Early-Career Job Displacement and the Gender Wage Gap: Evidence from Brazil

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Abstract

This paper examines the long-term effects of early-career job displacement in Brazil, with a focus on gender differences. Using matched employer–employee data, we show that the gender wage gap is smaller among displaced workers and that firm pay premia explain less of the gap in this group. Following workers affected by mass layoffs, we find that women experience larger earnings losses in the short run, driven by lower formal labor market participation and transitions to part-time work. In contrast, men face larger and more persistent earnings losses in the long run. Displaced men return to work more quickly, often through the informal sector, but lose access to high-paying firms, leading to weaker wage growth over time. Overall, early-career displacement reduces the gender wage gap by eroding men's advantage in within-firm career progression.

Keywords: Gender Wage Gap, Job Displacement, Informal Labor Market, Formal Employment, Worker Reallocation
JEL Classification Codes: J16, J31, J63, J64, O17, J21

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1 Introduction

Understanding the persistence of the gender wage gap remains a central question in labor economics. While a large literature documents the role of parenthood and the child penalty in shaping gender inequality (Kleven et al., 2019a,b; Aguilar-Gomez et al., 2026), much less is known about how exogenous labor market shocks interact with gender to affect long-term outcomes. A well-established body of work shows that job displacement leads to persistent earnings losses and elevated non-employment (Ichino et al., 2017). Most of this evidence, however, comes from developed economies, where displaced women tend to experience larger losses than men, often attributed to labor supply constraints and lower geographic mobility (Meekes and Hassink, 2022; Illing et al., 2024). Evidence from developing economies remains limited. In these settings, characterized by high job turnover and large informal sectors, the adjustment mechanisms may differ, as informality can buffer job loss and reshape gender-specific recovery paths.

This paper examines the labor market effects of early-career job displacement in Brazil, providing new evidence on how labor market structure influences gender inequality. We focus on a cohort of young workers (born in 1978) who entered the formal labor market during the late 1990s and early 2000s. Our empirical strategy proceeds in two steps. First, we establish stylized facts about the gender wage gap using the two-way fixed effects framework proposed by Abowd, Kramarz, and Margolis (1999, henceforth AKM) and the decomposition method from Card et al. (2016). Second, to identify the causal effect of job loss, we exploit mass layoffs as exogenous shocks, tracking displaced workers and a matched control group of non-displaced peers for up to 15 years.

Our descriptive analysis reveals a striking pattern: the gender wage gap is significantly wider among workers with continuous employment histories (*stayers*) than among those who experience displacement. Controlling for education, experience, sector, worker and firm fixed effects we find an average gender wage gap of 10 log points for *stayers* and only 9 log points for displaced workers. The AKM decomposition clarifies the source of this

discrepancy. First, employer fixed effect gap among stayers if 7.1 log point, while among displaced workers is only 2.5. In summary, employers pay premium explains much less of gender wage gap among displaced workers. For *stayers*, the gap is largely driven by the sorting component—men's superior ability to sort into high-paying firms. For displaced workers, this sorting advantage is attenuated, and the remaining gap is driven primarily by within-firm bargaining. This suggests that the male wage premium is heavily reliant on uninterrupted career progression within specific high-quality firms.

In the second part of the paper, we exploit job losses triggered by firm mass layoffs as an exogenous shock. To ensure comparability, we perform exact matching based on observable characteristics to select a valid control group of non-displaced workers. Our event study analysis uncovers a dynamic reversal in the gendered costs of job loss. In the short run (first 5 years), our results align with the literature from developed countries: women experience larger earnings losses than men. This initial penalty is driven by the fact that displaced women are more likely to exit the labor force, transition to part-time employment and work less hours.

Leveraging rich administrative data that track workers for up to 15 years after displacement, we show that long-run outcomes differ by gender. While earlier differences fade over time, earnings losses eventually reverse. Between 10 and 15 years after displacement, men experience significantly larger and more persistent earnings losses than women. Women's earnings gradually converge toward their counterfactual trajectories as they return to the formal sector, whereas displaced men face a permanent wage penalty that does not dissipate even after 15 years.

The long-term earnings penalty is particularly pronounced among men displaced at very young ages (between 16 and 20 years old) and those losing their first formal job. Moreover, this pattern is concentrated among less-educated individuals (those with at most a high school degree), who comprise the vast majority of our sample. In addition, our findings do not appear to be driven by the characteristics of the origin firm or by pre-

displacement wage levels, indicating that the results are not specific to workers' initial positions in the wage distribution or firm hierarchy.

To shed light on these results, we exame short-run mechanisms using descriptive evidence from a national household survey. Following displacement, men and women display similar rates of active job search. However, women are more likely to exit the labor force. We also find that women are more likely to shift into part-time formal jobs but are less likely to enter informal employment in the first year after job loss, even though informal jobs typically offer greater flexibility. This higher rate of non-participation among women helps explain their larger short-run earnings losses.

We next examine explanations for the larger long-run earnings losses observed among men, arguing that these losses reflect the disruption of men's job ladders and the persistent stigma of career interruptions. Non-displaced men typically benefit from a steep wage trajectory by sorting into larger and higher-paying firms. Early-career displacement disrupts this mechanism, resulting in adverse outcomes through two distinct channels. First, many men re-enter the labor market quickly accepting lower-quality matches. While this preserves participation, it comes at the cost of weaker job quality, stifling long-run progression. Second, men who face extended non-employment spells suffer severe "CV scars," where long gaps signal a depreciation of skills or productivity to future employers, resulting in heavy earnings penalties for men. Consequently, whether through downward mobility into low-quality jobs or the scarring effects, displacement permanently lowers men's earnings progression. For women, who are historically less likely to sort into high-premium firms and more likely to experience career interruptions due to maternity, the relative loss in firm quality is less severe. Thus, displacement narrows the aggregate gender wage gap by eroding the structural advantage held by men.

We are engaging with the literature on the long-term consequences of early labor market shocks. Oyer (2006) shows that economists who enter the academic job market during downturns face long-lasting disadvantages in placement and productivity, suggesting

that even highly skilled labor markets are shaped by initial conditions. Kahn (2010) finds that U.S. college graduates who begin their careers in a recession earn significantly lower wages for many years. Similarly, Oreopoulos et al. (2012) demonstrate that graduating in a recession reduces earnings and occupational quality for over a decade.

Our paper is also closely related to several strands in the literature exploring the reasons for differences in the labor market experience of men and women and the sources of the gender pay gap. Meekes and Hassink (2022) show that relative to displaced men, displaced women have a longer period of unemployment after job loss in search of a flexible job, widening the gender gap in employment. They also find that displaced women experience a smaller increase in commuting, indicative that women are less competitive in the labor market through smaller job search areas. Ivandić and Lassen (2023) show that women experience a larger relative loss in earnings and a higher unemployment risk. They don't find a gender gap in participation rates. Finally, Illing et al. (2024) find that women experience larger earnings losses than men women who, on average, have much lower earnings. They find that women are much more likely to work part-time and in lower-paying industries before displacement, which are all characteristics typically associated with smaller earnings losses.

Our paper makes several key empirical contributions to the literature. First, we document a systematic relationship between job displacement and the gender wage gap, showing that firm pay premia account for a smaller share of the gap among displaced workers. Second, we provide long-run evidence showing that displacement effects are not persistent and that gender differences in earnings reverse over time. Third, we contribute new evidence on labor supply and demand adjustments in a developing-country context. While women are more likely to transition into part-time work within the formal sector, as in developed economies, they are less likely to move into informal employment, despite its greater flexibility. Finally, we show that firm-level job ladder mechanisms related to within-firm bargaining and sorting are less relevant among displaced workers. Men

disproportionately lose access to high-premium firms after displacement and face larger penalties following extended periods out of the formal labor market.

The organization of the paper is as follows: Section 2 describes the data, and Section 3 documents the institutional background. Section 4 details the empirical strategy. Section 5 presents our main results, while Section 6 explores the underlying mechanisms. Finally, Section 7 concludes.

2 Data

Our main analysis relies on longitudinal data from the formal sector (RAIS). In addition, we use an alternative source: the national household survey (PNAD). We describe each data source in detail below.

Employer-employee registers. We use the longitudinal employer-employee data from *Relação Anual de Informações Sociais* (RAIS). This linked employer-employee longitudinal data set covers nearly all formal jobs in Brazil, made available by the Ministry of Labor. Workers are identified by a unique tax code (CPF) and their full name. Each observation in RAIS corresponds to a worker-establishment match, representing a job in a given year. For each job, the dataset provides three categories of information: (i) worker-related variables, such as gender, age, education, and a unique worker identifier; (ii) firm-related variables, including sector of activity, establishment size, municipality, and unique identifiers for both the establishment and the firm; and (iii) job-related variables, such as average monthly earnings for the year, contractual weekly hours, tenure, occupation, months of hiring and separation, and the reason for separation.

The RAIS dataset is compiled from legally mandated annual reports submitted by firms, which provide the Brazilian government with detailed information on all employees who were on the payroll during the previous year. RAIS exclusively includes formal workers, excluding informal workers, firm owners, and shareholders, unless they are

(self-)employed. In Brazil, formal employees are hired under the labor regulations established by the *Consolidação das Leis do Trabalho* (CLT). According to the CLT, employers must complete and sign the employee's work card (*Carteira de Trabalho*) upon formal hiring. Since employers are required to give workers at least 30 days' notice of dismissal, we define the timing of a layoff as the official layoff date recorded in RAIS minus 30 days.

Household survey data. To study labor market dynamics for both formal and informal workers in Brazil, we use microdata from the Brazilian quarterly labor force survey *Pesquisa Nacional por Amostra de Domicílios Contínua* (PNAD), conducted by the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, or IBGE). The survey was conducted in early 2012 and continues to the present day, and it is used to compute official unemployment statistics. The main variables we use are the worker ID, gender, age, monthly earnings, labor market status (employed and unemployed), and information on whether the individual holds a formal work permit. Workers with a working card correspond to those in the RAIS data.

PNAD surveys follow a rotating panel structure similar to the U.S. Current Population Survey (CPS). Households are surveyed in five separate spells, each consisting of five consecutive quarters, with a two-month gap between each visit. This design means that households participate in a quarterly interview, pause for two months, and then complete another quarterly interview. Due to this structure, individuals are always interviewed across five consecutive quarters. Additionally, interviews are evenly distributed throughout the month.

To calculate total annual real earnings, we deflate average annual nominal earnings using the average *Índice de Preços ao Consumidor Amplo* (IPCA) over the months of employment, normalized to December 2020.

3 Gender Earning Gap and Firm Pay Premium Decomposition

3.1 Evidence on the Gender Wage Gap in Brazil

We begin by documenting key trends in the Brazilian labor market using RAIS. We focus on the 1995–2019 period and restrict the sample to individuals who entered the formal labor market between 1998 and 2004. Specifically, we select the 1978 birth cohort and follow workers from ages 20 to 41. We construct an annual worker-level panel with one observation per worker-year. For workers holding multiple jobs in a given year, we keep the job with the highest earnings. If earnings are tied, we randomly select one of the job matches.

We classify workers into three labor market trajectories to contrast continuous attachment to the formal sector with different forms of employment disruption. *Stayers* are workers with uninterrupted formal employment since entry and account for about 28% of the sample. The remaining workers experience some form of separation. We distinguish between *displaced* workers, defined as those who spend at least one full year out of the formal sector (72% of the sample), and *dismissed* workers, defined as those who experience at least one employer-initiated separation, with or without cause (81% of the sample). Because workers may separate and find another formal job within the same year, dismissal does not necessarily imply displacement.

Figure 1 displays the lifecycle evolution of the average gender wage gap across the three trajectory categories.[1] The gap between men and women widens over the lifecycle, ranging from 10 to 35 log points. Notably, we observe distinct gaps by trajectory: among *stayers*, the gap is larger from the onset of their careers, whereas for the *displaced* and *dismissed* groups, the gaps are smaller and similar in magnitude. This suggests that the

[1] To estimate the gender wage gap, we regress log wages on a gender dummy. We control for tenure, contracted hours, firm size, state, education, and year fixed effects.

divergence in wage growth over the lifecycle is correlated with labor market turnover.

Figure 1 suggests that the widening gender wage gap among stayers may reflect differential returns to career progression. However, selection may also play an important role: lower-ability workers may sort into firms or sectors with a higher risk of layoffs, which could contribute to the observed gender gap. These considerations motivate the estimation of a two-way fixed effects model.

We estimate a equation based on AKM seminal two-way FEs framework (Card et al., 2016) separately by gender:

$$lwage_{ijt} = \alpha_i + \psi_j^g + X_{it}'\beta^g + \varepsilon_{ijt}, \tag{1}$$

where $lwage_{ijt}$ is log earnings of individual i in year t working at employer $j = J(i,t)$. g indexes gender (F or M). α_i is a person FE; ψ_j^g is a gender-specific employer FE. We control for X_{it}, including tenure, contractual hours, state, education (non-parametrically in the four levels), and experience. ε_{ijt} is a residual.

We can only identify the fixed effects in equation (1) for firms connected by worker mobility, requiring at least one observation per worker. We therefore restrict our analysis to the "dual-connected sample," defined as the intersection of the largest connected sets for men and women. Table 1 presents descriptive statistics by sample: Column 1 displays the full sample, while Columns 2 through 5 focus on the AKM estimation sample, broken down by labor market trajectories. Differences between the dual-connected set and the full sample are negligible; indeed, the observation counts indicate that we can estimate equation (1) for 96% of the original sample.

Table 1 also details other key characteristics. Most individuals work full-time, with a roughly even split between white- and blue-collar occupations. The average age is 31, and the majority of workers hold a high school degree or lower. We also observe notable heterogeneity across labor market trajectories. Compared to *displaced* or *dismissed* workers, *stayers* earn higher wages, are more likely to hold white-collar positions, possess higher

levels of education, and are employed by larger firms.

In previous work, Card et al. (2016) original paper and subsequent literature, normalize firm effects relative to the average effects in the hotel and restaurant sector, which they argued has "low-surplus" firms that offer on average zero wage premiums for both genders. Our setting with gender-specific, we normalize the firm-fixed effect by lower within each gender that is agricultural sector for men and food and accomodation for women. Figure 2 confirms sectors with the lowest average firm fixed effects for men and women separatly, supporting this choice of normalization.

