Who supports young workers through job loss?*

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Abstract:

Economists estimate that a minority of eligible US workers claim unemployment insurance in the event of job loss, and that this follows a decades-long decline in UI claiming (Lachowska et al. 2022, O'Leary et al. 2023). This paper uses administrative data from Ohio's state unemployment insurance system, matched to reports from a leading national credit bureau, to ask whether UI under-claiming is concentrated in younger, middle aged, or older workers. Relying on the mass layoff techniques of Jacobsen et al. (1993) and others, we find that workers in their twenties and sixties draw approximately half as much unemployment insurance (UI) as mid-career workers in response to layoffs. If younger workers do not rely on UI benefits, where else do they turn for support through unemployment? Our population-level Ohio credit report data allow us to identify workers' reliance on consumer lending markets, as well as intergenerational sharing of residences and accounts. Lenders are estimated to be of little help: We find that younger displaced workers actually decrease credit card borrowing in response to job loss and, if displaced in the pandemic, rely little on pandemic lender forbearance. However, family support is clear: our estimates indicate that less stably attached younger workers move home to elders in response to displacement. Further, we find that the specific young workers who lived with elders before displacement are less than half as likely to draw UI benefits. Finally, we estimate the extent of employment and financial recovery that displaced Ohio workers achieve. Young workers make the most complete recovery, in terms of employment and earnings, though they suffer persistent credit score declines. Young displaced workers who co-reside with elders are no slower to re-employment but achieve considerably more complete earnings recovery by six quarters after displacement.

Keywords: Job displacement, unemployment insurance, intergenerational transfers, consumer credit

1. Introduction

US states' unemployment insurance (UI) programs are designed to help displaced workers sustain consumption through unemployment spells. The UI system acts as an automatic stabilizer, protecting workers against job loss as it protects the broader economy against deepening downturns. Recent evidence, however, establishes displaced workers' low rate of unemployment insurance take-up. Lachowska et al. (2022) estimate that 29 percent of "monetarily eligible" displaced workers, or 45 percent of monetarily eligible displaced workers who do not quickly find re-employment, receive unemployment insurance. They demonstrate that "the dominant source of targeting error in the UI system is that eligible workers do not apply." O'Leary et al. (2023) note a steep decline in UI receipt over the past three decades. These concerning developments lead us to ask: which displaced workers are failing to draw UI benefits? What sources of support do displaced workers find instead? And, finally, given this assortment of supports, how completely are workers able to recover from job loss?

The impacts of job displacement vary meaningfully across the life cycle. Extensive research has examined the degree of career scarring that follows early-career job loss.[1] Mid-career losses are noteworthy for their impact on dependents.[2] Late-career job loss may precipitate early retirement, or, alternatively, may force prolonged work at lower wages.[3] By the same token, we expect the sources of support for displaced workers to differ with the worker's life stage. Therefore, we begin by estimating UI take-up across the life cycle.

Using administrative data on workers who have jobs that are covered by the state of Ohio unemployment insurance system matched to a randomly chosen 20 percent subsample of all Ohio credit file holders, we first ask whether unemployment insurance take-up differs importantly by age. Are displaced workers at earlier or later career stages more apt to claim unemployment insurance benefits? Our large sample of Ohio workers allows us to estimate unemployment application and benefit receipt around a job displacement event with precision for decadal age groups, and thus to identify the life stages at which UI take-up is lacking. This is to say that we identify the subset of displaced workers by age who are, for reasons attributable to the worker, the employer, or the program, missed by Ohio's state unemployment insurance system.[4]

In this paper, we use anonymized firm identifiers in the Ohio Longitudinal Data Archive (OLDA)'s Ohio Department of Job and Family Services (ODJFS) worker sample, anonymously hashed to Ohio State University Consumer Credit Panel (OSU-CCP) credit data, to identify workers who separate from, or stay with, mass layoff

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[1] See Ruhm (1991), Eliason and Storrie (2006), Schmillen and Umkehrer (2017), Bell et al. (2018), Huckfeldt (2022), and Jarosch (2023).

[2] See Ananat et al. (2011), Kalil and Wightman (2011), Rege et al. (2011), Hilger (2016), Bubonya et al. (2017), and Schaller and Zerpa (2019).

[3] See Chan and Stevens (1999), Tatsiramos (2010), Lammers et al. (2013), Heisig and Radl (2017), and Hetschko et al. (2019). Levi-Gayle, Odio-Zuniga, and Ramakrishnan (forthcoming) demonstrate the sense in which the above age comparisons of work life are not static but rather evolve across several generations.

[4] Lachowska et al. (2022) describe workers', employers', and government programs' contributions to failed take-up.

employers.[5][6] Event study estimates in this worker sample regress employment and financial outcomes on time until and since displacement, controlling for individual, industry-quarter, and location-quarter fixed effects, and other time-varying characteristics. By and large, our approach is to adopt standard methods from the existing mass layoff event study literature, with some adaptations for our timeframe, data, and context.

A final important feature of our approach is our study periods. Job loss presumably matters differently during times of stability and crisis, overall and for workers at differing career stages. We estimate the effects of job loss on work and finances across the life cycle in two time periods: the comparatively stable pre-pandemic years and the COVID-19 pandemic years. The possibilities for returning to work and their age gradient were quite different in the pre-pandemic and pandemic years. Moreover, according to Bhutta et al. (2020), cash assistance included in the CARES Act allowed almost all families to meet recurring expenses despite lasting unemployment, suggesting marked differences in workers' financial responses to pre-pandemic and pandemic job loss. Our estimation approach allows us to understand both. In the pre-pandemic sample, workers enter the quarterly panel in the second quarter of 2016, treated workers suffer displacement in the second quarter of 2018, and we trace their recovery, in comparison with stayers, through the fourth quarter of 2019. Pandemic sample workers enter the panel in the second quarter of 2018, treated workers suffer displacement in the second quarter of 2020, and we trace their recovery, in comparison with stayers, through the fourth quarter of 2021. Thus, we are able to compare job loss supports and recovery across the life cycle in the stable economy of 2018-2019 and the crisis of 2020-2021.

We estimate the causal effect of a mass layoff from the worker's primary employer on UI recipiency. We find that displaced (UI eligible) workers in their twenties and sixties rely markedly less on traditional job loss supports, drawing UI at roughly half the rate of mid-career workers during the stable period, all else equal. This finding is equally true for UI claiming, UI receipt, and UI benefit amounts, and throughout the first three quarters following displacement. It appears that the under-claiming phenomenon described by Lachowska et al. (2022) and O'Leary et al. is concentrated among early- and late-career workers, at least in the case of Ohio.

If younger and older workers are half as reliant as mid-career workers on UI benefits in the event of layoff, where else do they turn for support during unemployment? Though a complete accounting of sources of support in unemployment is infeasible, our data are rare among administrative sources in that they allow glimpses into borrowing and accommodations provided by the private consumer lending market and family sources of support.

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[5] This approach follows the mass layoff approach to estimating the causal effects of job loss that was developed by Jacobson, LaLonde, and Sullivan (1993), hereafter JLS, and advanced by Lachowska, Mas, and Woodbury (2020) and others. See Section 2 for further details on the mass layoff method.

[6] The employment loss criteria are applied using Quarterly Census of Employment and Wages-sourced information on firm level headcounts provided in conjunction with the ODJFS OLDA data, as opposed to inferring employment declines from the 20 percent worker subsample.

Displaced workers may turn to private, lender provided credit to smooth consumption during a loss of income. We use our matched OSU-CCP consumer credit histories to track borrowing, missed payments, and forbearance through job loss.[7] Owing again to the size and coverage of this data resource, we are able to estimate the pattern of borrowing, repayment, and forbearance through the job loss experience, and to identify these patterns at a quarterly frequency with notable precision. We use this approach to ask, separately, whether younger and older displaced workers are able to access borrowing to support consumption through unemployment, whether they fall delinquent in the repayment of their loans, and whether lender accommodations find them.

Young displaced workers are estimated to decrease credit card balances substantially following job loss in 2018, by as much as 75 to 90 percent at four through six quarters after job loss, which only reinforces any consumption deficit.[8] In contrast, mid-career workers reduce credit card balances at half of this rate or less, and older workers show no significant decline in credit card balances after layoff. Once again, our estimates point to comparatively minimal reliance on traditional sources of consumption support among displaced younger workers.

