencing job displacements, so the higher-frequency displacements for these groups likely exacerbate existing income differences.

By focusing exclusively on earnings outcomes, our paper does not fully capture the potential impact of being displaced. The job displacement literature has found that displacements affect a wide range of outcomes besides earnings, such as health (Ahammer and Packham, 2020) and homeownership (Cooper, 2013). Future work should explore whether the effects of a job displacement on these various outcomes differ by race, education, or parental income.

While the number of jobs in the United States has recovered to pre-COVID-19-recession levels, it is important to remember that many of the workers who were displaced in 2020 will likely continue to feel the negative effects of their job displacement for years to come, especially in cases where structural changes mean that old jobs are not returning. Researchers and policymakers alike should work to understand both the negative effects resulting from these displacements and the possible policy solutions that could reduce their impact.

## **END NOTES**

- 1. We also report estimates on hourly wages and total hours worked in Appendix Figures 1 and 2, respectively.
- 2. In our main sample, roughly 30 percent of our displaced workers are displaced because of a plant closure or employer relocation as opposed to a layoff or firing. When we use a more restrictive displacement definition in which workers are only considered to be displaced if they lost their job due to a plant closure or employer relocation, the reduced sample size makes it difficult to conduct robustness checks for our subgroup analyses. Therefore, we are only able to estimate the event study model for our overall sample.
- **3.** Farm income and the labor portion of business income are excluded from this measure of labor income because the distinction between capital and labor income is challenging for these types of income. By excluding them, we focus on income that can clearly be categorized as labor income.
- **4.** If only one parent is observed in the PSID, we use the earnings of the parent that is observed, regardless of whether they are the mother or father. We almost always link children to their biological parents. In the rare cases where both biological parents are missing from the PSID but an adoptive parent is observed, we use earnings data from the adoptive parents.
- 5. To account for the fact that some individuals have two parents with income observations and others have just one, we create an equivalence-adjusted measure of income by summing up the incomes of both parents and dividing the sum by the square-root of two if an individual has two parents with income observations. With this equivalence adjustment, a worker with two parents earning \$50,000 would be ranked similarly to a worker with just one parent earning \$71,000.
- 6. Since the same worker can show up multiple times in our sample if they are displaced or non-displaced more than once, it is possible that their parental income rank changes across observations. For example, if a worker is displaced at age 30 and then again at 40, and if their parent experienced a significant relative growth in income over that period, the same individual will have a higher parental income rank the second time they appear in our sample. In practice, the vast majority of the workers observed multiple times in our sam-

ple have the same parental income rank across their observations.

- 7. Half of the parents in our sample have income percentiles that are within 10 points of each other across the tenyear periods in which they are observed.
- **8.** The "spouse" category can refer to a non-married, cohabiting partner of the reference person, as long as they cohabitate for at least one year.
- 9. We do not balance our sample, so most individuals in our sample are not observed every year from five years before their displacement to ten years afterwards. In fact, since the PSID becomes a bi-annual survey from 1997 onward, most of our individuals are observed in the even number years relative to the year they are displaced.
- **10.** We show summary statistics for the relative year -2 instead of relative year -1 since after 1997, the PSID becomes a bi-annual survey, so individuals are only observed in even relative years. By showing summary statistics two years before the displacement or non-displacement, we are able to observe all individuals in our sample.
- **11.** We only show Black and white race categories since sample sizes are too small for other race groups to be included in our subgroup analysis.
- There is also some evidence that earnings losses begin mounting in the year before a displacement occurs (Jacobson et al., 1993).
- **13.** While Coate et al. (2017) find an average displacement rate of "around three percent" using the PSID, other studies have found slightly higher displacement rates using different data sets (Davis and Wachter, 2011; Kuhn, 2002).
- **14.** These results are qualitatively similar when we estimate equation (1) using log hours worked as the outcome variable.
- **15.** Kaila et al. (2021) focus on differences between workers with parents in the top and bottom quintiles of the income distribution instead of the top half and bottom half of the distribution. Our findings do not change qualitatively when we look at the top and bottom parental income quintiles.

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### **APPENDIX**



**Note:** The figure plots the coefficients on the relative year dummies that result from estimating equation (1), which includes year dummies, base-age fixed effects, and individual-base-age fixed effects. Values are in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level. BROOKINGS

#### APPENDIX FIGURE 2 **Effect of Job Displacement on Annual Hours Worked** All workers, ages 25 to 55



**Note:** The figure plots the coefficients on the relative year dummies that result from estimating equation (1), which includes year dummies, base-age fixed effects, and individual-base-age fixed effects. Values are in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level. BROOKINGS



**Note:** Dates of US recessions as inferred by GDP-based recession indicator (shaded in) are retrieved from FRED, Federal Reserve Bank of St. Louis. BROOKINGS



**Note:** The figure plots average earnings for each year relative to the displacement by bachelor's degree attainment in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level.

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**APPENDIX FIGURE 3** 

APPENDIX FIGURE 5 **Earnings Trajectories** Log annual earnings for white and Black workers



**Note:** The figure plots average earnings for each year relative to the displacement by race in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level.

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#### APPENDIX FIGURE 6 Earnings Trajectories

### Log annual earnings for workers with **high-income parents** and workers with **low-income parents**



Not Displaced = = = Displaced

**Note:** The figure plots average earnings for each year relative to the displacement by parental income in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level.

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#### APPENDIX FIGURE 7 Effect of Job Displacement on Hourly Wages Hourly wage for workers with a bachelor's degree and those with no bachelor's

degree, ages 25 to 55



**Note:** The figure plots the coefficients that result from estimating equation (1) separately for those with and without a bachelor's degree in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level. BROOKINGS

#### APPENDIX FIGURE 8 Effect of Job Displacement on Annual Hours Worked

Annual hours worked for workers with a **bachelor's degree** and those with **no bachelor's degree**, ages 25 to 55



**Note:** The figure plots the coefficients that result from estimating equation (1) separately for those with and without a bachelor's degree in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level. BROOKINGS





**Note:** The figure plots the coefficients that result from estimating equation (1) separately by race in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level. BROOKINGS





**Note:** The figure plots the coefficients that result from estimating equation (1) separately by race in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level. BROOKINGS

#### **APPENDIX FIGURE 11**

#### **Effect of Job Displacement on Hourly Wages**

Hourly wage for workers with **high-income parents** and those with **low-income** parents, ages 25 to 55



**Note:** The figure plots the coefficients that result from estimating equation (1) separately by parental income in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level. BROOKINGS

#### APPENDIX FIGURE 12 Effect of Job Displacement on Annual Hours Worked

Annual hours worked for workers with **high-income parents** and those with **low-income parents**, ages 25 to 55



**Note:** The figure plots the coefficients that result from estimating equation (1) separately by parental income in 2019 dollars (PCE). Shading represents 95 percent confidence intervals using standard errors clustered at the individual level. BROOKINGS

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