3.2 Between-firm versus within-firm decomposition

Our primary objective is to determine whether the gender wage gap in our sample is driven more by within-firm wage progression or by sorting into specific firms. Crucially, we investigate these mechanisms across labor market attachment statuses: specifically for those with continuous formal employment (*stayers*), those who experienced early-career separation (*displaced*), and those who were terminated (*dismissed*). To this end, we first estimate equation (1) separately for each gender. As we aim to compare fixed effects across genders, we normalize the estimates within each group. This normalization re-centers and rescales the fixed effect distributions to ensure comparability. Finally, we decompose the gender difference in firm pay premia into between-firm and within-firm components by implementing the Kitagawa-Blinder-Oaxaca decomposition as follows:

$$\begin{aligned}\mathbb{E}\left[\psi_j^M \mid g = M\right] - \mathbb{E}\left[\psi_j^F \mid g = F\right] =& \mathbb{E}\left[\psi_j^M - \psi_j^F \mid g = M\right] \\ &+ \mathbb{E}\left[\psi_j^F \mid g = M\right] - \mathbb{E}\left[\psi_j^F \mid g = F\right].\end{aligned} \tag{2}$$

We decompose the difference $\mathbb{E}\left[\psi_j^M \mid g = M\right] - \mathbb{E}\left[\psi_j^F \mid g = F\right]$, which captures the contribution of firm selection to the gender wage gap, into two distinct channels: a between-firm component (sorting channel) and a within-firm component (bargaining channel). The first term on the right-hand side represents the within-firm channel. It captures the aver-

age difference between firm fixed effects for men and women, assuming that women are distributed across firms in the same proportion as men, that is, holding sorting fixed. The remaining terms represent the sorting, or between-firm, channel. This corresponds to the difference between the average firm effect for women and what it would be if they were represented across firms in the same proportion as men.

Table 2 reports the gender gap based on the AKM model. In the full sample, the gender gap in firm effects is 9.1 log points, which is smaller than the raw wage gap shown in Figure 1, yet indicates that a substantial gap persists even after accounting for worker selection and sorting across firms.

Focusing on the dual-connected sample, the gender gap remains sizable at 8.9 log points but displays meaningful heterogeneity across labor market trajectories. The gap is larger among *stayers* (10.0 log points) than among *displaced* (9.0) and *dismissed* workers (9.7). Thus, even after conditioning on selection, displacement is associated with a narrower gender gap.

We now turn to the role of firm fixed effects. In the full sample, the gender gap in firm pay premia is 3.7 log points, but the gap is substantially larger among *stayers* at 7.1 log points, compared with 2.5 log points among *displaced* workers and 2.9 log points among *dismissed* workers. This pattern indicates that sorting of women into lower-paying firms plays a much more important role in explaining the gender gap for workers with uninterrupted formal careers.

The decomposition further reveals distinct mechanisms across trajectories. For *stayers*, the gender gap is largely explained by between-firm differences. For workers who experience a career interruption, whether through displacement or dismissal, firm sorting becomes less relevant. Instead, the remaining gap is driven mainly by within-firm pay differences.

These results are consistent with a mechanism in which men accumulate firm-specific human capital or advance along internal job ladders faster than women. Job displacement

disrupts these gains along career progression. By eliminating the firm wage premia that men disproportionately capture, displacement effectively resets wage trajectories. As a result, the gender gap is smaller among *displaced* and *dismissed* workers than among those with uninterrupted careers, as men's advantage from sorting into higher-paying firms is attenuated.

4 Empirical Strategy: Job Displacement Effects

In this section, we outline our empirical strategy to estimate the effects of job displacement. Our identification challenge arises from the fact that labor turnover is endogenous to several factors, including gender. Women, for instance, might be more likely than men to leave their jobs for family-related reasons or to self-select into part-time work. The incidence and reasons for labor turnover matter, as they influence long-term labor market outcomes through human capital accumulation and signaling.

To address this issue, we select comparable workers based on observable characteristics. Matching displaced and non-displaced workers enhances the internal validity of our analysis by reducing the potential for selection bias in job displacement based on observables. The treatment group consists of workers who experienced displacement from their formal job due to mass layoffs between 1998 and 2004, while the control group is composed of non-displaced workers employed in formal job in firms that did not undergo mass layoffs during the same period. This approach ensures that the 'actual' year of job loss for a displaced worker represents the 'potential' year of job loss for a non-displaced worker.

We identify control workers by a exactly match on birth cohort, gender, earnings category (by R$25/month bins), occupation code, job tenure (in years), firm size (quartiles) and state (27). In cases where a treated worker is matched with multiple controls, one is randomly selected. We impute the dismissal date for control workers using the dismissal

date of their matched treated counterpart. To ensure that we are capturing workers in the early stages of their careers, we restrict the sample to individuals who were between 16 and 30 years old at the time of displacement.

To estimate the dynamic impact of displacement effects for men and women, we use an event study analysis. Let Y_{it} be the outcome of interest for worker i observed in time t. We estimate the following regression model separately by gender:

$$Y_{it} = \alpha + \gamma Treat_i + \sum_{k=K_0}^{K_1} \delta_k (Treat_i \times I_{(t=k)}) + \sum_{k=K_0}^{K_1} \gamma_k I_{(t=k)} + \varepsilon_{it}, \tag{3}$$

where Treat_i is a dummy variable indicating whether worker i was displaced during a mass layoff. The term $I_{(t=k)}$ represents a set of dummy variables for each period k relative to the displacement year. The coefficients of interest are δ_k, which measure the differential evolution of outcomes for displaced workers relative to the control group (non-displaced workers). The time window is measured in years, with $K_0 = -3$ and $K_1 = 15$ corresponding to the period from three years prior to displacement up to the fifteenth year following the event.

To assess gender differences in responses to job displacement, we also estimate the following regression model:

$$\begin{aligned} Y_{it} = &\alpha + \gamma Treat_i + \sum_{k=K_0}^{K_1} \gamma_k I_{(t=k)} + \beta Male_i + \sum_{k=K_0}^{K_1} \eta_k (Treat_i \times I_{(t=k)}) + \delta (Treat_i \times Male_i) + \\ &+ \sum_{k=K_0}^{K_1} \lambda_k (Male_i \times I_{(t=k)}) + \sum_{k=K_0}^{K_1} \delta_k (Treat_i \times Male_i \times I_{(t=k)}) + \varepsilon_i, \end{aligned} \tag{4}$$

where $Male_i$ is the sex indicator and all other variables are defined as in equation (3).

Our identification strategy further employs a quasi-experimental design, using job loss due to firm mass layoffs as an exogenous shock to employment status. This approach ensures that men and women experience unexpected job loss for the same reason. By

focusing on mass layoffs, we reinforce this strategy, as these events are driven by firm-level shocks rather than the behavior of displaced workers. The pool of potential control workers includes all individuals employed in firms that did not engage in mass layoffs during the analysis period.

Following Bhalotra et al. (2021), we use as definition of mass layoffs firms with 15 or more workers dismissing at least 33% of their workforce without just cause in a given a year. Labor law in Brazil allows firms to dismiss workers without a just cause, although it imposes severance payments. As many as 93% of all contracts in the private sector are open-ended, full-time contracts. We analyze layoffs without a just cause, which account for 65% of all separations (the rest are mainly voluntary quits).

Sample Characteristics. The mass-layoff sample represents 11.5% of the initial sample. Our matching rate is 95%. The final sample consists of 602,169 workers aged 16 to 30 who lost a formal job due to a mass layoff between 1998 and 2004 and who are matched to a control worker. The resulting panel includes 22,882,422 worker-year observations.

Table 3 presents descriptive statistics for laid-off workers and the matched control group in the displacement year, along with mean differences and corresponding p-values. The two groups are well balanced across most observable characteristics. Where differences are statistically significant, they are small in magnitude. The sample consists primarily of younger, lower-wage workers, with relatively few college-educated individuals, compared with the full worker sample reported in Table 1.

Beyond the standard treatment-control comparison, we verify whether covariate balance differs by gender, given that we analyze men and women separately. Figure 3 plots the triple-difference coefficients from the balance regression (capturing the difference in treatment-control gaps between genders). We find that the groups are largely balanced, with the exception of firm size: treated women are more likely to work in small firms (up to 5 employees) and less likely to work in medium-sized firms (5–20 employees) compared to control women, whereas this differential is smaller for men. Although the magnitude of

this discrepancy is modest (approximately 2 percentage points), we perform a heterogeneity analysis by firm size to hold this dimension fixed. We discuss this results in Section 5.

We conclude that there are no economically significant pre-displacement differences between the treatment and control groups. Furthermore, where imbalances exist, they generally do not vary substantially by gender. However, it is possible that displaced men are sorted into different occupations and firms compared to displaced women. While this compositional difference does not pose a threat to our identification strategy—since the difference-in-differences design relies on the parallel trends assumption rather than identical baseline levels (a condition we validate in our event study results)—it suggests that pre-existing characteristics, such as higher earnings or older age, could potentially drive the observed heterogeneity in treatment effects.

To investigate potential compositional differences, we examine the characteristics of men and women in the year of displacement, focusing on age, earnings, and firm attributes. Panel (a) of Figure 4 displays the age distribution at the time of displacement. Women tend to be slightly younger than men. To address this, we perform a robustness check restricting the sample to workers aged 21–26, a range where the age densities overlap significantly; results presented in Figure 19 confirm our main findings.

Panel (b) presents the distribution of average monthly wages in the displaced job, with vertical lines indicating the mean. We observe that average monthly wages (in 2020 prices) were approximately R$1,100, with highly similar distributions for men and women. To account for the gender wage gap that tends to emerge with age, we conduct an additional robustness check focusing exclusively on first jobs (Figure 20), which yields consistent results.

Finally, Panels (c) and (d) display firm size and average firm wages, respectively. The distributions are generally similar, with mean values close to one another. However, men are slightly more likely to be allocated to larger and higher-paying firms. We explore

heterogeneity along these dimensions and find that our conclusions remain unchanged.

Beyond these characteristics, men and women may sort into different occupational roles prior to displacement. We observe that, pre-displacement, women were more likely to hold white-collar positions (53% vs. 21% for men), whereas men were predominantly concentrated in blue-collar jobs (62% vs. 31% for women). Disaggregating these categories reveals that this disparity is driven primarily by the concentration of men in manual labor roles (e.g., construction assistants) and women in sales and administrative support roles (e.g., secretaries and receptionists). Excluding these specific occupations eliminates the pre-displacement occupational differences. Consequently, we perform a robustness check excluding these roles; as shown in Figure 21, our results remain robust to this restriction.

5 Results

Earning Losses. We begin by examining the wage effects of job loss by gender. Figure 5 presents the main results. Coefficients are expressed relative to baseline monthly earnings in the pre-displacement job. Both men and women experience large earnings declines in the years immediately following displacement. In the first post-displacement year, earnings fall by about 40% for men and 45% for women. The losses persist, and they are more negative for women in the short run, up to five years after displacement.

Long-run dynamics, however, differ by gender. From year 7 onward, women's earnings losses stabilize, while men's losses continue to grow. As a result, starting around year 10, men's earnings losses exceed women's. Panel (b), which plots the gender difference in these responses, makes this pattern clear. Men's losses are less negative in the short run, consistent with a positive triple-interaction coefficient, but the differential declines over time. By year 10, the estimated coefficient turns negative, indicating larger long-run earnings losses for men.

Table 4 summarizes the average gender differences in displacement effects at four hori-

zons: 1, 5, 10, and 15 years after displacement. In the short run, men experience smaller earnings losses than women, with a positive and statistically significant estimate indicating a 48% smaller decline. By five years after displacement, women recover more quickly, and the gender difference becomes statistically insignificant through year 10. By year 15, men experience larger earnings losses than women.

Employment. We now turn to potential mechanisms that may explain why women experience larger earnings losses in the short run, while men face larger losses in the long run. One possibility is that women are more likely to leave formal employment after displacement, or to transition into part-time formal jobs.

Figure 6 shows event-study estimates for formal sector employment. There is a mild pre-displacement trend in which workers who are eventually displaced exhibit slightly higher formal employment rates prior to the event, with the pattern stronger for men. This trend runs counter to the post-displacement effects and amounts to a difference of about 1pp between men and women. One year after displacement, formal employment among displaced workers is about 30pp lower than the control group for men and about 34pp lower for women.

Both men and women begin to return to the formal sector two years after displacement, but men re-enter more quickly, leading to a wider employment gap in the second year. From that point onward, women's formal employment gradually converges to men's. By year 10, men and women exhibit similar re-entry rates, and formal employment among displaced workers remains about 3pp below the baseline. Even after 15 years, that small share of displaced workers does not return to formal employment, indicating a persistent exit from the formal sector.

Figure 7 reports outcomes defined only for employed workers, including full-time status, part-time status, and contract hours. We define full-time as holding a formal full-time contract at any point during the year, and part-time as holding a formal contract with fewer than 35 weekly hours at any point during the year.

Panels (a) and (b) report the results for full-time employment. Among workers who remain employed in the formal sector in the first year after displacement, men experience a small decline in the probability of holding a full-time job, while the decline is larger for women, at 0.2 and 1.3 percentage points, respectively. The gender difference in this effect narrows over time and becomes statistically insignificant, as shown in Panel (b). Accordingly, in the long run there is no meaningful gender gap in the probability of holding a full-time job. Panels (c) and (d) show the corresponding results for part-time employment. Women are more likely to reallocate into part-time jobs following displacement. The long-run dynamics mirror those for full-time employment but with opposite signs. Finally, Panels (e) and (f) present the results for contractual hours. Women reduce contractual hours more than men after displacement, but this difference shrinks over time. In the long run, the gap in hours worked between men and women is small. Consistent with Illing et al. (2024), we find that women in Brazil are more likely to transition to part-time jobs following displacement. The magnitude is small, however, because formal contracts in Brazil are overwhelmingly full-time, as shown in Table 3.