Credit market solutions to job loss were quite different during the unprecedented circumstances of the COVID pandemic, likely due in part to pandemic-era public and private consumption supports. We estimate that credit card balances, delinquencies, and credit scores were surprisingly stable through job loss across our various worker groups. We observe the extent to which displaced workers received pandemic-era lender accommodations in the form of payment forbearance. Our estimates indicate that displaced workers in their forties were 1.4 percentage points more likely than non-displaced counterparts to benefit from lender forbearance during the first full quarter of displacement.[9] Estimated forbearance differentials for displaced workers in their twenties and sixties are, however, negligible. Thus while displaced mid-career workers benefited from pandemic-era forbearances, such private credit support did not equally benefit young and older displaced workers.

Having accumulated evidence that displaced young workers draw very limitedly on UI benefits and reduce credit markets for support, we shift our focus to the extent to which displaced young workers rely on intergenerational family connections for help through unemployment. Intergenerational co-residence has long been recognized as a source of support for young adult workers who experience labor market and financial setbacks.[10] More broadly, young workers may not yet be financially independent and may receive financial support from elders. We investigate the extent to which displaced young workers turn to their elders for support through job loss, along with the extent to which such reliance substitutes for, or displaces, UI benefits. Because

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[7] We have built this expansive data resource in collaboration with a leading US credit bureau, the Ohio Longitudinal Data Archive (OLDA), and the Ohio Department of Job and Family Services (ODJFS), and benefitting from oversight, restricted and anonymized matching, and expert guidance from Ohio State's CHRR.

[8] Following a central distinction drawn by Braxton et al. (2024), one must recognize that this decline in balance represents both changes in borrowing and charge-off. We address each below.

[9] This claim pertains to mortgage and auto loan forbearance only. We set aside student loan forbearance, as it was universal for the 90 percent of the student loan market comprised of federal loans.

[10] See Kaplan (2012), Dettling and Hsu (2018), and Bleemer et al. (2024).

our OSU-CCP credit report data include near-population coverage of adult Ohioans with credit reports, as well as indicators connecting reports coming from the same household and proprietary methods of tracking shared credit accounts, we are able to identify intergenerational co-residence and intergenerational credit account sharing at a quarterly frequency. We ask: Do young workers move home to parents or similar elders in response to job loss? Do they rely on new shared credit with parents or similar elders? Are the displaced young workers who have intergenerational sources of financial and residential support the specific young workers who fail to connect with state UI benefits in the event of job loss? And, finally, do displaced young workers with family support recover more effectively, in career and financial terms?

We find some evidence that young workers respond to job loss with an increased rate of moving home to elders. However, approximately half of our young worker sample already co-resided with elders just before the time of job separation. These workers may also benefit from intergenerational financial support. Therefore, we estimate heterogeneity in UI benefit receipt by co-residence with elders. Estimates indicate that young workers who co-reside with elders draw UI benefits in response to layoff less than half as much as non-co-resident young workers, all else equal. Under the assumption that mid-career workers rely comparatively little on support from elders, the magnitude of our family support heterogeneity estimates goes far toward reconciling the large gap in UI uptake between displaced workers in their twenties and forties.

In order to understand the effectiveness of each age group's sources of support, we next estimate the extent of each age group's recovery from job loss in terms of re-employment, conditional earnings, and credit score. Despite limited reliance on traditional unemployment supports, and perhaps owing to help from family, younger displaced workers accomplish the most successful career recovery. By six quarters out, young displaced workers recover most completely in terms of employment and conditional earnings. Along the way, the speed of their re-employment and the progress of their earnings recovery look similar to those of displaced mid-career workers. These recovery dynamics are notable as evidence of the success of young workers' coping methods, but also because they allow us to rule out the hypothesis that younger workers fail to draw UI benefits as a result of rapid re-employment. Meanwhile, displaced older workers are substantially less reliant on outside support from all sources, and they suffer substantial and persistent loss of both employment and earnings. Financial recovery, in terms of delinquency and credit score, is most complete among mid-career workers, while displaced younger and older workers' financial profiles retain marks of past hardship.

Perhaps most centrally to this paper, heterogeneity estimates by family support demonstrate that, while young displaced workers with family support are not faster or slower to re-employment and do not differ in the extent of their credit recovery, those with family support are able to recover a substantially greater share of their pre-displacement earnings by six quarters after job loss than those without family support.

This paper is organized as follows. Section 2 describes some of the most closely relevant literature on the mass layoff method of estimating causal effects of job loss and on debt and credit across the life cycle. Section 3 details our anonymized state of Ohio and private credit bureau data sources and anonymized hashing to create a more comprehensive description of Ohio workers' finances, employment, and household structures than was previously available. Section 4 develops our mass layoff estimation methods, including inherited features and special adaptations for our timing and data. In Section 5, we report estimates of the effect of job displacement through mass layoff for young, middle aged, and older workers using a series of event study figures, and we perform a deep dive into the interdependence of intergenerational support, UI receipt, and recovery from job loss at the level of the individual young worker. Section 6 offers some concluding discussion.

2. Related Literature

A concern for all job loss studies is that, in the broad population of workers, those workers that separate from employment may not be comparable to workers who remain, in terms of both observable and unobservable characteristics. Jacobson, LaLonde, and Sullivan (1993), hereafter JLS, dealt with this concern by identifying firms in the Pennsylvania state unemployment insurance system data who laid off a large percentage of workers, and then following the workers who left the mass layoff firms and the observably comparable workers who stayed with those same mass layoff firms. Their reasoning was that workers separated in a mass layoff were unlikely to have left voluntarily, and also unlikely to have separated for (observed or unobserved) cause. Their methods generated pre-separation trends in which leavers and stayers in mass layoff firms looked closely comparable.

JLS spawned a rich literature using mass layoff events to estimate the causal effect of job loss on: earnings losses (JLS, Couch and Placzek 2010), the return to community college training among displaced workers (JLS 2005), earnings losses for displaced workers decomposed into various job transition sources (Lachowska, Mas, and Woodbury 2020, hereafter LMW), mortality (Sullivan and von Wachter 2007), career recovery as it relates to (task-based) labor market concentration (Dodini, Lovenheim, Salvanes, and Willen 2024), and many other outcomes. Moreover, recent research from Flaaen, Shapiro, and Sorkin (2019) combines survey with administrative data on mass layoffs and the reasons behind separations to find earnings effects of layoffs that are surprisingly close to the administrative data-only estimates. The findings of their multi-modal analysis build confidence in traditional mass layoff methods.

A second relevant literature for this project pertains to credit use across the life cycle, and as a source of consumption support in unemployment. Displaced workers may not qualify for new lines of credit as a result of income loss. However, to the extent that workers' revolving credit access survives a job separation, displaced workers may support consumption in the face of income loss by borrowing. Relevant evidence on these processes appears in Aaronson et al. (2019), Braxton et al. (2020), and Dempsey and Ionescu (2021). Viewed differently, the

worker's marginal utility of consumption may rise to the point that reallocating some resources away from debt payment toward consumption becomes welfare-improving, despite the cost of delinquency in terms of lost access to future credit. Keys (2018) demonstrates a large bankruptcy response to job loss, and Athreya et al. (2012), Blattner et al. (2022), and Chatterjee et al. (2023) model the choice between consumption and delinquency/default, with its cost to reputation and future borrowing.

Regarding life cycle patterns of credit use, we know that existing debt obligations vary across the life cycle, with combined secured and unsecured debt typically lowest in early adulthood, peaking at midlife, and declining through retirement. Recent trends, however, have seen real debt increasing at older ages. In terms of new borrowing, both credit scores and existing credit lines increase steeply, approximately monotonically, with age. Collins et al. (2013) and Lusardi, Mitchell, and Oggero (2020) investigate developments in debt at older ages. Brown et al. (2020) describe outstanding debt over the life cycle, the recent "graying" of US debt, and the steep, monotonic, near-linear association between age and credit score. These facts together suggest that displaced workers' opportunities to support consumption through a job loss using new borrowing may vary with age, and, further, that their need and qualification for forbearance and their propensity to miss debt payments may also depend heavily on their life cycle stages.

Finally, our study includes a collection of results, drawn from matched administrative data, on the extent to which young displaced workers rely on intergenerational connections, as well as the extent to which those with intergenerational connections rely less on public support and recover successfully from job loss. Kuchler and Stroebel (2021, 2022) frame the emerging research field of "social finance", which comprises new research using evidence of agents' interconnectedness drawn from vast, often linked, administrative and private sector data resources to understand the role of social connections in shaping career and financial progress. This growing literature is also represented by Chetty et al. (2022a, 2022b) on fine geographic markers of social connectedness drawn from Facebook friendships. Balyuk and Williams (2021) trace social connections through administrative consumer transfers data. In this context, our broader research agenda uses credit bureau data on financial and residential connections to integrate notions of social connectedness with job market questions traditionally posed in state-level administrative data on workers and firms.

3. Data and Sample Construction

We construct a unique panel dataset for this analysis, combining data on adults ages 20 and older in Ohio from two sources. The first is the Ohio State University Consumer Credit Panel (OSU-CCP), a quarterly administrative panel dataset of consumer credit information built from credit panel data provided to us as a part of an ongoing collaboration with one of the three leading US national credit bureaus. The bureau's data cover the full population of adults with credit records in the state of Ohio, 10 to 11 million consumers each quarter, from the last quarter of

2015 to the last quarter of 2021. Traditional credit records are supplemented with the credit bureau's proprietary database of non-traditional high-cost forms of credit. The OSU-CCP contains randomly assigned, anonymous consumer and household identifiers that enable us to track individuals and their households over time. It contains over two thousand credit attributes including account balances (e.g., credit cards, student loans, auto loans, and mortgages), Vantage credit score, account openings, credit inquiries, payment delinquency and forbearance, as well as basic demographic information such as age, gender, and ZIP code. In addition to the individual-level credit attributes, the OSU-CCP contains trade-level data whose detailed account information enables us to trace financial connections through joint accounts and authorized user accounts.

Our second data source is the Ohio Longitudinal Data Archive (OLDA).[11] Managed by CHRR (previously the Center for Human Resource Research) at the Ohio State University, the OLDA contains the public administrative records of working individuals in Ohio. The quarterly OLDA employment data allow us to observe the worker's wage income during the quarter, with separation of income across multiple employers for a given worker. The data also include weeks worked for each employer, and the weekly status of their unemployment insurance (UI) including their claims and benefits received. Crucially, the OLDA data include an anonymized employer identifier for each worker-job combination. Supplemental Quarterly Census and Wage (QCEW) data are appended that describe characteristics of the anonymized firm, including, for firms of sufficient size, employment headcount and industry. Like the OSU-CCP data, the OLDA data contain unique (anonymized) identifiers for individuals and employers, enabling us to track workers, firms, and worker-firm matches over time. While the OSU-CCP and the OLDA data are each approximately population-level data on Ohio adults in one context or another, we have been granted the right to work with matched data on a representative subsample. Our matched estimation sample, therefore, contains a 20 percent random subsample of the OSU-CCP individual-level credit fileholders matched to any records they may have in the OLDA data on Ohio's UI-covered employment system.[12]

The OSU-CCP data include household identifiers based on fileholders' masked addresses, down to the apartment number. We append to our 20 percent individual credit fileholder sample additional credit data representing all adult Ohio credit fileholders who share an address with the primary 20 percent sample member. We are also able to append the household members' Ohio unemployment insurance system employment records, if the household member works in the state of Ohio in a UI-covered job.[13]

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[11] The Ohio Longitudinal Data Archive is a project of the Ohio Education Research Center (oerc.osu.edu) and provides researchers with centralized access to administrative data. The OLDA is managed by The Ohio State University's Center for Human Resource Research (chrr.osu.edu) in collaboration with Ohio's state workforce and education agencies (ohioanalytics.gov), with those agencies providing oversight and funding. For information on OLDA sponsors, see http://chrr.osu.edu/projects/ohio-longitudinal-data-archive.

[12] The 20 percent random sample is based on the last digits of anonymized consumer identifiers, similar to Lee and Van der Klaauw (2010).

[13] More specifically, we are able to pull in credit, employment and UI records for all adults at the address of each primary sample member, so that we can study the households of all of the Ohioans in our 20 percent worker sample, not merely

Note that most traditional employment is covered by the state of Ohio unemployment system. Professional roles, including employment in law, medicine, and business management, are generally included in the employment records. But so are part- and full-time wage work in retail, restaurants, and hospitality. Of course, some work is necessarily excluded from state unemployment insurance coverage (in Ohio and in all US states). This includes religious employment, work for the federal government, and contract work. The latter is a growing category of employment that includes most app-based gig work.[14] Finally, Ohio unemployment system employment records are unable to represent informal work that is compensated "under the table"; this includes unreported paid caregiving work. The unemployment records do account for household employment when it is reported to the state UI system by household employers, a step that is legally required but far from universal. As a result, our worker samples are able to represent the bulk of salaried and wage work in the state of Ohio, with the notable exceptions of religious, federal government, gig market, and unreported informal sector employment.

While our data are limited to one state, Ohio includes diverse urban and rural communities, with 16 metropolitan statistical areas and 32 counties in the rural Appalachian region. Ohio mirrors the nation with regard to its age and gender distribution, the percent of individuals who identify as Black, and the percentage of individuals in the labor force.[15] Thus, the Ohio worker population constitutes a reasonably close approximation to the US worker population, and our sample offers meaningful heterogeneity along many dimensions, including affluence and hardship.

Our estimation exercise requires a treated sample consisting of job leavers and a parallel comparison sample consisting of job stayers. We begin by requiring that workers have continuous employment with an observed primary employer (defined as the anonymized employer where the worker earned the majority of their UI-covered pay) for eight quarters, either from 2016Q2 through 2018Q1 for the stable economy sample or from 2018Q2 through 2020Q1 for the pandemic sample. Next, we select, as our treatment group, displaced workers who separated from the primary employer in 2018Q2 (2020Q2) and experienced a reduction in earnings in the quarter of 50 percent or more.[16] Finally, we construct a control sample of workers who meet the pre-period stable employment criterion and also remain with the same stable pre-period employer throughout the subsequent six quarters. The merged treatment and control worker samples constitute our all-firm sample, with event study estimates for the all-firm analysis

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those whose adult household members are also included in the 20 percent random sample of workers with UI-covered Ohio jobs.

[14] See Garin et al. (2022a, 2022b) on the emergence of gig work over our sample period.

[15] U.S. Census Bureau; https://www.census.gov/quickfacts/fact/table/OH,US/PST045219, April 26, 2021. It is important to note that the Ohio population does not mimic the US population distribution specifically in terms of the share of workers who identify as Hispanic.

[16] These criteria impose that sample workers must separate from their longtime primary employer. The 50 percent earnings reduction threshold requires that the worker leave a primary employer who paid the majority of their UI-covered earnings, but allows for the common circumstance in which the worker maintains a low-paying second job throughout the separation quarter.

available from the authors. Clearly, the stayers and leavers in this all-firm sample need not be comparable on various dimensions, and so these estimates stand as a description of the differing work and financial experiences of Ohioans who stay with and leave stable jobs, for young, middle aged, and older workers.

In order to study more comparable leavers and stayers, we isolate those working for mass layoff firms. We turn to the described QCEW data on (anonymized) firm characteristics. We restrict our analysis to firms with 25 or more employees at some point in the treated workers' eight-quarter pre-separation period, either 2016Q2-2018Q1 or 2018Q2-2020Q1.[17] Next, we require that the firm shed at least 30 percent of its peak pre-displacement headcount at some point during the subsequent six quarters. We perform our mass layoff analysis using a merged dataset comprising workers who have left these mass layoff firms and workers who remain steadily employed with these same mass layoff firms throughout the eight- plus six-quarter estimation window. This approach tolerates a loss in the generalizability of results, owing to its selected set of employers, in order to attempt to generate comparable leavers and stayers, and thereby identify the causal effect of job displacement on sample members' work and financial outcomes.

Our methods are derived from the long history of mass layoff studies, including JLS, LMW, Couch and Placzek (2010), Sullivan and von Wachter (2007), and many others. The specifics of each of these studies vary, accommodating each time, place, and data resource, and, in many cases, seeking comparable pre-trends for leavers and stayers. We also tool the specifics of our approach to our context. Perhaps our most notable deviation from past methods is the choice of a two-year pre-displacement period of stable employment, rather than a four- or six-year period of stable employment.[18] This choice is important to us because younger workers' employment trajectories are characterized by higher turnover. A young worker with a six-year uninterrupted spell with a single employer is far from representative. In order to estimate job loss effects for young workers in comparison with mid-career and older workers, we have chosen to narrow the stable employment criterion to eight pre-displacement quarters, and thereby to estimate with a larger and more representative sample of younger workers.