Taken together, these results indicate that women's larger short-run earnings losses are partly driven by lower formal sector participation and shifts toward part-time work. By year 10, gender differences in employment and full-time status converge, which likely contributes to women's earnings recovery. This pattern suggests that early-career earnings losses among women, relative to men, reflect temporary selection out of formal employment. Our contribution relative to the existing literature is to show that this mechanism fades over time and does not persist beyond the first decade after displacement.

To disentangle employment from wage effects, we estimate displacement effects on earnings conditional on formal sector participation. In Table 4, the row "Earnings | Employed After 1 Year" restricts the sample to displaced workers who return to the formal sector in the first year after displacement. Among these workers, the gender difference in earnings losses shrinks from R$48 to R$16. When we instead condition on formal sector

participation 5, 10, or 15 years after displacement, women's short-run earnings losses become more pronounced. This pattern is consistent with participation dynamics accounting for a large share of the short-run gender gap in earnings losses.

Heterogeneous Effects. We estimate job displacement effects by pre-displacement education level. Figure 8 shows that the pattern of larger short-term earnings losses for women, followed by a long-term reversal, is driven by less-educated workers. Among college graduates, men experience larger earnings losses from the short run onwards. Considering employment dynamics helps explain this divergence among graduates: post-displacement participation does not differ between men and women in this group. Conversely, less-educated workers follow the previously observed aggregate pattern, with the higher short-term participation among men being particularly pronounced for those with less than a high school education.

Figure 9 presents results for two distinct age cohorts in our sample: 16 to 20 years old and 26 to 30 years old. In both groups, earnings losses are larger for women in the short run; however, the long-run reversal is significant only for the younger cohort. Specifically, if displacement occurs between ages 16 and 20, men eventually experience larger earnings losses than women in the long run.

Finally, we examine whether job displacement effects vary by other pre-displacement characteristics, finding little variation beyond education and age. Figure 10 displays results by wage quartile, indicating that effects are not highly heterogeneous across income levels. Furthermore, we explore heterogeneity by firm characteristics, such as size and average wage, and find that the results remain consistent with the main findings.

6 Understanding the Gender Gap in Earning Losses

Non-Participation and Informal Employment. In this section, we examine whether women and men differ in their sorting into the informal sector following job loss. Employment

in the informal sector is typically associated with lower job security, limited access to benefits, and more unstable earnings, which may exacerbate the adverse effects of displacement. Since we are unable to track informal contracts in the RAIS data, we use the national household survey (PNAD) from 2012 to 2024 to examine the aggregate effects of unemployment on employability. We select in the PNAD sample young individuals aged 16 to 22 who were formally employed and experienced unemployment at some point in the panel.

Figure 13 shows the distribution of labor force status by gender three quarters after experiencing unemployment. We highlight that this analysis provides new evidence that complements our main results using RAIS: in the short run, women are slightly less likely to participate in the formal sector. Additionally, since we now observe both formal and informal employment, we find that women are more likely to exit the labor force after displacement, whereas men are more likely to transition into informal employment.

As a complementary analysis, we compute transitions in labor force status by quarter after displacement for the sample of displaced youth, and present the results in Figure 14. We confirm that there is no gender difference in the likelihood of actively searching for a job (see Panel (a)). In Panel (b), we show employment rates by gender, and observe that three quarters after unemployment, around 80% of men are reemployed, compared to about 70% of women. This 10 percentage point difference in reemployment is explained by gender differences in transitions to informality and labor force exit. Panels (c) and (d) illustrate this clearly: men are about 10 percentage points more likely to be employed in the informal sector three quarters after displacement, while women are about 10 percentage points more likely to have exited the labor force.

In summary, we provide descriptive evidence that men are more likely than women to transition into informality in the short run following displacement (although both genders appear to rely on informality as a form of insurance). As shown in the main RAIS results, men experience larger long-term wage losses in the formal sector, which may be partly

explained by the fact that they remain stuck in the informal sector, which tends to offer more precarious jobs and lower wages.

In addition, we show in Figure 15 Panel (a) the displacement effect on number of days spent unemployed over the previous two months. We find that women, on average, spend more time searching, which may indicate either greater difficulty in re-entering the labor market or a more selective job search process compared to men. Figure 15 Panel (b) shows the average proportion of individuals who report not looking for a job because they had to care for a dependent, such as a child or an elderly family member. We see that, in our sample of young individuals who experience job displacement, it is uncommon for respondents to report being out of the labor force due to caregiving responsibilities. Consequently, we find no significant gender differences in this reason for not seeking employment. This suggests that among the young, caregiving does not disproportionately hinder women's ability to seek employment. In fact, we find that women tend to spend more days actively searching for a job compared to men after displacement. Since the overall probability of being unemployed is similar between genders, this suggests that women remain jobless for longer periods because they tend to search for jobs for longer periods.

Job Search Behavior and Household Roles. Figure 16a shows that male heads of household are re-employed at the fastest rate after displacement, while women—especially non-heads—return more slowly. Panel 16b shows that male household heads also spend the fewest days searching for a job. This suggests they face stronger pressure to return to work quickly, likely due to economic or social responsibilities. Since men are more often household heads and primary earners, they may be overrepresented among those returning quickly.

Firm Pay Premium. We also examine whether men's larger long-run earnings losses reflect reallocation to lower-quality firms following displacement. We proxy firm quality using the firm's average monthly wage, with results shown in Figure 17. Beginning in the

first year after displacement, men are employed at firms with lower average wages than women, indicating that displaced men transition to lower-quality firms.

As discussed in Section 3, women sorting into lower-paying firms explains a sizable share of the overall gender wage gap. This mechanism is less informative for the displacement-induced gender difference, however. Here we focus on how displacement affects sorting and find that men shift toward lower-paying firms compared to women. Because this lowers men's average firm quality, the sorting gap between men and women narrows. As a result, sorting into firms becomes less important in explaining the gender difference in displacement effects.

A related explanation concerns differential constraints on post-displacement job search. As noted above, men may face stronger household pressure to return to work quickly. This pressure contributes to larger short-run earnings losses for women, who are more likely to remain out of the labor force in the years immediately following displacement. At the same time, it may lead men to accept lower-quality matches. Rapid re-employment can come at the cost of moving to firms that pay less, which may slow men's wage growth over the life cycle and contribute to their larger long-run earnings losses. In contrast, women return more slowly, but conditional on re-entry they tend to match into higher-paying firms than men.

CV Scars. We now examine how time spent out of the formal labor market shapes post-displacement wages. As shown in Table 4, when we restrict attention to workers who return quickly, wage losses are similar for men and women. As non-employment durations lengthen, however, displacement effects become more heterogeneous.

Consistent with the extensive-margin results, women are less likely to participate in the formal labor market in the short run. Figure 18 shows a similar pattern for the duration margin: on average, women spend more months out of the formal sector after displacement than men.

Figure 18 further investigates this mechanism by splitting the sample into workers

who return to formal employment within one year and those who remain out for more than 36 months. Among workers who re-enter shortly after displacement, earnings losses are similar by gender. In contrast, the long-run earnings losses are concentrated among men who experience extended non-employment spells. This pattern reinforces the idea that employment interruptions carry larger long-run penalties for men and suggests that long gaps may worsen match quality upon re-entry, potentially reallocating men toward lower-paying firms.

Career Progression. Career progression, beyond firm sorting, may also contribute to our findings. If women advance more quickly than men after returning to the labor market, the narrowing of the gender wage gap could partly reflect differential post-displacement career advancement. In Table 4, *Panel B: Occupation and Industry* reports the effects of job displacement on measures of career progression.

We first estimate the effect of displacement on the probability of receiving a promotion, defined as a wage increase that exceeds the firm's average annual wage growth. Men experience a short-run increase in promotion probability immediately following displacement. In the long run, however, the pattern suggests that displaced men are less likely to be promoted than women.

We also examine whether workers change industries or occupations relative to their pre-displacement positions, as shown in the rows *Changed Industry* and *Changed Occupation*. Men are less likely than women to switch either occupation or industry. Finally, we show that there are no meaningful gender differences in the probability of holding managerial positions, suggesting that managerial sorting does not explain the long-run gender differences in earnings losses.

Overall, we find limited evidence that differential career progression explains the larger long-run earnings losses experienced by men. While some indicators suggest short-run differences in promotion probabilities, these effects are not persistent and do not translate into sustained advantages over time. Similarly, gender differences in occupational or in-

dustry mobility are modest and do not account for the divergence in long-run earnings trajectories. Taken together, these results indicate that career progression mechanisms play at most a secondary role in explaining men's larger long-run losses, reinforcing the interpretation that firm reallocation and CV Scars are the primary drivers of the observed patterns.

7 Discussion

In this paper, we used matched employer-employee data from Brazil combined with household surveys to investigate the long-term effects of early-career job displacement on labor market trajectories. Whereas existing research from developed economies, such as Germany and the U.S., often finds that women suffer larger or at least comparable earnings losses to men due to labor supply constraints, evidence for developing economies remains limited. A key contribution of this paper is to analyze these effects in a context characterized by a large informal sector and high labor turnover, identifying the mechanisms—specifically firm sorting and informality—that drive gender differences in the costs of job loss.

Our decomposition results indicate that the gender wage gap is significantly smaller among displaced workers compared to those with uninterrupted careers (*stayers*). This suggests that a substantial portion of the aggregate gender wage gap is generated by career progression within high-paying firms—a mechanism that disproportionately benefits men. When this link is severed by a mass layoff, the gender gap narrows. In our context, early-career displacement acts as a leveler, reducing men's wage growth advantage and bringing their earnings trajectories closer to those of women.

Our results from mass layoffs reveal a nuanced dynamic between short-term shocks and long-term trajectories. In the short term, we confirm the previous results for developed countries that women suffer earnings losses in the 5 year window after job loss,

partially driven by lower labor force participation and transitions to part-time employment. This pattern is consistent with the traditional literature suggesting that women face greater barriers to re-entry or opt for more flexible, lower-paid arrangements. However, despite these initial penalties for women, a central finding of our analysis is this effects fade away in the long run due to return of women to formal labor market.

We argue that this narrowing of the gap is explained by the destruction of the male "job ladder" advantage. In the absence of displacement, men benefit disproportionately from sorting into larger, higher-paying firms and accumulating firm-specific human capital, which translates into significant wage gains over the life cycle. Early-career displacement severs this trajectory. By forcing men out of these high-quality matches, displacement effectively strips them of the accumulated firm premium that drives the widening gap among stayers. Consequently, the gender gap narrows not because displaced women fare better than stayers, but because displaced men lose the structural advantage that typically insulates their earnings growth.

An important question is whether these divergent trajectories are driven by labor demand or labor supply. We provide additional evidence on this distinction by documenting post-displacement transitions into non-employment and informality. Displaced men are more likely to re-enter the labor market quickly through the informal sector, often accepting lower-quality matches to avoid non-employment. Women, in contrast, take longer to return to work and are less likely to shift into informal employment. This pattern suggests that informality operates as a buffer against non-employment primarily for men, despite the greater flexibility typically associated with informal jobs.

These findings carry important implications for public policy. Programs aimed at mitigating the effects of job displacement – such as active labor market policies, training programs, or wage subsidies – should account for gender differences not only in short-term needs but also in long-term career trajectories. For men, preserving career continuity may be especially critical; for women, policies that enhance access to higher-quality jobs and

facilitate reentry into the formal sector can be particularly impactful.

Future research could explore the mechanisms behind these gender differences in wage dynamics more directly. Unpacking these questions would help refine our understanding of labor market inequality and inform more targeted, evidence-based policy interventions.

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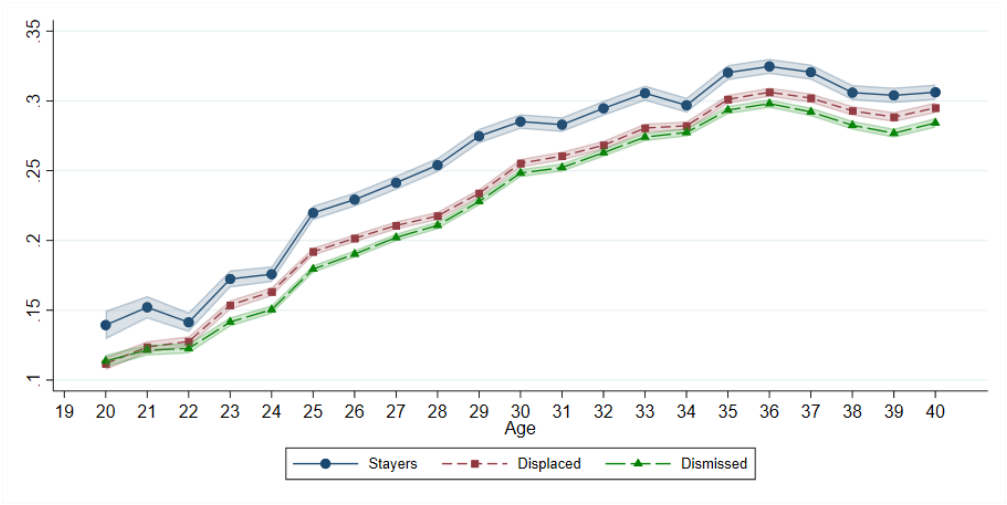
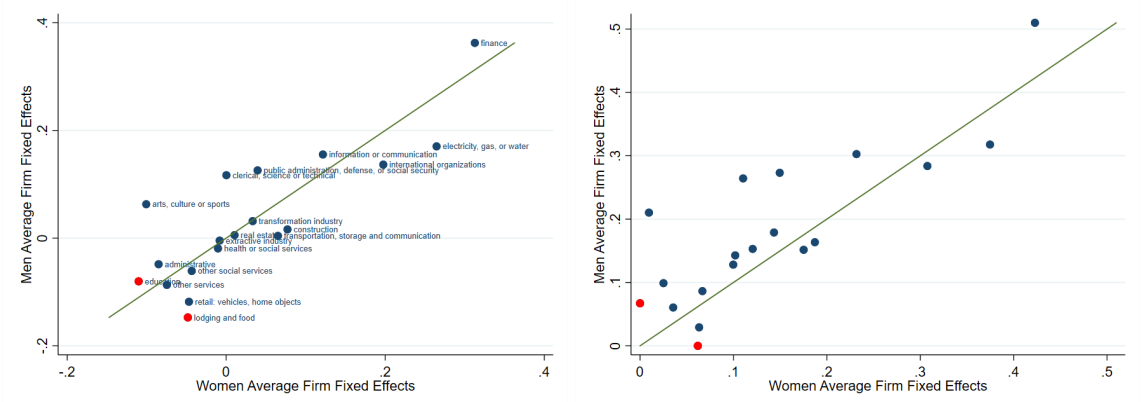
A Figures

Figure 1: Gender Earnings Gap across Employment Trajectories



This figure plots the gender gap in earnings by age for three employment trajectories. *Stayers* are workers continuously employed in the formal sector. *Displaced* workers experience at least one employment interruption lasting one year or more. *Dismissed* workers are those separated from their jobs through dismissal. The gender gap is estimated by regressing log wages on a gender indicator, controlling for tenure, contracted hours, firm size, state, education, and year fixed effects. Shaded areas represent 95% confidence intervals. The data come from RAIS and cover the period 1995–2019 for workers who entered the formal labor market between 1998 and 2004 and were born in 1978.

Figure 2: Firm Fixed Effects by Gender and Sector

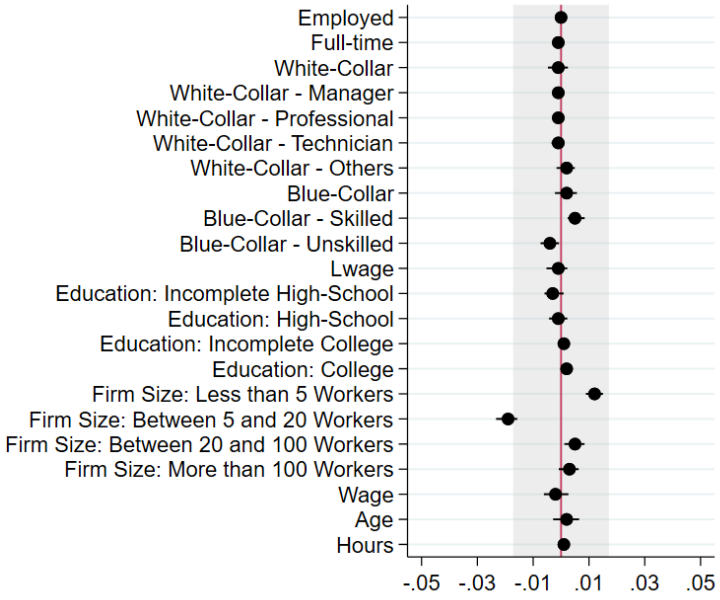


(a) Level

(b) Normalized

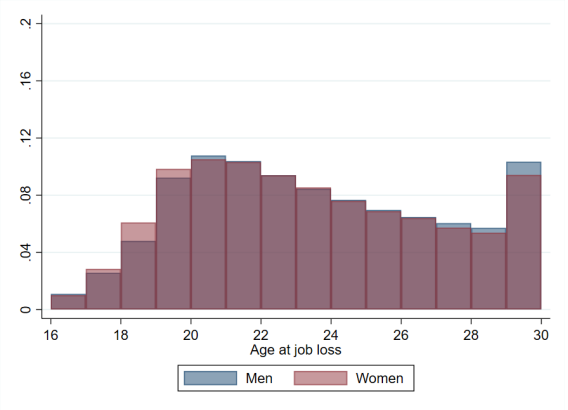
This figure plots firm fixed effects estimated from an AKM model, separately by gender and sector. Panel (a) reports the level of firm fixed effects, while Panel (b) reports normalized firm fixed effects, using the sectors highlighted in red as the normalization benchmark. Each point corresponds to a sector. The data come from RAIS and span the period 1995–2019.

Figure 3: Gender Differences in Pre-Layoff Covariates: Laid-Off vs. Matched Controls

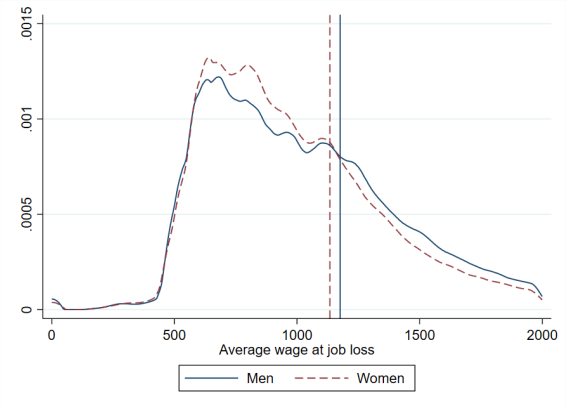


This figure reports covariate balance for the matched sample of workers affected by layoffs. Each point shows the gender gap in the difference between laid-off workers and matched controls for observable characteristics measured one year prior to the layoff. We show 95% confidence intervals. The matched sample is constructed using observable worker and job characteristics as described in Section 4. The data come from RAIS and span the period 1995–2019.

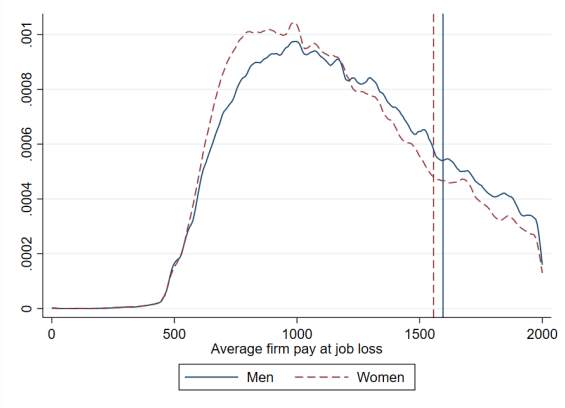
Figure 4: Distribution of Worker Characteristics at the Time of Displacement, by Gender



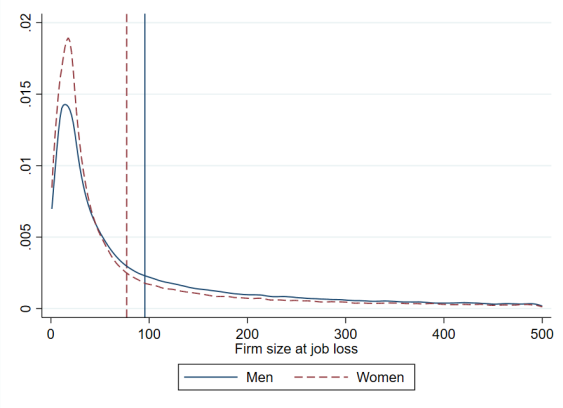
(a) Age



(b) Monthly Wage



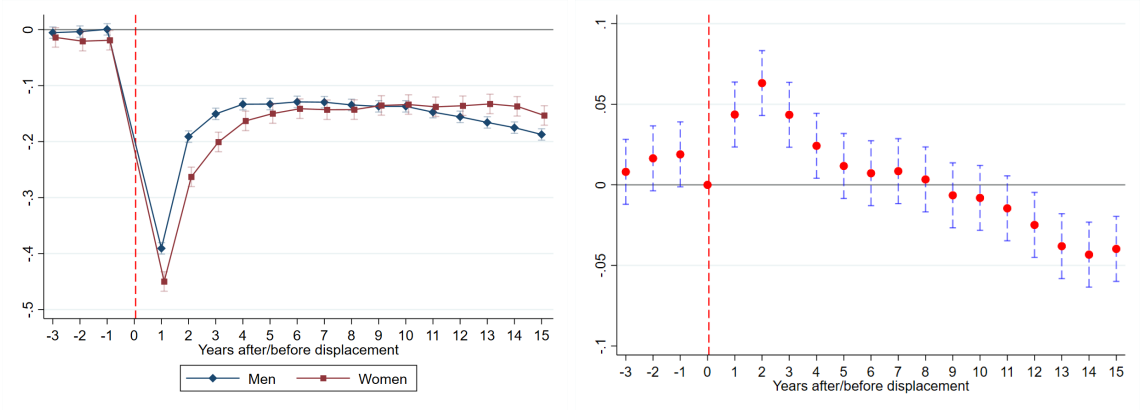
(c) Firm Pay



(d) Firm Size

This figure shows the distribution of selected worker characteristics at the time of displacement, separately by gender. Panel (a) reports age at job loss, panel (b) reports monthly wages at job loss, panel (c) reports average firm pay at job loss, and panel (d) reports firm size at job loss. Solid and dashed lines correspond to men and women, respectively. Vertical lines indicate gender-specific means where applicable. The data come from RAIS and span the period 1995–2019

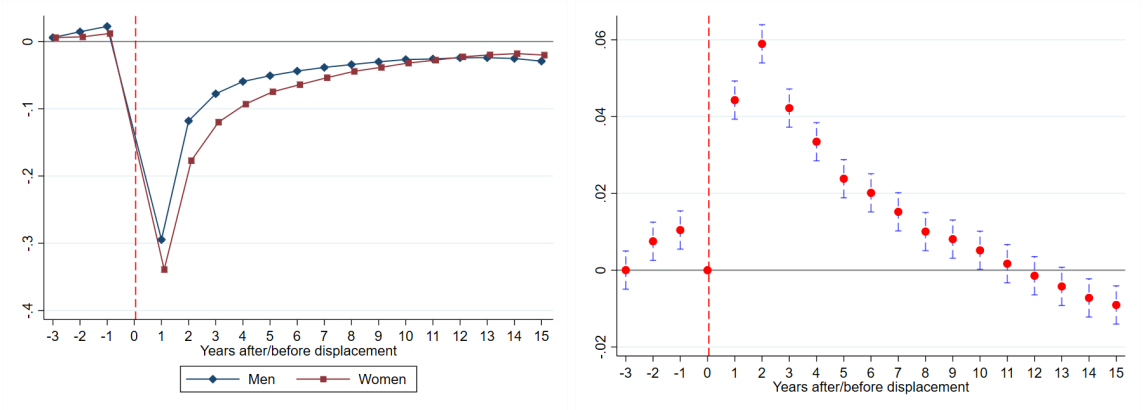
Figure 5: Effects of Job Displacement on Earnings Loss



(a) Earning Loss (b) Gap

This figure shows the dynamic effects of job displacement on earning loss. Panel (a) reports event-study estimates of employment for men and women, while Panel (b) reports the corresponding gender gap. Estimates are relative to the year immediately before displacement. The analysis covers a window of 3 years before and 15 years after displacement. Robust standard errors are clustered at the worker level, and 95% confidence intervals are shown. The data come from RAIS and span the period 1995–2019

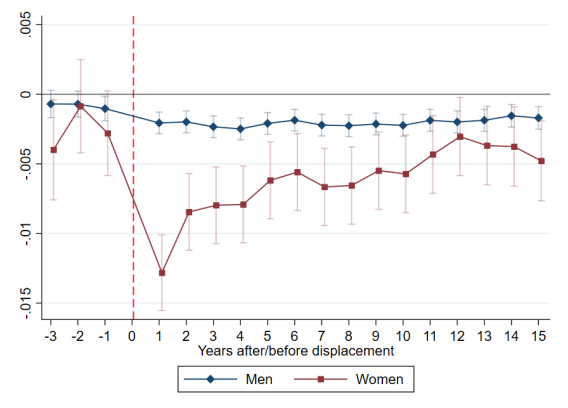
Figure 6: Effects of Job Displacement on Formal Labor Market Participation



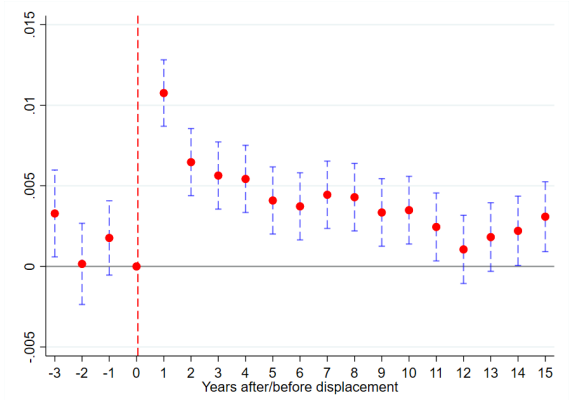
(a) Employment (b) Gap

This figure shows the dynamic effects of job displacement on formal labor market participation. Panel (a) reports event-study estimates of employment for men and women, while Panel (b) reports the corresponding gender gap. Estimates are relative to the year immediately before displacement. The analysis covers a window of 3 years before and 15 years after displacement. Robust standard errors are clustered at the worker level, and 95% confidence intervals are shown. The data come from RAIS and span the period 1995–2019.