Finally, we create five age groups of data, representing workers in their 20s, 30s, 40s, 50s, and 60s, for both the stable 2016-2019 period and the pandemic 2018-2021 period. Thus we have ten separate mass layoff samples whose sizes are detailed in Table 1, totaling roughly 130,000 individuals.

As a large portion of our analysis involves a deep dive into the supports and recovery from job loss of younger workers, Table 2 reports the means of various relevant demographic and financial characteristics of the young

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[17] Most papers in the literature require mass-layoff firms to have at least 50 employees, except for Braxton et al. (2020) who use 25 employees. In order to retain sample size to track decadal age groups, we use the more lenient cutoff.

[18] The literature following Jacobson et al. (1993) uses different numbers for the workers' required prior tenure. Jacobson et al. (1993) and Aaronson et al. (2019) require six years, focusing on estimating the effects of job displacement on high-tenure workers. Davis and Wachter (2011) and Braxton et al. (2020) use three years, focusing on mid-tenure and high-tenure workers; Keys (2018) places no requirement on tenure; East and Simon (2022) require one year. Our focus on young workers, who are characterized by high turnover, leads us to locate toward the shorter end of these stable employment requirements in order to retain a sufficient and representative sample of young workers for our analysis.

workers in their twenties in our samples before their job displacement, overall and separately for the displaced and non-displaced workers in our pre-pandemic and pandemic mass layoff samples. Most noticeably, in both the pre-pandemic and pandemic periods, the treated groups have much smaller quarterly earnings (about $11,800 and $11,200) than their respective control groups (about $15,100 and $16,400). Some of these earnings differences are expected and are consistent with Jacobson et al. (1993), who find that displaced workers from mass-layoff firms start losing earnings even before their job losses. In addition, Table 2 indicates meaningful differences between displaced and non-displaced workers across several observable, and largely time-fixed, characteristics.

Table 3 details the industry of the primary pre-displacement employer of young workers in the control and treated groups. While each mass layoff sample firm is well represented in the Ohio worker dataset, we observe that young treated workers are more concentrated in the industries with lower wages, such as administrative, support, food, and accommodations services. These descriptive statistics suggest systematic differences between the control and the treated groups. Our specifications account for this heterogeneity empirically, including the use of a range of individual, industry, location, and time fixed effects, flexible time paths by industry and location, time-varying observables, and proportional credit balance and earnings recovery outcomes.

We conclude this section with a word on the role of qualification for unemployment benefits in our analysis. The OLDA-ODJFS administrative employment record is generated based on reporting required of Ohio employers regarding UI-covered jobs. Therefore all members of our estimation sample are in UI-covered employment (at least until displacement). The mass layoff sample construction requires 8 quarters of stable employment with the primary employer, while Ohio UI eligibility begins at 20 weeks and peaks at 26 weeks of covered employment during our sample window. Therefore all members of our estimation sample are eligible based on employment duration. The longstanding mass layoff method is designed with the intention of isolating involuntary job loss, which is particularly difficult for labor economists in most settings, as, in other circumstances, even the worker or employer themselves may be limitedly aware of the voluntary or involuntary nature of the separation. Therefore, if the assumptions of the mass layoff approach are valid, this method goes some distance toward isolating involuntary separation, which is required for UI eligibility. The final requirement for UI eligibility in Ohio is an earnings threshold. This threshold is quite low relative to the location of the distribution of earnings in our mass layoff sample. For example, the 2017 Ohio weekly earnings threshold is $211, while our sample mean weekly earnings are $1123 (depending on some criteria). Limiting the sample to earnings-eligible workers is, therefore, not an especially restrictive cut. This leaves us with a decision to make: do we execute a comprehensive analysis of the various sources of support through job loss of all Ohio workers who were stably attached to traditional (UI-covered) jobs, including this small slice of low earners, or do we narrow our focus to the supports accessed by UI earnings-eligible workers alone? In the following analysis, we adopt the former all-workers approach; estimates that remove the small slice of low-income workers who are not earnings-eligible may be requested from the authors.

4. Empirical Specification

Following the literature since Jacobson et al. (1993) on the effects of job displacements, we estimate the coefficients of the model

$$y_{ijt} = \alpha_i + \mu_{I(j)t} + \gamma_{lt} + X_{it}\beta + \sum_{k \neq -2} \delta^k D_{it}^k + \varepsilon_{ijt}, \tag{1}$$

where y_{ijt} is an employment or credit-related outcome for worker i in firm j in quarter t, α_i is an individual fixed effect, $\mu_{I(j)t}$ is an industry-quarter fixed effect, where industry $I(j)$ reflects the industry of worker i's primary employer j during the required pre-period of stable employment for both treatment and control.[19][20] γ_{lt} is a location l quarter t fixed effect, X_{it} is a vector of indicators for worker i's age in quarter t, and D_{it}^k is an indicator that equals 1 if worker i separated from their job in period $t - k$, and equals 0 otherwise.[21] We are most interested in the coefficients δ^k, which represent the average responses of workers k quarters after job loss, and which, in the mass layoff sample, are intended as event study estimates of the average causal effects of being k periods from job loss, where $k = -4, \ldots, +6$.

Specification (1) is used to answer each of our three research questions: first, the extent of younger and older workers' reliance on UI benefits in response to job loss, second, the extent of the change in workers' relationship to credit markets and to family support in response to job loss, and third, workers' recovery from job loss, in terms of employment, earnings, and credit status and in comparison to non-displaced workers, by six quarters after displacement. To answer the first question, we estimate the response of whether the worker (both claims and) receives UI benefits in response to job displacement.[22] To answer the second, we begin by estimating the response of the worker's credit card balance to job displacement. If workers are able to access pre-existing revolving lines of credit to support consumption through job displacement, then this may allow them to avoid seeking UI benefits and lender accommodations in order to sustain consumption in the face of lost income. This new borrowing would increase credit card balances. At the same time, displaced workers may miss credit card payments, retaining funds

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[19] Our interval of observation is quarterly. Hence, index t reflects the time period, which is the quarter and year in which the observation is made. Though we refer to this as the quarter, we do not mean to reference the season of the year varying independently from the calendar year.

[20] Pavan (2010), for example, demonstrates the relative importance of shocks to the broader industry and to an individual plant in shaping a worker's recovery – while carefully accounting for the possibility of losing attachment to the pre-displacement career, which may also suggest greater costs to early career displacement. Hence our approach includes freely varying industry-quarter effects, which may shape outcomes differently for younger and older workers.

[21] Keys et al. (2023) uses a movers strategy to separate the contributions of individual and place to delinquency and default, and finds that place contributes very little, relative to persistent individual effects, to repayment struggles. The lone exception is bankruptcy, where place is a significant determining factor. Relatedly, we find that credit outcomes appear less sensitive to the inclusion of place-specific trends than career outcomes.

[22] We emphasize the receipt of UI benefits in the results section below. However, we estimate effects of job loss by age group on the rate of UI claiming and the dollars of UI benefit receipt as well. Qualitative results across the three UI outcome measures are similar.

to support consumption. This would initially increase credit card balances through decreased paydown and increased fees, would register (absent lender accommodation) as delinquency, and could eventually decrease credit card balances if lenders charge off the delinquent debt. Thus our interpretation of estimated responses of credit card debt to job displacement is aided by evidence on repayment delinquency, and so we also estimate specification (1) taking delinquency as the outcome of interest. Finally, in the category of support through job loss from the private lending market, lender accommodations were more prevalent during the pandemic. Therefore, we estimate the response of the receipt of pandemic lender accommodations to the worker's job displacement.

Next, we look at young workers' family support, their responses to job loss, and the interdependence of UI participation, family support, and recovery from unemployment. While no data resource offers comprehensive coverage of the means by which extended families help their members through unexpected job loss, our rare data on the work, financial lives, and household structures of 20 percent of adult Ohio workers offer some insight into the role of the extended family in supporting displaced young workers, in novel conjunction with both government and lender resources. We generate two measures of family support for young workers. First, we consider whether the young adult lives with a household member who is 15 to 45 years older than the young adult. We rely on existing research indicating that such arrangements are unlikely to be romantic (partnered) relationships and predominantly benefit the younger co-resident.[23] Second, we use proprietary methods in the credit bureau data to track account sharing. We identify young adults who do and do not share credit accounts with account donors 15 to 45 years older. These accounts are authorized user accounts (AUAs), established based on the measured creditworthiness of the elder account donor and requiring repayment of the account owner but not of its beneficiary. Examples of authorized user accounts are credit card accounts shared by parents and children, merchant accounts for gas station chains, and various other revolving accounts. With these measures in hand, we are able to investigate transitions into family support in response to job loss, and also heterogeneity in UI reliance and recovery from job loss for displaced workers whose histories do and do not indicate family support.

To answer the third question, we adopt two standard measures of career recovery from job loss used by the existing literature: the probability of (re-)employment and the log of earnings, conditional on employment. To these accepted recovery indicators we add our own: the worker's credit score, which we offer as a summary measure of the worker's loss and recovery of financial stability in response to job displacement. Analysis of the speed and success of workers' recovery from job displacement serves at least two purposes. First, it allows us to evaluate the sufficiency of the combination of unemployment supports adopted by each of the groups of workers that we study. Second, it helps us to evaluate one candidate explanation for young workers' limited UI take-up: Younger workers

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[23] See Bleemer et al. (2024) and Dettling and Hsu (2018) for evidence on the inference of household members' relationships from the age distribution of household members in credit report data. Note, for example, that co-residence with a household member 15 to 45 years older occurs as a result of large age difference marriages or partnerships approximately three percent of the time in the Current Population Survey.

may fail to take up UI benefits because they replace their lost jobs more quickly, and therefore they do not require (or qualify for) UI benefits at a comparable rate to that of middle aged workers. This re-employment differential seems particularly plausible given that younger workers earn lower salaries, and lower paying jobs may be easier to replace than higher paying jobs. In addition, if less experienced younger workers are also less aware of their UI coverage, then they may feel more financially constrained in their search for a new job, and may take a lower paying job sooner than a more experienced worker, with full knowledge of the UI system, might.

In addition, for young workers, we consider heterogeneous effects of job loss by family support status. We compare reliance on UI benefits in response to job loss, as well as recovery from job loss, between young workers with and without family support by estimating the modified model

$$y_{ijt} = \alpha_i + \mu_{I(j)t} + \gamma_{lt} + X_{it}\beta + \sum_{k \neq -2}\sum_{g \in G} \delta^{k,g} d_i^g D_{it}^k + \varepsilon_{it}. \tag{2}$$

The differences between equations (1) and (2) are that, from equation (1) to equation (2), we replace δ^k with $\sum_{g \in G} \delta_g^k d_i^g$, where d_i^g is an indicator that equals 1 if worker i belongs to the group $g \in G$, and G is a set of mutually exclusive and exhaustive subsets of workers in the sample. Groups G represent young workers who do and do not live with elders, or young workers who do and do not share financial accounts with elders. We thus interpret the coefficient $\delta^{k,g}$ as the average job loss response of workers at distance k from job loss in group g.[24]

Like Jacobson et al. (1993), we limit our sample to workers at mass-layoff firms, whose reason for leaving the job is more likely the firm's distress and not the individual worker's volition, so it is reasonable to believe that the correlation between the individual error term ε_{ijt} and job losses is limited. In addition, we adopt one sample condition from Lachowska et al. (2020): we require that each sample worker has some employment recorded by the state unemployment system in each year following the layoff. In this manner, we ensure that sample treated workers have not simply left the state in response to the job loss.

The resulting event study estimates from equations (1) and (2) are interpreted relative to the omitted base quarter. Typically, event study conventions select the period immediately prior to the separation event ($k = -1$) as the omitted period, against which all other periods are compared. We assign the separation event to be the first quarter in which the worker has no earnings from the primary employer, and we label this quarter as $k = 0$. However, the separation event likely occurred at some point during $k = -1$, at the beginning, middle, or end of the quarter. As a result, $y_{i,j,t}$ may reflect early effects of the separation when $D_{it}^{-1} = 1$. To ensure that the omitted base quarter is unaffected by the separation event, we fix quarter $k = -2$ as the omitted base quarter.

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[24] Note that the coefficients in expression (2) are free to differ from those in expression (1), despite the overlapping naming conventions, which we have retained to simplify notation.

Along with these timing choices, we have chosen to center each (difference in differences) event study on a shared job loss quarter.[25] As a result, we do not need to contend with the event study concerns that arise from staggered treatment timing under heterogeneous treatment effects, as described by Sun and Abraham (2021) and others.

5. Results

5.1 Unemployment Insurance

Figure 1 depicts estimates of expression (1) in which outcome y_{ijt} is an indicator for receiving UI benefits. Estimates are shown in Figure 1a for the event study in which the treated group separated from a previously stable job in 2018Q2, and Figure 1b for the event study in which treated workers separated in 2020Q2. The panels of each figure represent age subsamples: the first panel is labeled "youth", and represents young workers ages 23-27, who are of particular interest as they have, by and large, left school and yet they remain in the earliest years of their careers. Beyond this, we represent estimates by decade: the second panel depicts all workers in their 20s, the next 30s, and so on through the final panel depicting workers in their 60s.

The difference by age group in the rate of successful take-up of UI benefits is striking. In Figure 1a, depicting pre-pandemic layoffs, workers in their twenties who have lost a job in a mass layoff, compared to those not losing a job, are fourteen percentage points more likely to have applied for and currently receive UI benefits in quarters k = -1 and 0, the quarters during which treated workers initially separate from their employers; they are eight percentage points more likely to do so in k = 1. Each of these point estimates differs significantly from zero at the five percent level or less. Nevertheless, eight or even fourteen percent is a startlingly low rate of UI take-up for this sample of Ohio UI covered workers. The rate at which benefits are claimed and awarded increases with each decadal age group until it reaches a peak among workers in their forties, who are estimated to be 32 and 34 percentage points more likely than continuing workers of the same age to receive UI benefits in quarters k = -1 and 0, respectively, and 20 percentage points more likely in k = 1. Again these point estimates differ significantly from zero at or beyond the five percent level. Hence we see that middle aged workers are more than twice as likely as young workers to access UI benefits in the event of covered job displacement; tests of the difference in pooled estimation following specification (2) reject the null hypothesis of identical UI effects of job loss for workers in their twenties and forties. Estimates using UI benefit dollars received as the outcome in expression (1) only serve

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[25] Because we implement a common, not staggered, event timing approach, with common displacement timing 2018Q2 in the stable economy sample and 2020Q2 in the pandemic sample, $k = 0$ belongs to the same calendar time for all sample members. We could, in fact, dispense with k and normalize $t = 0$ to 2018Q2 (2020Q2) for all pre-pandemic (pandemic) sample members. This would, however, be potentially confusingly at odds with conventional notation.

to expand the magnitude and significance of the gap between young and middle aged workers' UI receipt in response to job loss, given that displaced mid-career workers tend to have lost higher-paying jobs.[26]

The rate at which displaced workers both claim and are awarded UI benefits declines through the fifties to reach a low for workers in their sixties that approaches the low rate of UI benefit receipt for workers in their twenties. Again, the difference between benefit receipt rates for workers in their forties and, this time, workers in their sixties is economically meaningful and significant at conventional levels. Displaced workers in their sixties are estimated to receive UI benefits approximately 19, 18, and 11 percentage points more often than non-displaced workers in k = -1, 0, and 1, a precipitous drop when compared with the 34 percentage point estimate for workers in their forties. In sum, we observe an inverted u-shape from younger to older ages in the estimated rate at which mass layoff worker displacement from long-held, UI-covered employment leads to UI benefit awards. Recalling the evidence of Lachowska et al. and of O'Leary et al, if workers are indeed taking up UI benefits at concerningly low rates, then our estimates based on Ohio workers suggest that the youngest and oldest displaced worker groups are contributing an outsized amount to the shortfall of UI take-up.

Looking to the pandemic era, in which many more workers suffered job displacement, some features of this estimated age profile persist and some do not. While we find in Figure 1b that displaced workers in their sixties are again less likely to claim and be awarded UI benefits than displaced younger workers, the magnitude of the difference in the pandemic era is quite modest. Further, in the pandemic era, we find workers in their twenties to be approximately as likely as workers in their thirties, forties, and fifties to receive UI benefits; a displaced worker in each of these groups is approximately 15 percentage points more likely to receive UI benefits than an otherwise comparable continuing worker. The COVID pandemic, and associated shutdowns and layoffs, increased the size of the pool of the unemployed. The otherwise stably employed workers who were reached by these layoffs may have had little past reason to understand their UI protections, and this may have led to reduced UI take-up among all workers and especially among displaced middle-aged workers. Impressively, the unprecedented labor market conditions of the pandemic appear to have removed nearly all of the age gradient in UI take-up.