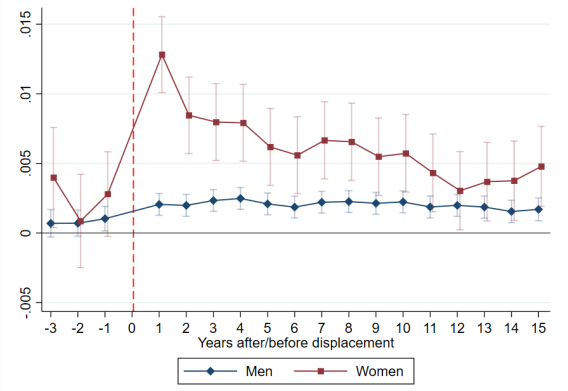
Figure 7: Effects of Job Displacement on Job Characteristics



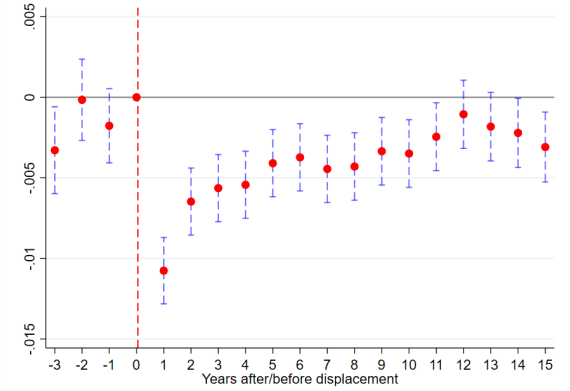
(a) Full Time - Level



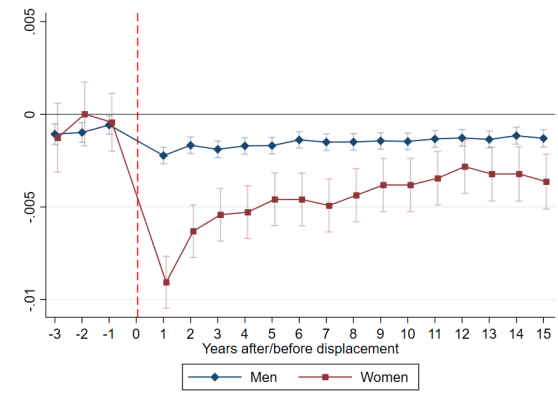
(b) Full Time - Gap



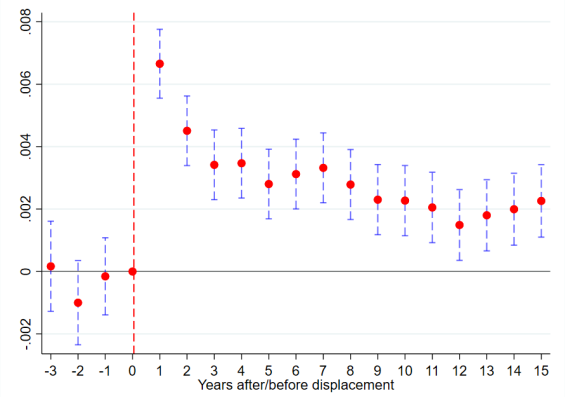
(c) Part-time - Level



(d) Part-time - Gap



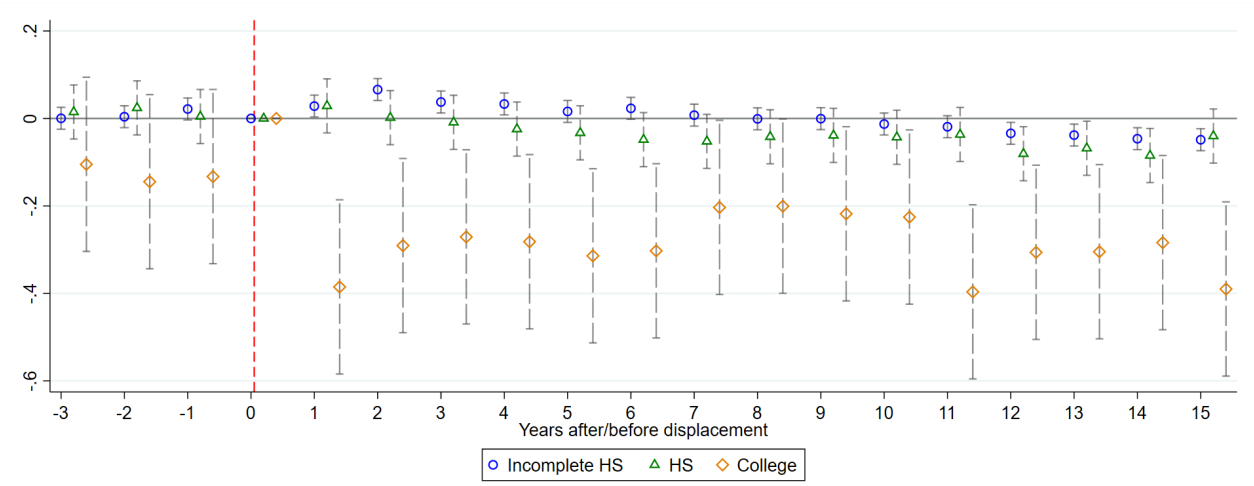
(e) Hours - Level



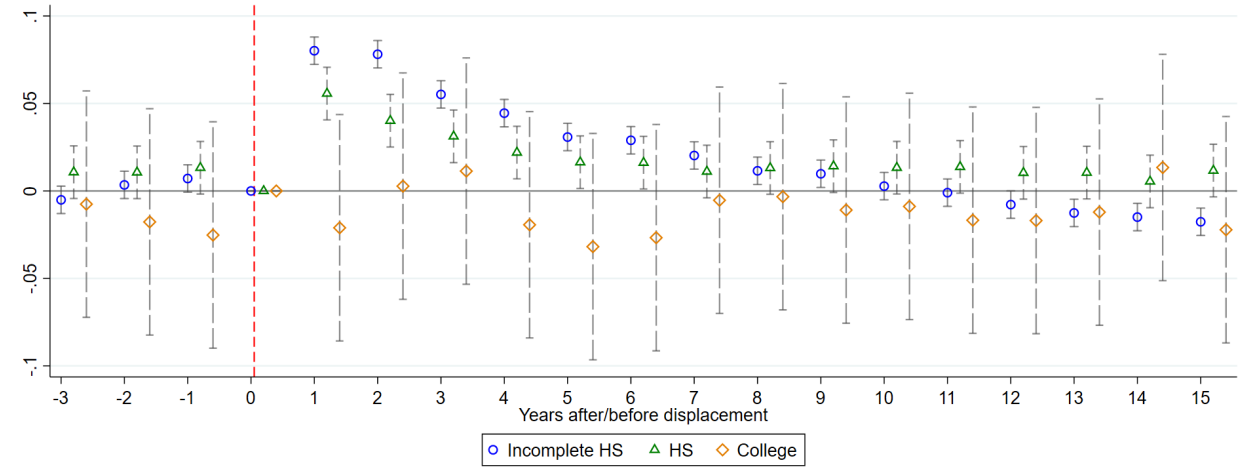
(f) Hours - Gap

This figure shows the dynamic effects of job displacement on job characteristics. Panels (a) and (b) report event-study estimates for full-time, panels (c) and (d) for part-time employment, and panels (e) and (f) for contracted hours. Left panels report level effects for men and women, while right panels report the corresponding gender gaps. Estimates are relative to the year immediately before displacement. The analysis covers a window of 3 years before and 15 years after displacement. Robust standard errors are clustered at the worker level, and 95% confidence intervals are shown. The data come from RAIS and span the period 1995–2019.

Figure 8: Effect of Job Displacement on Gap in Earning Loss and Formal Market Participation, By Education



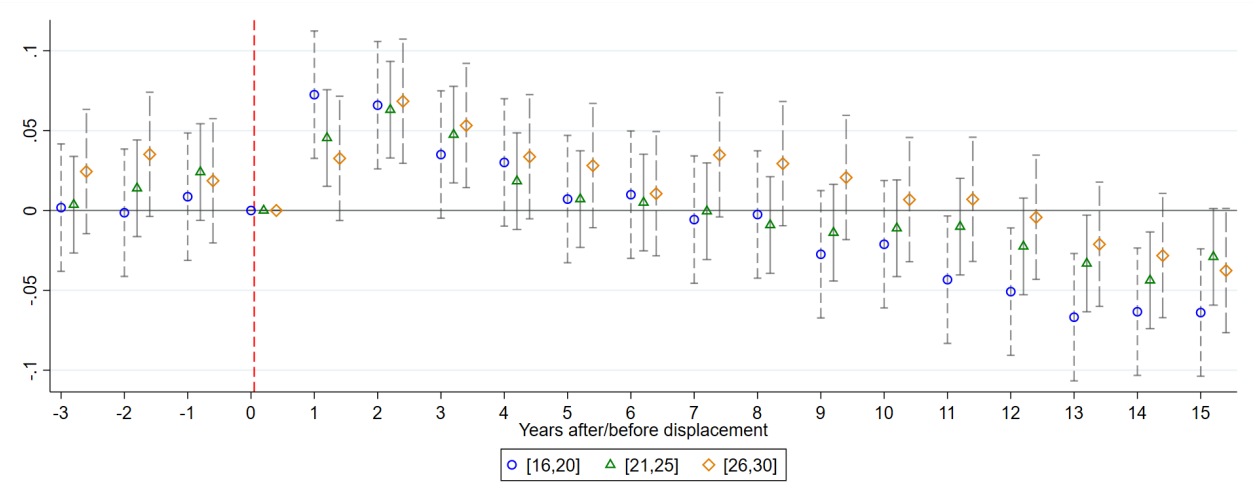
(a) Earning Loss



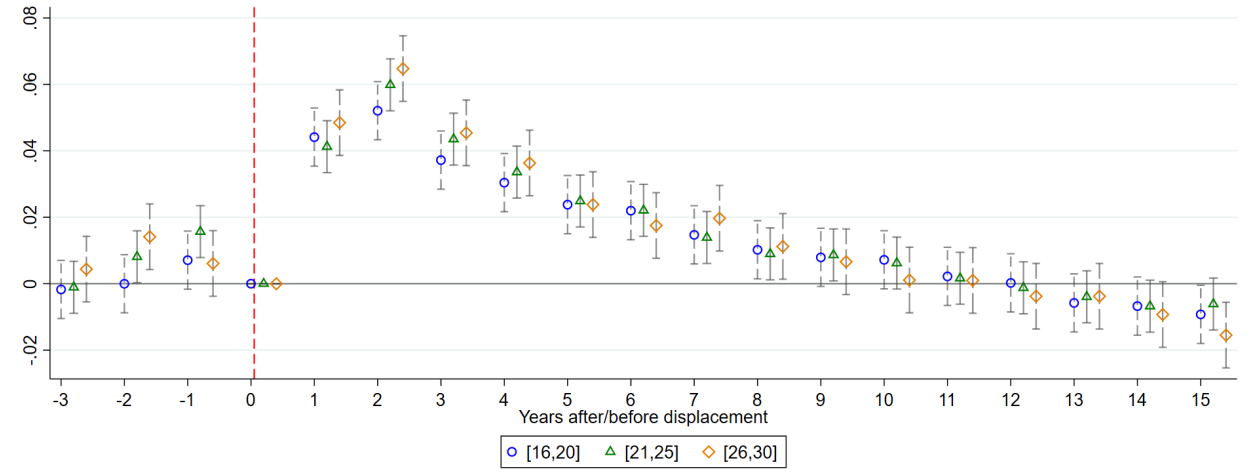
(b) Employment

This figure shows event-study estimates of the effects of job displacement on gender gaps in earnings losses (Panel (a)) and formal employment (Panel (b)). Estimates are shown separately for workers with incomplete high school, high school, and college education. All estimates are relative to the year immediately before displacement. The analysis covers a window of 3 years before and 15 years after displacement. Robust standard errors are clustered at the worker level, and 95% confidence intervals are shown. The data come from RAIS and span the period 1995–2019.

Figure 9: Effect of Job Displacement on Gap in Earning Loss and Formal Market Participation, By Age



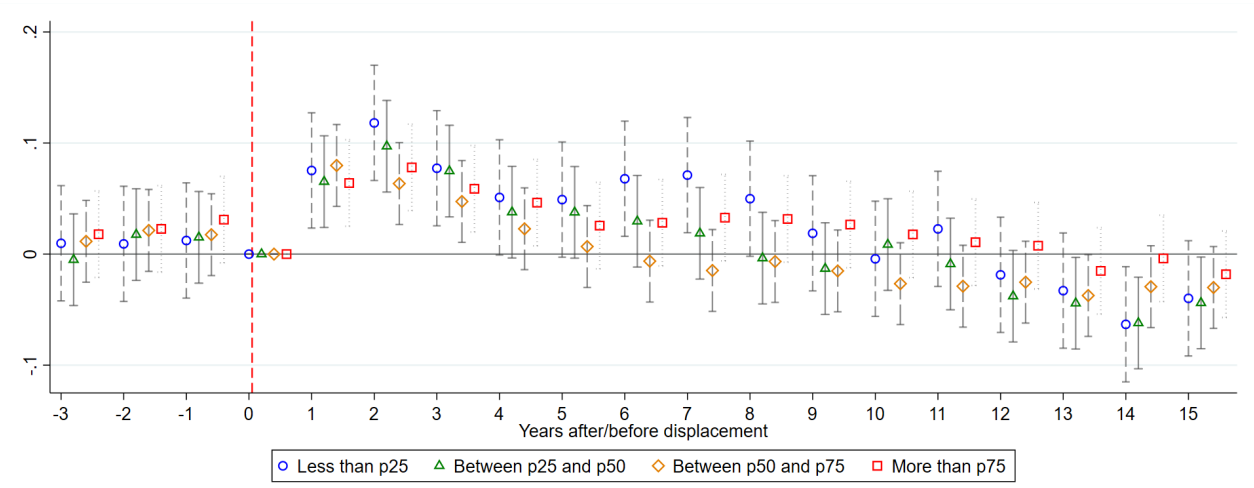
(a) Earning Loss



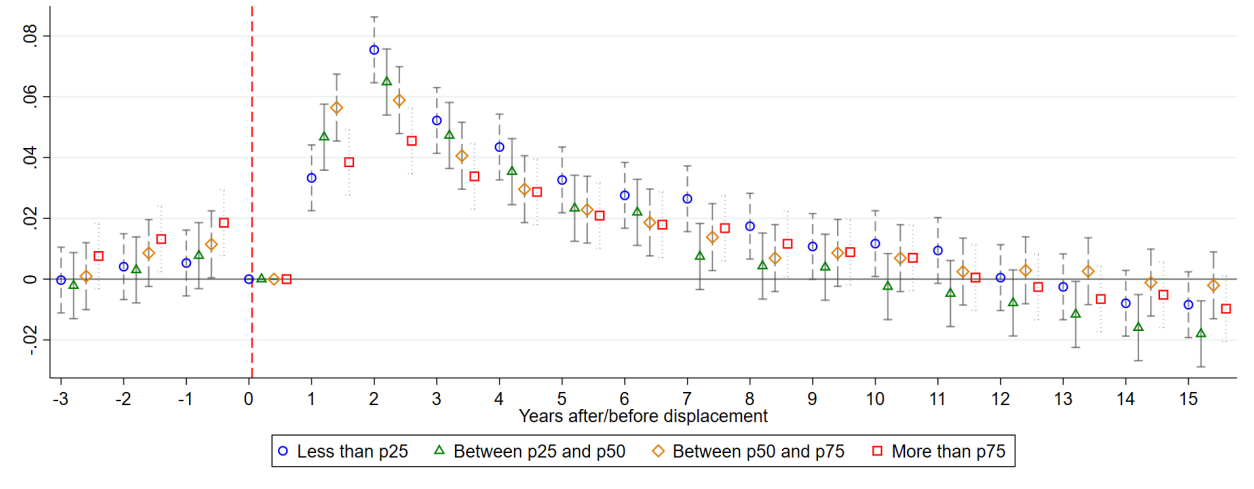
(b) Employment

This figure shows event-study estimates of the effects of job displacement on gender gaps in earnings losses (Panel (a)) and formal employment (Panel (b)), by age group. Estimates are reported separately for workers aged 16–20, 21–25, and 26–30 at the time of displacement. All estimates are relative to the year immediately before displacement. The analysis covers a window of 3 years before and 15 years after displacement. Robust standard errors are clustered at the worker level, and 95% confidence intervals are shown. The data come from RAIS and span the period 1995–2019.