5.2 Lender Accommodations and Credit Card Borrowing

If displaced younger and older workers are less likely to take advantage of UI benefits, what other supports do they find? We first consider reliance on private lenders, in the form of credit card balances, missed payments, and repayment accommodations, to sustain ongoing (largely non-durable) consumption.

Figure 2 reports the estimated effect of job displacement on credit card debt, following specification (1), again across five decadal age samples and again during the stable pre-pandemic and the pandemic period. We estimate the dependence of the inverse hyperbolic sine of credit card debt on job displacement following specification (1),

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[26] UI dollar amount estimates by age are available from the authors.

in order to understand the proportional response of debt while also accommodating the (often small) minority of consumers in each age group who have no credit card debt.

The estimates in Figure 2 do not support the possibility that young, displaced workers increase borrowing on credit cards (or reducing card repayment) to smooth consumption. In the pre-pandemic period, workers in their twenties respond to displacement with far greater (proportional) declines in their credit card balances than those in other age groups. The 2018Q2 job loss event study generates a significant decline in credit card debt for workers in their twenties in response to job loss that grows to a roughly 90 percent decline in card balances by five quarters beyond separation. In contrast, displaced workers in their forties respond with an approximate 40 percent decline in credit card debt, and those in their fifties show no significant or substantial decline in card debt at all. Finally, we note that estimates of the response of credit card debt to displacement during the pandemic are small and insignificant for all age groups and across almost every event study period.[27] This may reflect the relative absence of both income and spending opportunities during this unprecedented time. No age group in either time period responds to job loss with increased credit card debt, indicating that credit card borrowing does not function as a meaningful source of consumption support through unemployment for the average worker in any of our estimation samples.

Estimates of the response of delinquency by age to pre-pandemic job loss, available from the authors, align with the credit card balance above and the credit score results in the recovery section below. We observe a particularly large and significant increase in credit card delinquency in response to job displacement among young workers. This delinquency response emerges quickly after displacement, and declines some quarters later. Its timing suggests that charge-off may indeed contribute to the large decline in credit card balances several quarters after displacement; the initial relationship of the estimated delinquency spike to balances, however, is presumably to increase them.

We study forbearance only for the sample in which treated workers are displaced in 2020Q2, as these programs arose to accommodate pandemic financial hardships and few similar opportunities existed in the pre-pandemic period. Figure 3 shows us the same expression (1) event study estimated with pandemic-era lender forbearance of auto and mortgage loan repayments for the sample in which treated workers separated from employment in 2020Q2.[28]

As in the case of UI benefits, we find that the estimated effect of job displacement on the rate of forbearance receipt follows an inverted u-shape with worker age. Where workers in their twenties have a peak response of the

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[27] Estimates of the response of the IHS of credit card debt to job loss during the pandemic for our decadal age groups are not reported among the main text figures, as they are uneventful. They are, however, available from the authors.

[28] We omit lender accommodations of student loan repayment because all US direct federal student loans benefitted from a payment pause without qualification or application, and 90 percent of the US student loan market is federal. Including student loans in our lender accommodations measure would likely lead to an inference of widespread loan accommodation among workers in their 20s and 30s that is unrelated to job loss.

rate of forbearance to job loss of 0.5 percentage points in quarter $k = 1$, workers in their forties show a peak 1.4 percentage point increase in forbearance (in $k = 0$) in response to job loss. While the forbearance response to job loss for workers in their forties is significant at the five percent level for each of $k = 0$ through 5, the point estimates for workers in their twenties are generally small and never reach significance at conventional levels. Advancing through the worker age groups, again we see the reliance on support for displaced workers, here forbearance, decrease until it reaches a symmetric low point among workers in their sixties. The greater reliance on auto and mortgage debt forbearance in response to job loss for middle aged workers is in part a function of middle aged adults being substantially more likely to hold mortgage debt than younger adults, and somewhat more likely to hold auto debt than younger or older adults.

Taken together, the forbearance estimates confirm that pandemic-era lender forbearance did differentially find displaced workers, particularly middle aged displaced workers. Though the peak differential of 1.4 percentage points for displaced versus continuing workers in their 40s appears modest, it is economically meaningful when compared to the prevalence of pandemic-era lender forbearance. Sanchez and Wilkinson (2022), for example, find that a cumulative share of 16 percent of mortgage holders participated in pandemic mortgage forbearance in 2020 and 2021; these participants typically used forbearance for three or fewer months.

5.3 Family Sources of Support for Younger Workers

In this section, we turn to measured indications of family support for displaced young workers. In doing so, we set aside the question of older workers' sources of support through job loss, despite their low reliance on UI benefits and lender forbearance, and their (surprisingly) unchanged mean credit card balances through unemployment. Older workers' limited recourse to government and lender support in response to job loss may pertain largely to accumulated wealth and the influence of job loss on retirement timing, a subject treated by an accomplished literature, from Chan and Stevens (1999) through Goda et al. (2023) and beyond.[29]

If the various estimates of expression (1) indicate that younger displaced workers rely very little on UI benefits, lender forbearance, or credit card borrowing to sustain consumption through unemployment, then how do they weather the income loss of unemployment? Younger workers typically lack meaningful accumulated wealth. Many do, however, retain supportive financial connections with their elders that mid- and late-career workers lack.[30]

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[29] In addition, the available evidence indicates that the older working cohorts in these time periods hold unprecedentedly high average wealth and retirement benefit claims, relative to the resources of younger generations and to past cohorts at this life stage. See, for example, Collins et al., Brown et al., and Lusardi et al. Extensive retirement resources, on average, may suggest that many members of this group are well prepared for the retirement transition. Heterogeneity in retirement resources of course implies that some workers may experience substantial welfare losses from an unanticipated layoff that forces retirement.

[30] While we estimate that many young displaced workers find intergenerational support, mid-career workers' displacement experiences may be most consequential for spouses and domestic partners. Charles and Stephens (2004) demonstrate a substantial divorce response to layoff or plant closure. Stephens (2002) estimates an added worker response to

With these measures in hand, we investigate transitions into family support in response to job loss, and, in the following section, the differences between the career and financial recoveries of displaced workers whose histories do and do not indicate family support.

Let us begin by describing estimates of the rate at which younger workers in their twenties who live independently in quarter $k = -2$ move in with parents or similar elders in response to job displacement. In our primary mass layoff sample, we find no clear evidence that displaced younger workers move home to parents or similar elders at a higher rate than non-displaced workers in response to job loss, during either the pre-pandemic or pandemic period. This is in surprising contrast to the findings of Kaplan (2012) and others. Moreover, in an analogous exercise comparing the rates of transition into shared credit accounts in response to job loss, we also find no clear evidence of the emergence of AUA accounts provided by elders in response to job loss. Our stably employed young workers who then experience displacement do not appear to establish new reliance on parents or similar elders in order to weather job loss.

One first exploration of this unexpected result is to relax our estimation sample conditions, asking: if we loosen the pre-displacement stable employment requirement for our young workers, who are well known to experience weaker labor force attachment and also more job-to-job transitions, do we find different family support responses to job loss?[31] Figures 4 and 5 depict event study estimates, following specification (1), of the response of intergenerational co-residence and shared credit account holding to job loss for the broader sample of young workers who were attached to a primary employer for at least four, but not necessarily eight, quarters prior to displacement. This shortening of pre-displacement stability requirements is at odds with the prior literature estimating job loss effects using mass layoff, but may be appropriate to our young sample of interest, for whom long attachment to a single employer is less the norm.

As reported in Figure 4, for our lenient pre-displacement attachment sample, we do indeed find that workers in their twenties are significantly and substantially more likely to move "home" in response to displacement. Displaced workers in their twenties who lived independently in the quarter before separation are seven percentage points more likely to have moved home by six quarters after displacement in the pre-pandemic period.[32] They are also more likely to move home during the pandemic, but note that all young adults in their twenties were more likely to move home during the pandemic, and so co-residence estimates from this highly unusual time period become somewhat more difficult to interpret. In sum, under restrictive attachment conditions we find that displaced and non-displaced young workers are similarly likely to move home. However, if we loosen our pre-displacement attachment

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displacement experienced by PSID husbands that recovers 25 percent of lost income. Brown and Yi (2025) use the data and methods of the present paper to revisit Stephens's added worker effect in recent administrative data, and to weigh contemporary households' employment and financial responses to mass layoffs.