Figure 10: Effect of Job Displacement on Gap in Earning Loss and Formal Market Participation, By Earnings



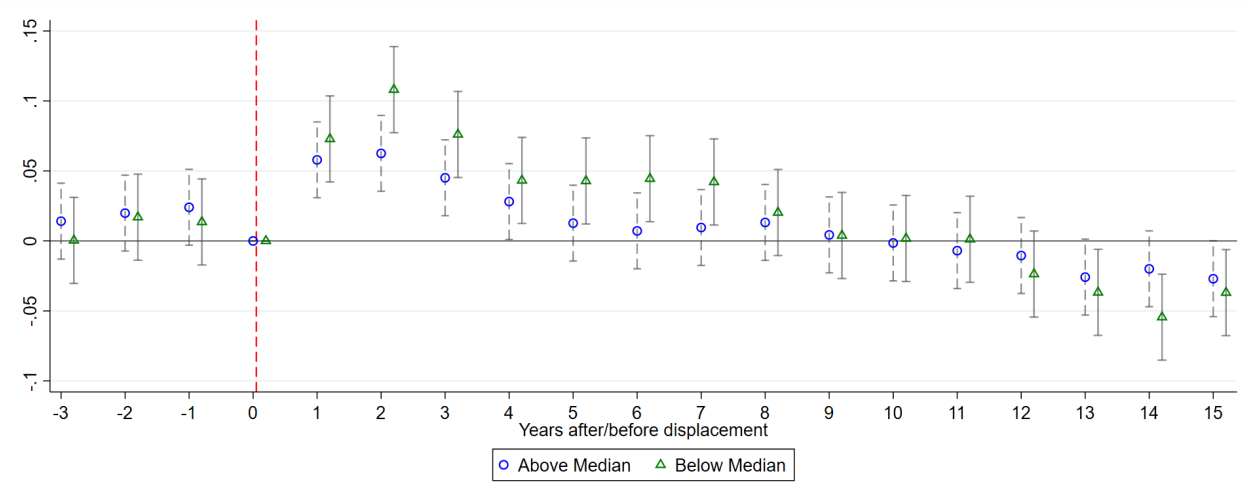
(a) Earning Loss



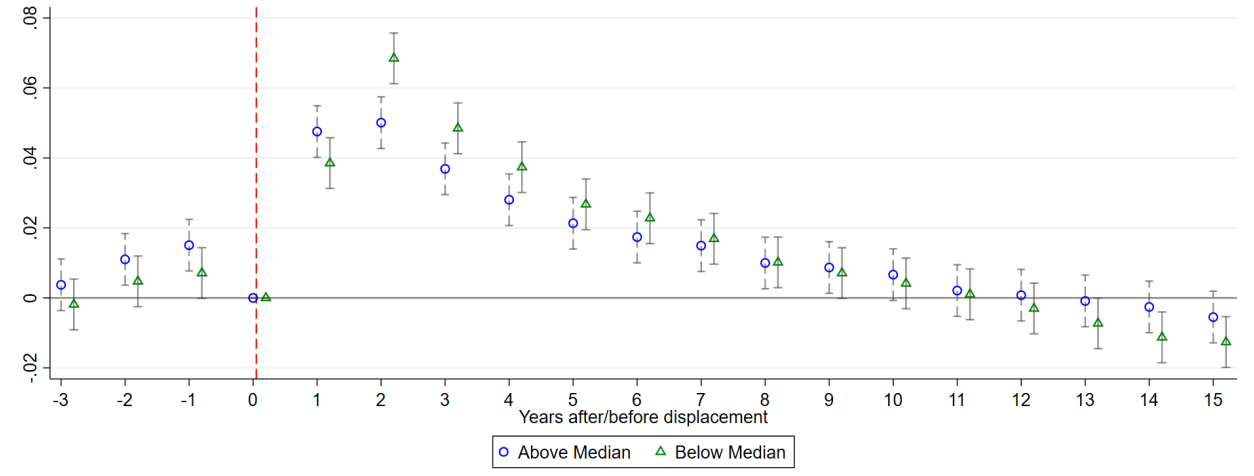
(b) Employment

This figure shows event-study estimates of the effects of job displacement on gender gaps in earnings losses (Panel (a)) and formal employment (Panel (b)), by pre-displacement earnings quartile. Estimates are reported separately for workers with earnings below the 25th percentile, between the 25th and 50th percentiles, between the 50th and 75th percentiles, and above the 75th percentile. All estimates are relative to the year immediately before displacement. The analysis covers a window of 3 years before and 15 years after displacement. Robust standard errors are clustered at the worker level, and 95% confidence intervals are shown. The data come from RAIS and span the period 1995–2019.

Figure 11: Effect of Job Displacement on Gap in Earning Loss and Formal Market Participation, By Firm Pay



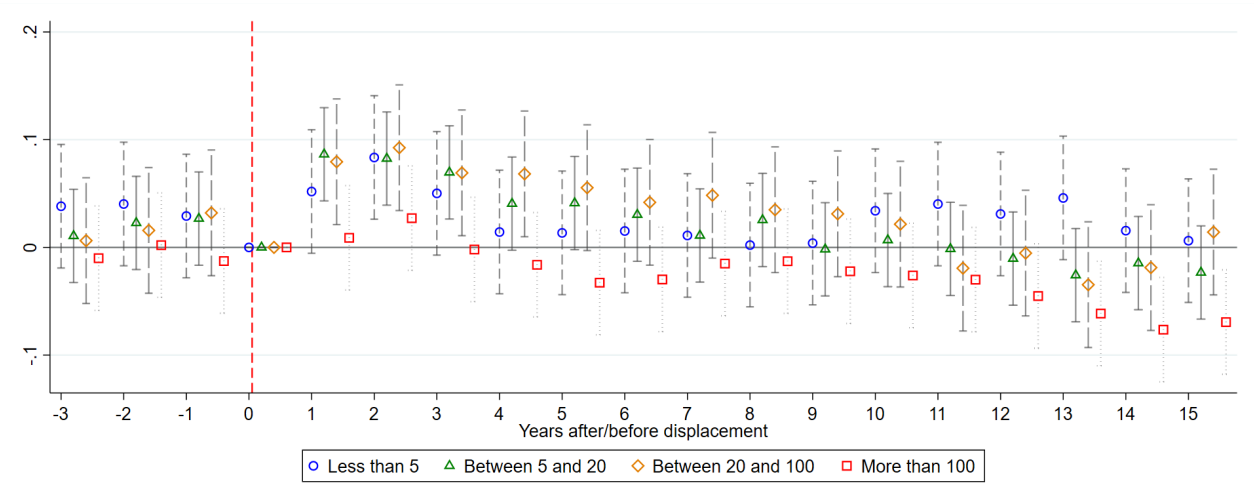
(a) Earning Loss



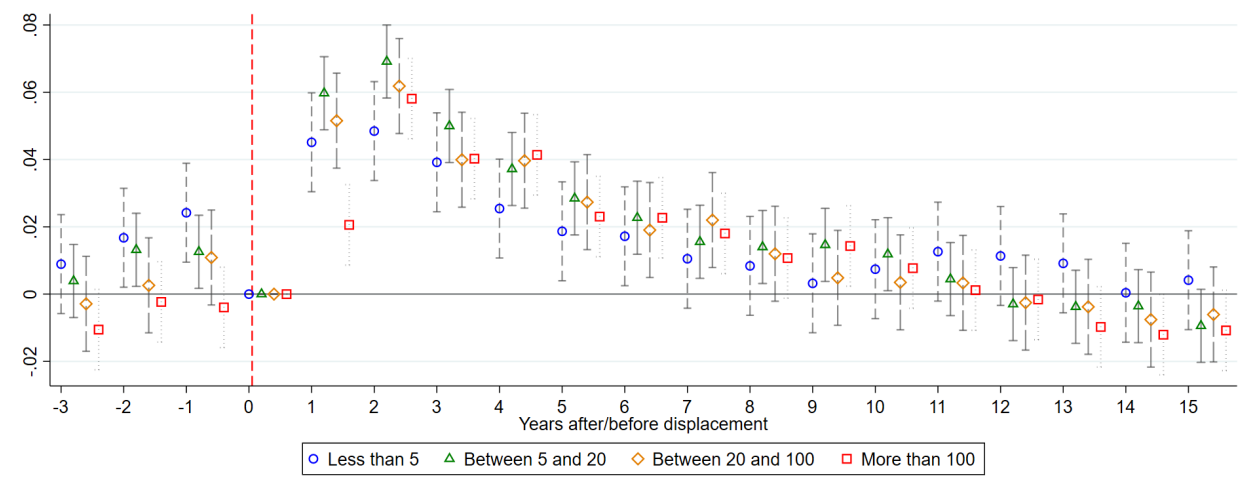
(b) Employment

This figure shows event-study estimates of the effects of job displacement on gender gaps in earnings losses (Panel (a)) and formal employment (Panel (b)), by firm pay. Estimates are reported separately for workers employed at firms with average pay above and below the median prior to displacement. All estimates are relative to the year immediately before displacement. The analysis covers a window of 3 years before and 15 years after displacement. Robust standard errors are clustered at the worker level, and 95% confidence intervals are shown. The data come from RAIS and span the period 1995–2019.

Figure 12: Effect of Job Displacement on Gap in Earning Loss and Formal Market Participation, By Firm Size



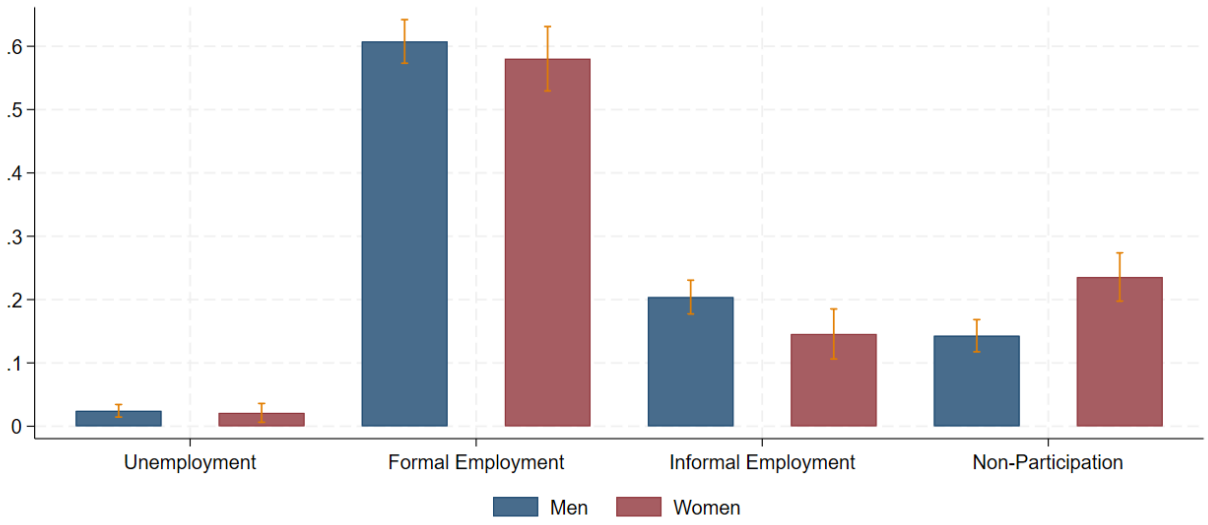
(a) Earning Loss



(b) Employment

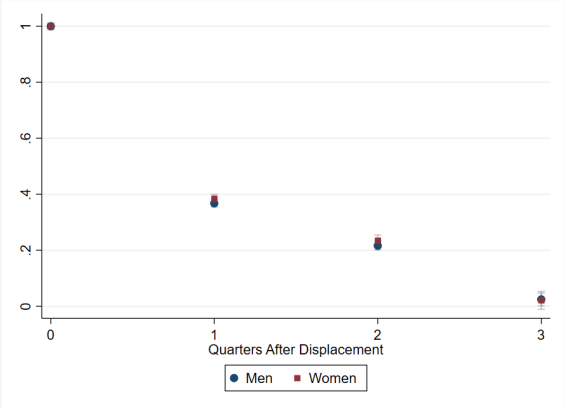
This figure shows event-study estimates of the effects of job displacement on gender gaps in earnings losses (Panel (a)) and formal employment (Panel (b)), by firm size. Estimates are reported separately for workers employed at firms with fewer than 5 employees, between 5 and 20 employees, between 20 and 100 employees, and more than 100 employees prior to displacement. All estimates are relative to the year immediately before displacement. The analysis covers a window of 3 years before and 15 years after displacement. Robust standard errors are clustered at the worker level, and 95% confidence intervals are shown. The data come from RAIS and span the period 1995–2019.

Figure 13: Employment Status After Job Loss

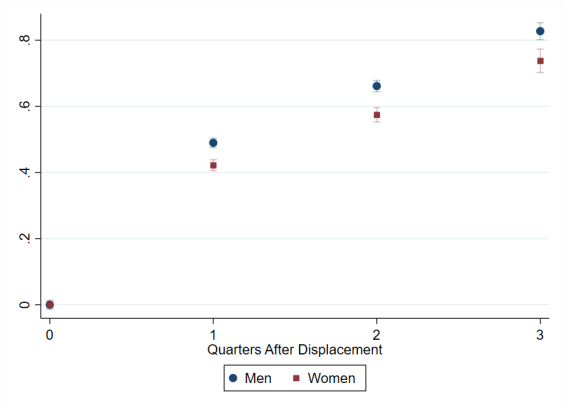


Our analysis covers a window of [0,+3] quarters after the unemployment. Our final sample covers PNAD-C period from 2012 to 2024. We show 95% confidence intervals.