[31] On age and turnover, see, for example, Mincer and Jovanovic (1981).

[32] This result is significant at the five percent level. The level of intergenerational co-residence rises steadily beginning three quarters after displacement, and continues until the end of the panel, at six quarters after displacement.

requirement to one year, we expand our sample of young workers substantially, and we estimate large and significant intergenerational co-residence responses to job loss. We infer that twenty-something workers with (characteristic) shorter employment spells do indeed respond to job loss by moving home to elders, and therefore that family support is an important mechanism by which young workers with weaker job stability weather unemployment.

Shared credit account transitions, on the other hand, bear little clear relationship to job loss. In Figure 5, we show event study estimates of the share of young displaced workers who are authorized users on accounts held by parents or similar elders around the time of displacement, among those who had no shared credit account in the quarter before displacement. This specification is analogous to the above specification for intergenerational co-residence.[33] As depicted in Figure 5, we find no increase in shared credit account holding in response to job loss among the pre-pandemic sample. Moreover, we find no response for the pandemic sample.[34] While our estimates support a claim that young workers resort to relying on intergenerational residential support in response to job loss, we have no evidence that their parents open new shared credit accounts to support them through job loss.

It may be helpful to recall at this point that roughly half of our twenty-something workers share an address with an elder preceding job loss. The young workers living in intergenerational households before the job loss are excluded from the above co-residence transition estimates, and yet they may also receive support from parents or similar elders through unemployment. This fact raises a question: do young displaced workers with prior evidence of family support rely more on family, and therefore less on UI benefits? Put differently, is family support through job loss a partial explanation for young workers' failure to take up UI benefits?

To inform this question, we estimate event study specification (2), using pre-displacement co-residence with elders, and then pre-displacement credit account sharing, as the source of heterogeneity in the effect of quarters since job loss on UI benefits. Figure 6 Panel A reports the resulting estimates. In the stable pre-pandemic period, we estimate that young adults co-residing with elders who experience displacement are 8 percentage points less likely to receive UI benefits in quarter $k = 0$ than displaced young adult non-co-residents.[35] This can be evaluated relative to a pooled UI take-up rate of 14 percentage points for all young workers in quarter zero, as reported in Figure 1a. Assuming that mid-career workers are comparatively unlikely to forego UI benefits as a result of support from elders, this 8 percentage point difference in the share of younger workers who receive UI benefits in response to job loss between the approximate half of the sample who co-reside and the approximate half who do not co-reside goes a long way toward explaining the difference between the low rate of UI benefit receipt among our younger workers, of 14 percent, and the higher rate of UI benefit receipt among our middle aged workers, of 34 percent.

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[33] For comparability, we have imposed four-quarter attachment instead of eight-quarter pre-displacement attachment, but the AUA results are similar for either attachment condition.
[34] Estimates available from the authors.
[35] This difference is significant at the five percent level.

During the pandemic, depicted in Figure 6 Panel B, we estimate that displaced young workers who co-resided pre-separation are three percentage less likely to draw UI benefits in response to job loss, and that this difference emerges immediately, during the $k = -1$ quarter in which separation is progressing. [36] This smaller estimate emerges in a period characterized by little or no age gradient in UI receipt in response to job loss, as in the Figure 1b estimates. Even in the pandemic, in which various worker groups behave unusually similarly in terms of UI take-up, young displaced workers who co-reside with elders are less reliant on UI benefits. It is also worth noting that the co-residence difference in UI take-up is far stronger for the pre-pandemic era in which we observe a steeper age gradient in UI take-up.

Beyond co-residence with elders, we also look at heterogeneity in UI take-up by credit account sharing with elders. Figure 7 shows that young displaced workers with shared credit do indeed draw UI benefits slightly less than those without shared credit, in both the pre-pandemic and pandemic eras, but also that the estimated heterogeneity in UI take-up by authorized user status is considerably smaller than that by co-residence status. During the pre-pandemic period, shared credit recipients were between two and three percentage points less likely to receive UI benefits than those without by quarters $k = 1, 2$, and 3 beyond displacement. [37] During the pandemic, shared credit recipients were four percentage points less likely to receive UI benefits one quarter after displacement, though this estimate is significant only at the ten percent level. [38]

In sum, we find that younger workers who live with parents or similar elders, and, to a lesser extent, who benefit from shared credit donated by elders, are substantially and significantly less likely to turn to UI benefits during unemployment. Hence, young adults with family support do appear to be the specific youth who least rely on UI benefits following displacement. This pattern suggests that younger workers who enjoy family support may be responsible for a meaningful portion of the under-claiming of UI benefits in the event of (UI-covered) job loss that we estimate among younger workers. [39]

5.4 Recovery

Finally, we look to data on the employment, earnings, and credit recovery of the displaced worker. First, we examine the extent to which younger workers return to work more quickly and at lower paying jobs, potentially explaining their low UI benefit take-up. Second, we ask a broader related question: given displaced workers' varied reliance

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[36] This difference is significant at the five percent level.

[37] Only the quarter two and three estimates are significant at the five percent level.

[38] The t-statistic for the test of the null hypothesis that shared credit and non-shared credit recipient displaced workers in their twenties receive UI at similar rates in quarter $k = 1$ is 0.055.

[39] Estimates available from the authors make the analogous comparison between shared credit beneficiaries and non-beneficiaries. In this case, we do not find a significant difference in UI benefit receipt between those who do and do not benefit from family support. It is worth noting that AUAs provided by elders are less common than intergenerational co-residnece, and so this distinction did not have a similar opportunity to explain large differences in young workers' UI benefit take-up.

on the assortment of supports described above, how completely do members of each of our displaced worker age groups recover from job loss?[40]

We measure recovery in terms of re-employment, the log of earnings within the quarter conditional on returning to employment, and the Vantage credit risk score (a proxy for financial stability). In Figure 8, we find that workers in their twenties through forties achieve very similar re-employment rates six quarters after a 2018Q2 displacement, and that their return to employment progresses at very similar rates in every quarter along the way. This finding suggests that younger workers' far lower rates of UI benefit claiming are not well explained by a speedier return to employment.

Returning to our second question, the broader comparison of career recovery by age group, we note that only workers in their fifties and, especially, sixties suffer more substantial continued non-employment following job loss. Employment recovery estimates are particularly bleak for the 2018Q2 displaced workers in their sixties, with persistent employment declines caused by 2018Q2 displacement of roughly 25 percent. During the pandemic, however, employment losses are both sudden and short-lived. All workers in their twenties through fifties display similar re-employment outcomes, with persistent employment losses on the order of ten percent, while workers in their sixties suffer persistent employment loss caused by 2020Q2 job displacement on the order of fifteen percent. By and large, our re-employment estimates indicate that early- and mid-career workers recover employment rates similarly, while older workers suffer persistent and large employment declines in response to job displacement.

Earnings recovery, reported in Figure 9a-b, displays a flat and then negative gradient with age. Figure 8a-b reports estimates of expression (1) across the decades of age, in which the outcome is the log of earnings conditional on having positive earnings (and hence, among the treated, conditional on having returned to work). We find that workers in their twenties, thirties, and forties who were displaced in 2018Q2 recover 70 to 75 percent of non-displaced earnings, conditional on returning to work. Workers in their fifties and sixties, however, display a meaningfully lower share of earnings recovered, conditional on returning to work, with both experiencing a persistent fifty percent or greater decline in even conditional earnings in response to job displacement in 2018Q2. The pandemic displacement again behaves quite differently: estimated earnings recovery reaches about 90 percent for workers in their twenties through fifties, which is consistent with evidence that this was a sudden and short-lived disruption. Only the workers in their sixties are left with an approximate twenty percent decline in conditional earnings in response to the pandemic job displacement.

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[40] While these estimates are informative regarding age-based heterogeneity in the causal effect of mass layoff on employment and earnings over the following six quarters, they do not get at the mechanisms generating any age-based differences in recovery. The previously cited Dodini et al., for example, estimate a greater setback arising from job loss in more concentrated labor markets; given that younger and older workers may participate in different employment markets, market concentration could be one among many mechanisms underlying our age heterogeneity results.