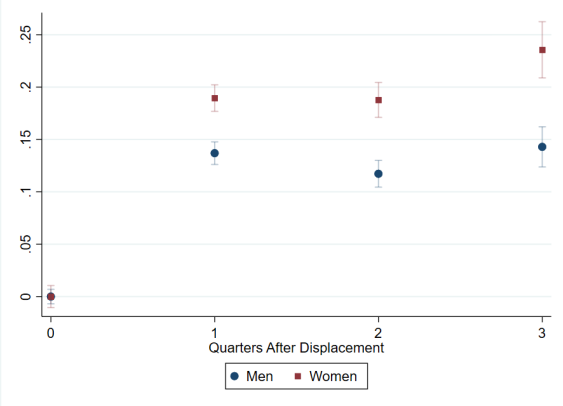
Figure 14: Employment Status After Job Loss by Quarter



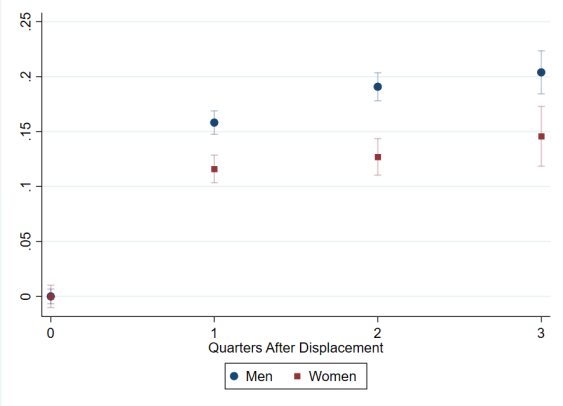
(a) Unemployment (%)



(b) Employment (%)



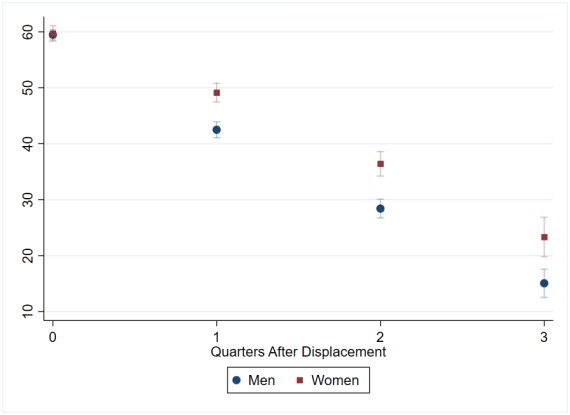
(c) Non-Participation (%)



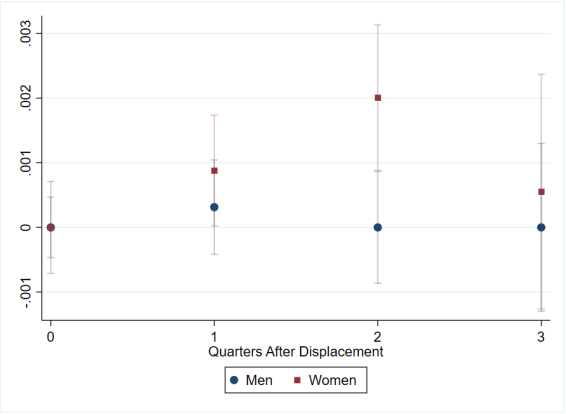
(d) Informal Employment (%)

Our analysis covers a window of [0,+3] quarters after the unemployment. Our final sample covers PNAD-C period from 2012 to 2024. We show 95% confidence intervals.

Figure 15: Time Looking for a Job After Job Loss by Quarter



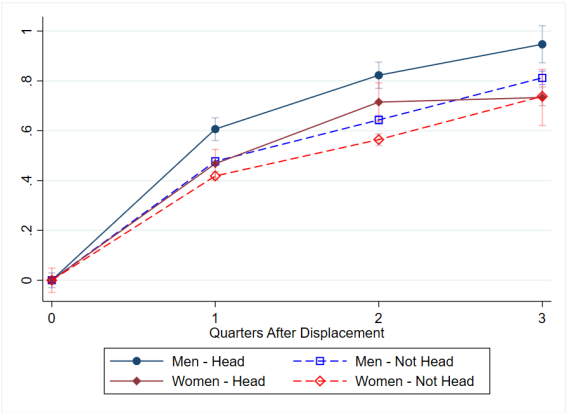
(a) Days Looking for a Job



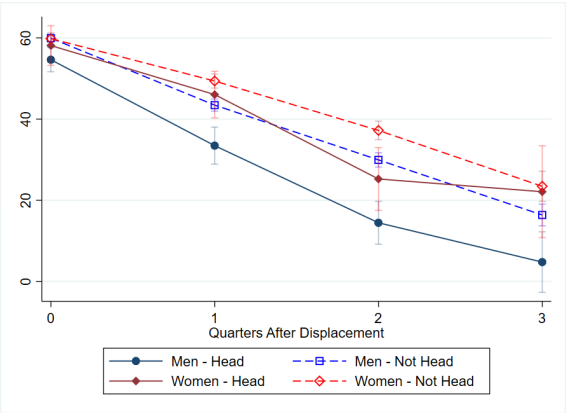
(b) Not Looking for a Job Due to Caregiving Responsibilities

Our analysis covers a window of [0,+3] quarters after the unemployment. Our final sample covers PNAD-C period from 2012 to 2024. We show 95% confidence intervals.

Figure 16: Job Search Behavior



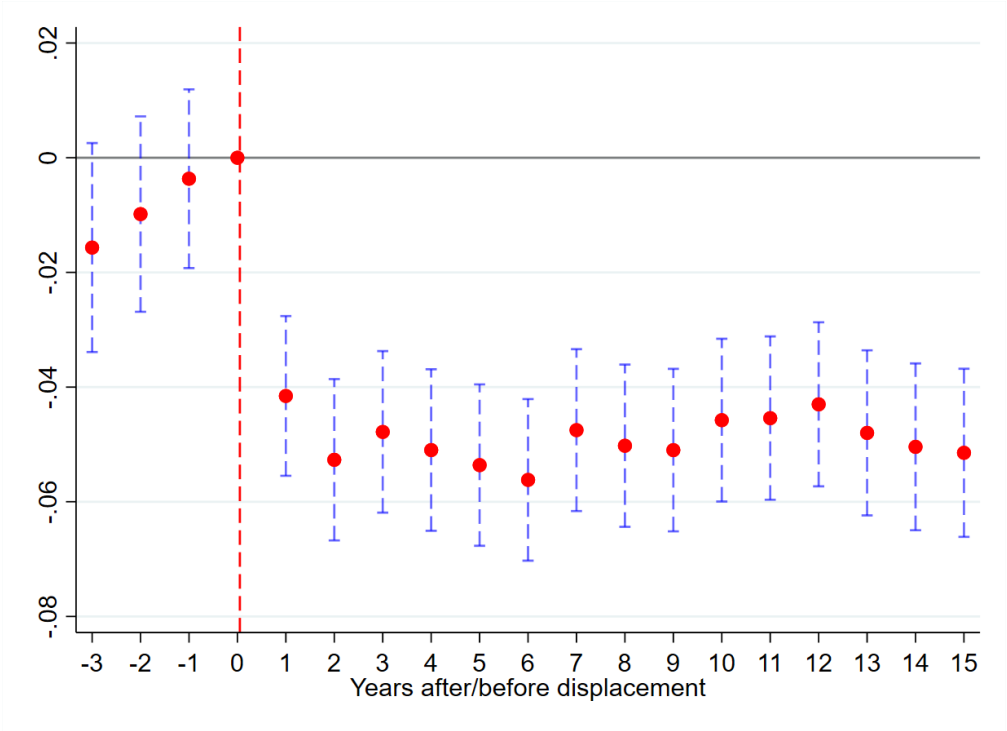
(a) Employment (%)



(b) Job Search Duration (Days)

This figure illustrates the dynamic effects of job displacement on (a) the employment rate (%), and (b) the number of days spent searching for a job. Our analysis covers a window of [0,+3] quarters after the unemployment. Our final sample covers PNAD-C period from 2012 to 2024. We show 95% confidence intervals.

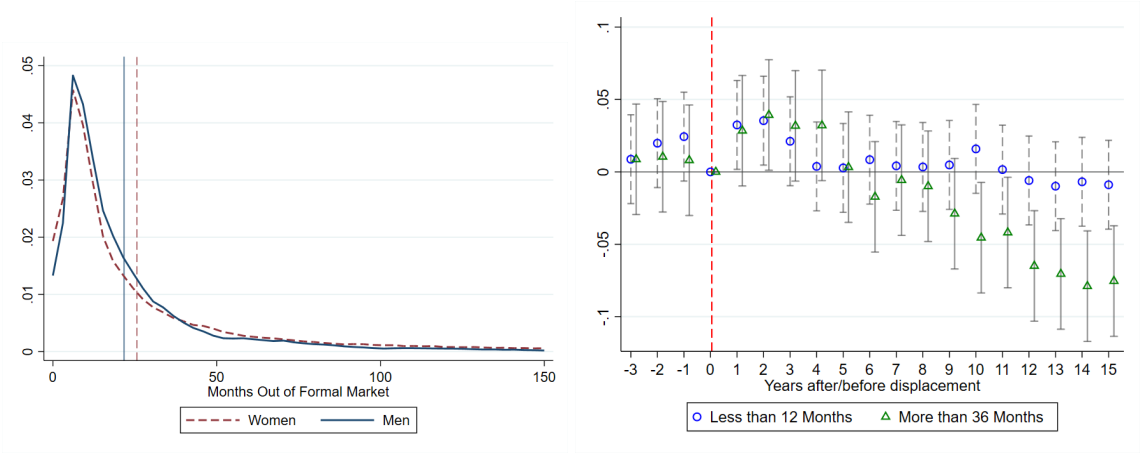
Figure 17: Effects of Job Displacement on Employment in High-Paying Firms



(a) Gap

This figure examines the employment of workers by firm average wage. All estimates are relative to the year immediately before displacement. Robust standard errors are clustered at the worker level, and 95% confidence intervals are shown. The data come from RAIS and span the period 1995–2019.

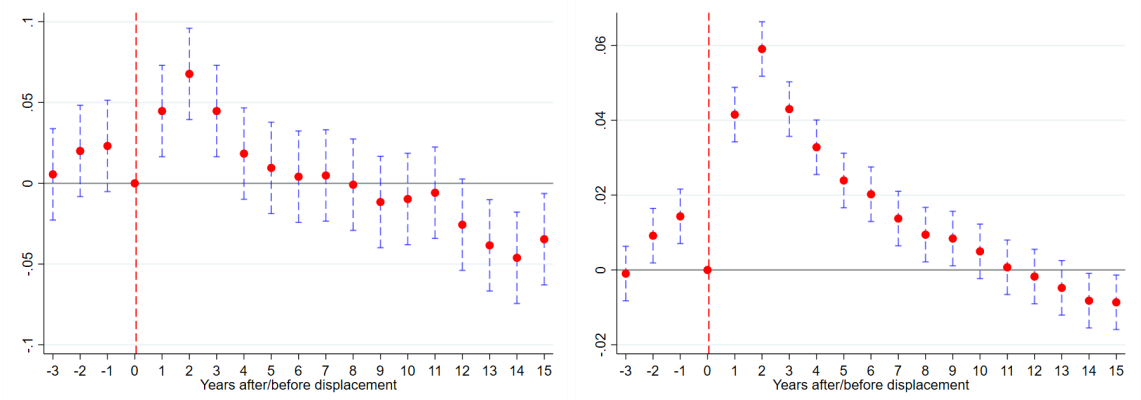
Figure 18: Effects of Job Displacement on Earnings Loss and Formal Employment Gaps, by Duration of Non-Employment



(a) Months Separeted (b) Earning Loss

This figure examines the role of non-employment duration in shaping the effects of job displacement on gender gaps. Panel (a) shows the distribution of months spent out of the formal labor market following displacement, separately for men and women. Panel (b) reports event-study estimates of the effects of job displacement on gender gaps in earnings losses, separately for workers with short non-employment spells (less than 12 months) and long non-employment spells (more than 36 months). All estimates are relative to the year immediately before displacement. Robust standard errors are clustered at the worker level, and 95% confidence intervals are shown. The data come from RAIS and span the period 1995–2019.

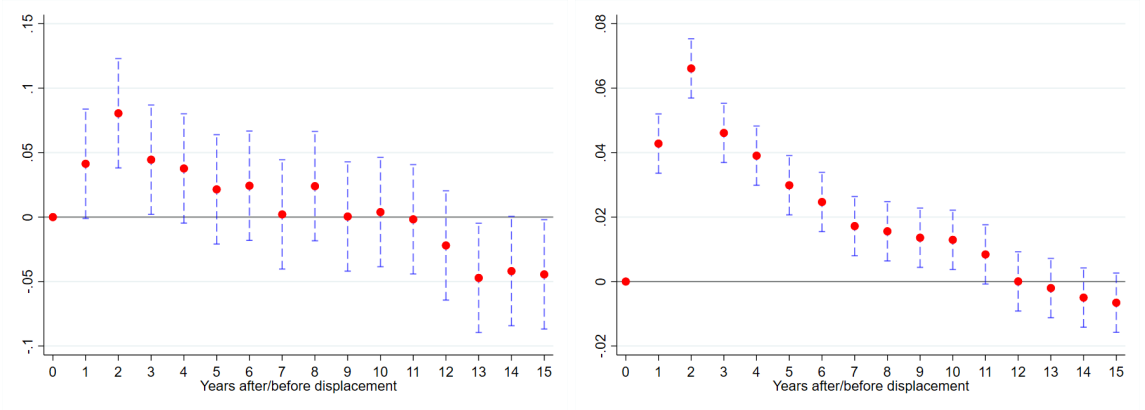
Figure 19: Robustness by Age: Effects of Job Displacement on Gap in Earning Loss and Formal Market Participation



(a) Earning Loss (b) Employment

This figure reports robustness checks restricting to ages 21-26 for the event-study estimates of the effects of job displacement on gender gaps in earnings losses (Panel (a)) and formal employment (Panel (b)). Estimates are relative to the year immediately before displacement. The analysis covers a window of 3 years before and 15 years after displacement. Robust standard errors are clustered at the worker level, and 95% confidence intervals are shown. The data come from RAIS and span the period 1995–2019.

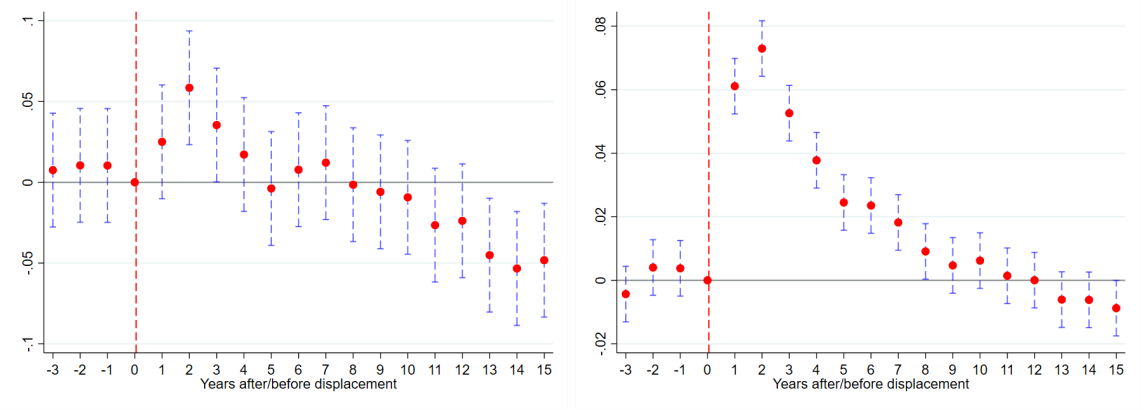
Figure 20: Robustness by First Job: Effects of Job Displacement on Gap in Earning Loss and Formal Market Participation



(a) Earning Loss (b) Employment

This figure reports robustness checks restricting to first jobs for the event-study estimates of the effects of job displacement on gender gaps in earnings losses (Panel (a)) and formal employment (Panel (b)). Estimates are relative to the year immediately before displacement. The analysis covers a window of 3 years before and 15 years after displacement. Robust standard errors are clustered at the worker level, and 95% confidence intervals are shown. The data come from RAIS and span the period 1995–2019.

Figure 21: Robustness by Occupation: Effects of Job Displacement on Earnings Loss and Formal Employment Gaps



(a) Earning Loss (b) Employment

This figure reports robustness checks by occupation for the event-study estimates of the effects of job displacement on gender gaps in earnings losses (Panel (a)) and formal employment (Panel (b)). Estimates are relative to the year immediately before displacement. The analysis covers a window of 3 years before and 15 years after displacement. Robust standard errors are clustered at the worker level, and 95% confidence intervals are shown. The data come from RAIS and span the period 1995–2019.

B Tables

Table 1: Descriptive Statistics of Workers by Employment Trajectory

		AKM sample			
	Complete	Dual-Connected	Stayers	Displaced	Dismissed
	(1)	(2)	(3)	(4)	(5)
Full-Time	0.919	0.919	0.884	0.932	0.944
	(0.273)	(0.273)	(0.320)	(0.251)	(0.230)
Earnings	2594.016	2632.152	3274.180	2380.694	2316.888
	(3656.446)	(3684.063)	(4311.923)	(3373.628)	(3069.273)
Ln(Earnings)	7.502	7.508	7.708	7.430	7.437
	(0.750)	(0.750)	(0.794)	(0.717)	(0.690)
White-Collar	0.454	0.456	0.536	0.425	0.411
	(0.498)	(0.498)	(0.499)	(0.494)	(0.492)
White-Collar – Manager	0.042	0.043	0.051	0.040	0.039
	(0.202)	(0.203)	(0.220)	(0.196)	(0.193)
White-Collar – Professional	0.098	0.100	0.143	0.083	0.074
	(0.297)	(0.300)	(0.350)	(0.276)	(0.261)
White-Collar – Technician	0.119	0.121	0.154	0.108	0.106
	(0.324)	(0.326)	(0.361)	(0.310)	(0.308)
White-Collar – Others	0.194	0.191	0.187	0.193	0.193
	(0.395)	(0.393)	(0.390)	(0.395)	(0.395)
Blue-Collar	0.540	0.537	0.456	0.570	0.586
	(0.498)	(0.499)	(0.498)	(0.495)	(0.493)
Blue-Collar – Skilled	0.235	0.237	0.225	0.241	0.249
	(0.424)	(0.425)	(0.417)	(0.428)	(0.432)
Blue-Collar – Unskilled	0.212	0.213	0.175	0.224	0.223
	(0.409)	(0.409)	(0.380)	(0.417)	(0.416)
Age	31.030	31.018	31.642	30.774	30.889
	(5.774)	(5.736)	(5.746)	(5.714)	(5.741)
Hours	41.516	41.495	40.572	41.857	42.157
	(5.901)	(5.897)	(6.653)	(5.531)	(5.176)
Education: Incomplete High-School	0.376	0.374	0.285	0.408	0.406
	(0.484)	(0.484)	(0.451)	(0.492)	(0.491)
Education: High-School	0.423	0.424	0.443	0.416	0.430
	(0.494)	(0.494)	(0.497)	(0.493)	(0.495)
Education: Incomplete College	0.043	0.043	0.047	0.041	0.041
	(0.202)	(0.202)	(0.212)	(0.198)	(0.198)
Education: College	0.158	0.160	0.224	0.134	0.123
	(0.365)	(0.366)	(0.417)	(0.341)	(0.329)
Firm Size: Less than 5 Workers	0.153	0.144	0.093	0.165	0.163
	(0.360)	(0.351)	(0.290)	(0.371)	(0.369)
Firm Size: Between 5 and 20 Workers	0.197	0.192	0.152	0.207	0.213
	(0.398)	(0.394)	(0.359)	(0.405)	(0.410)
Firm Size: Between 20 and 100 Workers	0.199	0.201	0.186	0.207	0.216
	(0.400)	(0.401)	(0.389)	(0.405)	(0.412)
Firm Size: More than 100 Workers	0.450	0.463	0.569	0.421	0.408
	(0.498)	(0.499)	(0.495)	(0.494)	(0.491)
Observations	11,793,141	11,313,828	3,184,103	8,129,725	9,226,801

This table reports descriptive statistics for workers by labor market trajectory. Columns (1) and (2) report statistics for the full sample and the dual-connected sample, respectively. Columns (3)–(5) report statistics separately for stayers, displaced, and dismissed workers. All variables are measured at the worker–year level. Reported values are means, with standard deviations in parentheses. *Full-Time* indicates full-time employment (40 hours or more) in a given year. Earnings denote average monthly earnings and, *Ln*(Earnings) denotes log monthly wages. Occupational categories distinguish white-collar and blue-collar jobs and their subgroups (manager, professional, technician, skilled, and unskilled). *Age* is measured in years, and *Hours* denote contracted weekly hours. Education variables indicate the worker's highest completed level of schooling. Firm size categories are defined by the number of employees at the firm. The data come from RAIS and cover the period 1995–2019 for workers who entered the formal labor market between 1998 and 2004 and were born in 1978.

Table 2: Decomposing the Gender Wage Gap

	Gender Wage Gap	Gender gap in employers FEs		Between-employer gap		Within-employer gap	
		Level	Share (%)	Level	Share (%)	Level	Share (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
All	0.091	0.037	41.0	0.029	32.0	0.008	9.0
Dual-Connected	0.089	0.037	41.6	0.028	31.8	0.009	9.8
Stayers	0.100	0.071	70.5	0.083	82.3	-0.012	–
Displaced	0.090	0.025	27.4	0.007	8.0	0.018	19.4
Dismissed	0.097	0.029	30.0	0.006	5.9	0.024	24.1

This table decomposes the gender wage gap using firm fixed effects estimated from an AKM model. Column (1) reports the overall gender wage gap. Columns (2)–(3) report the contribution of firm fixed effects to the gap, in levels and as a share of the total gap. Columns (4)–(5) report the between-firm component, and columns (6)–(7) report the within-firm component, following the decomposition in Card et al. (2016). Rows report results for the full sample and by labor market trajectory (*dual-connected, stayers, displaced, and dismissed*). The data come from RAIS and cover the period 1995–2019 for workers who entered the formal labor market between 1998 and 2004 and were born in 1978.

Table 3: Descriptive Statistics for Laid-Off Workers and Matched Controls

	Laid-Off (1)	Matched (2)	Difference (3)	P-value (4)
Full-Time	0.978	0.976	0.002	0.000
	(0.147)	(0.154)		
Earnings	1170.597	1159.625	10.972	0.000
	(1197.782)	(1034.731)		
Ln(Earnings)	6.930	6.925	0.005	0.000
	(0.456)	(0.454)		
White-Collar	0.294	0.295	-0.001	0.090
	(0.456)	(0.456)		
White-Collar – Manager	0.004	0.003	0.001	0.000
	(0.061)	(0.057)		
White-Collar – Professional	0.008	0.008	0.000	0.022
	(0.088)	(0.090)		
White-Collar – Technician	0.072	0.071	0.001	0.024
	(0.259)	(0.257)		
White-Collar – Others	0.210	0.213	-0.003	0.001
	(0.407)	(0.409)		
Blue-Collar	0.539	0.536	0.003	0.002
	(0.498)	(0.499)		
Blue-Collar – Skilled	0.171	0.165	0.006	0.000
	(0.377)	(0.371)		
Blue-Collar – Unskilled	0.217	0.221	-0.004	0.000
	(0.412)	(0.415)		
Age	23.183	23.166	0.017	0.014
	(3.809)	(3.776)		
Hours	43.247	43.166	0.081	0.000
	(3.622)	(3.730)		
Education: Incomplete High-School	0.764	0.730	0.034	0.000
	(0.424)	(0.444)		
Education: High-School	0.203	0.228	-0.025	0.000
	(0.402)	(0.420)		
Education: Incomplete College	0.020	0.025	-0.005	0.000
	(0.141)	(0.155)		
Education: College	0.013	0.017	-0.004	0.000
	(0.112)	(0.129)		
Firm Size: Less than 5 Workers	0.164	0.174	-0.010	0.000
	(0.370)	(0.379)		
Firm Size: Between 5 and 20 Workers	0.316	0.313	0.003	0.007
	(0.465)	(0.464)		
Firm Size: Between 20 and 100 Workers	0.268	0.263	0.005	0.000
	(0.443)	(0.440)		
Firm Size: More than 100 Workers	0.253	0.249	0.004	0.000
	(0.435)	(0.433)		
Observations	602,169	602,169		

This table reports descriptive statistics for laid-off workers and their matched control group. Columns (1) and (2) report means for the laid-off and matched samples, respectively. Column (3) reports differences in means, and column (4) reports p-values from tests of equality of means. All variables are measured one year prior to displacement. Reported values are means, with standard deviations in parentheses. *Full-Time* indicates full-time employment (40 hours or more) in a given year. Earnings denote average monthly earnings and, *Ln*(Earnings) denotes log monthly wages. Occupational categories distinguish white-collar and blue-collar jobs and their subgroups (manager, professional, technician, skilled, and unskilled). *Age* is measured in years, and *Hours* denote contracted weekly hours. Education variables indicate the worker's highest completed level of schooling. Firm size categories are defined by the number of employees at the firm. The matched sample is constructed using observable worker and job characteristics as described in Section 4. The data come from RAIS and span the period 1995–2019.

Table 4: Effects of Job Displacement on Gender Gap

	+1 Years (1)		+5 Years (2)		+10 Years (3)		+15 Years (4)	
Panel A: Main Earnings and Employment Results								
Earnings	48.219***	(5.366)	11.092	(6.852)	-11.403	(9.164)	-49.073***	(10.624)
Employment (%)	0.044***	(0.002)	0.024***	(0.002)	0.005***	(0.002)	-0.009***	(0.002)
Full-time (%)	0.006***	(0.001)	0.002***	(0.001)	0.003***	(0.001)	0.002	(0.001)
Part-time (%)	-0.006***	(0.001)	-0.002***	(0.001)	-0.003***	(0.001)	-0.002	(0.001)
Hours (%)	0.192***	(0.017)	0.124***	(0.019)	0.136***	(0.021)	0.124***	(0.028)
Earnings | Employed After 1 Year	15.757**	(6.818)	0.464	(9.041)	8.339	(12.210)	-26.866*	(14.006)
Earnings | Employed After 5 Years	38.443***	(7.219)	-9.199	(9.497)	-13.617	(12.936)	-50.041***	(15.121)
Earnings | Employed After 10 Years	55.177***	(7.472)	5.764	(9.627)	-30.340**	(12.758)	-42.443***	(15.579)
Earnings | Employed After 15 Years	66.002***	(8.293)	14.000	(10.443)	0.536	(13.917)	-30.064*	(16.620)
Panel B: Occupation and Industry								
Firm Avg. Pay	-8.381	(6.027)	-33.019***	(8.441)	-31.532***	(10.579)	-40.459***	(12.812)
Promotion	0.019***	(0.003)	-0.005	(0.003)	0.001	(0.003)	-0.007**	(0.004)
Changed Industry	-0.006**	(0.003)	-0.029***	(0.003)	-0.025***	(0.003)	-0.016***	(0.003)
Changed Occupation	-0.009*	(0.005)	-0.026***	(0.004)	-0.018***	(0.003)	-0.015***	(0.003)
Manager	-0.001*	(0.000)	0.001	(0.001)	0.002***	(0.001)	0.001	(0.001)

This table reports the effects of job displacement. Our analysis covers a window of [-3,+15] relative to the displacement. Robust standard errors are clustered at the worker level. The data come from RAIS and span the period 1995–2019. ***p< 0.01, ** p< 0.05, * p< 0.1.