Credit score losses and recoveries in response to the mass layoff are one way of summarizing the financial fallout from job loss experienced by our younger, middle aged, and older workers. In Figure 10, describing credit score responses to the 2018Q2 layoffs, we estimate that workers in their 20s experience rapid and large credit damage following job loss, peaking at a mean credit score decline of 17 points after four quarters. Displaced workers in their thirties, forties, and fifties suffer much smaller peak credit score losses of 7, 9, and 7 points, respectively. While workers in their twenties through forties do show some improvement following peak credit score damage, ending in final score declines after six quarters of 13, 5, and 7, respectively, the older workers in their fifties and sixties are notable in that their credit score decline following layoff is monotonic, with the final score decline six quarters out being the greatest; by the end of our estimation window, workers in their fifties have suffered a significant seven point decline, and workers in their sixties have suffered a significant 14 point decline.

On the other hand, credit scores show very little response to job displacement in any age group during the pandemic, suggesting that various public pandemic supports and private lender accommodations were sufficient to protect most workers from damage to credit profiles resulting from the pandemic.

Pre-trends are worth noting among the recovery estimates. Employment is a sample criterion and therefore its pre-trends are uninformative. However, we can track pre-trends in the differences between displaced and continuing workers' outcomes, conditional on specification (1) controls, as an indication of the success of our mass layoff methodology in generating comparable treatment and control workers, holding other specified worker characteristics fixed. Estimated pre-trends in conditional log earnings, UI benefit receipt and amount, credit card borrowing, forbearance, and credit scores all indicate close comparability of our treatment and control groups. The one exception in terms of comparable pre-trends comes in the case of the rate of intergenerational co-residence for continuing and displaced workers one year before the job displacement in the pre-pandemic sample. This point estimate does suggest that a greater share of soon-to-be displaced workers lived with parents or similar elders, though this was not the case two years before the mass layoff. By and large, our controls, including time-varying industry and location effects, and our sample conditioning, including requiring displaced workers to return to the state of Ohio employment data at some point post-layoff, appear to have created closely comparable treatment and control groups.

Summarizing the recovery findings: we see no evidence that younger workers experience a faster return to employment. Instead, younger workers return to employment at similar speeds to middle aged workers, and they recover their past earnings levels more completely than any other age group. Strikingly, in the face of their estimated resource deficit, younger workers make the most complete career recovery from the mass layoff. However, alongside workers in their sixties, they suffer the greatest financial stability setback. Despite, or because of, their relative independence in the face of job loss, older workers demonstrate the largest and most persistent setbacks in employment, conditional earnings, and financial stability six quarters after a job displacement. Both younger and

older workers are estimated to contribute meaningfully to the unemployment insurance under-claiming phenomenon that motivates this paper, and both suffer large credit score declines six quarters after job loss. Finally, middle aged workers are not among our UI under-claimers. They source job displacement support most broadly, relying more than twice as much as the youngest and oldest workers on UI benefits and lender accommodations, and they achieve an intermediate level of recovery from job displacement after six quarters.

5.5 Do young workers with and without family support recover from job loss differently?

Given that roughly half of our young worker sample lives with elders, and that those with markers of family support are considerably less reliant on UI benefits through job loss, we would like to know whether young displaced workers with family support recover their employment and earnings more (or less) successfully than young displaced workers without family support. Might families support young workers through longer job searches, allowing them to maintain higher reservation standards for their re-employment positions? Or might they distract young displaced workers from the job search process, leading to slower returns to employment at lower wage jobs? Is the propensity of young workers with family support to forgo UI benefits helpful or harmful to career recovery? Estimates of the differences in the employment, conditional earnings, and credit recoveries of young workers with and without family support will reveal gaps between the causal effects of layoff on these outcomes for supported and unsupported youth. While these heterogeneity estimates do not reveal the explicit causal effect of family support on recovery, they will provide clues to possible differences in the search processes that supported and unsupported young workers undergo.

A first insight from our estimates is that young displaced workers who do and do not co-reside or share credit with parents or similar elders, in both the pre-pandemic and the pandemic period, return to employment at similar rates. In estimates available from the authors, we estimate the specification (2) difference in differences event study using first intergenerational co-residence and then shared credit as the dimension of heterogeneity, and we perform this exercise for the pre-pandemic and pandemic samples. We find closely comparable employment patterns before, during, and after displacement for our various family support and no family support subgroups. This finding is counter, for example, to the hypothesis that family support allows displaced young workers to maintain higher re-employment standards and therefore to search for a longer time before returning to (more desirable) work.

Similar re-employment rates, however, need not imply similar earnings. In Figure 11, we report estimates, based on specification (2), of the difference in the extent of earnings recovery between young displaced workers who did and did not co-reside with elders immediately before displacement. Panels A and B demonstrate that co-resident young workers recover their pre-displacement earnings more completely, conditional on working. In the pre-pandemic period, co-resident young workers recover roughly 10 to 15 percent more of their pre-displacement

earnings than do non-co-resident young workers.[41] During the pandemic, co-resident displaced youth recover a peak of 9 percent of pre-displacement earnings more than non-co-resident youth, with an 8 percent of pre-displacement earnings difference by the sixth (and last) quarter of the panel.[42] Overall, young displaced workers who benefit from co-residence with elders are able to recover on the order of 10 percent more of their pre-displacement earnings, conditional on finding work. And, as noted, they find work at a similar rate to their non-co-resident peers.

Young adults with shared credit also appear to recover earnings more completely, though, as with UI reliance, the difference by credit sharing is smaller than the difference by co-residence. In the pre-pandemic period, shared credit recipients retained 29 percent more of pre-displacement earnings than non-recipients during quarter $k = -1$ (while displacement is ongoing). Afterward, the shared credit versus non-shared credit difference is more or less flat, and does not differ significantly from zero.[43] In the pandemic period the results are more straightforward: shared credit recipients recover roughly 10 percent more of pre-pandemic earnings throughout the period, conditional on working.[44] Overall, we do see evidence that young displaced workers who receive authorized user accounts from elder donors are able to recover a greater share of pre-displacement earnings, though the findings for the pre-pandemic period are considerably more ambiguous than the results of the analogous co-residence comparison.

Finally, in estimates available from the authors, we examine whether young displaced workers with family support recover greater financial stability following job loss. We do this by estimating specification (2) with credit score as the outcome marking recovery, again for AUA versus no AUA and intergenerational co-residence versus no co-residence comparisons. Credit score in this instance serves as a proxy for financial stability, reflecting a combination of repayment success, available credit (utilization), and credit seeking behavior. Perhaps surprisingly, we find that the large credit score setback that workers in their twenties experience as a result of job loss does not differ significantly for workers with and without family support, and that this is true in both the pre-pandemic and the pandemic period. In short, we fail to find any evidence that families are able to stem the financial fallout of early-career job loss.

Overall, our estimates indicate that, while young workers with family support are no slower or faster in finding re-employment, and no better off in terms of the damage to financial stability that they suffer as a result of job loss, they do enjoy more complete earnings recovery. Whether this difference in earnings recovery is causal, and, if so, the mechanisms by which families bring about more successful job search remain open questions. Most importantly

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[41] These point estimates are significant at the ten percent level for $k = 4$ through 6; the estimate is greatest at $k = 5$, at 26 percent of pre-displacement earnings, and is significant at the five percent level.

[42] These estimates are each significant at the five percent level.

[43] It is unclear what this initial difference in retained earnings means. One possibility is that AUA recipients separate later in quarter $k = -1$, retaining earnings through more of the ongoing displacement quarter.

[44] These point estimates differ from zero at the five percent level for quarters $k = -1$, 1, 5, and 6.

in the context of this paper, our estimates suggest that displaced young workers who benefit from family support in the form of intergenerational co-residence or shared accounts drive the UI under-claiming that we have demonstrated among the younger working cohorts, and those displaced workers who appear to rely on family in place of UI during unemployment are not, on average, disadvantaged when it comes to career recovery.

6. Discussion

Motivated by evidence that displaced workers, and especially lower income displaced workers, under-claim UI benefits, we use a unique administrative dataset that includes various public, private, and family sources of support to shed light on the supports that help workers through job loss and recovery. Because the relevance of each source and the nature of career recovery varies meaningfully over the career, we estimate the reliance on public and private resources separately by worker age group.

We use a random 20 percent subsample of the population-level Ohio State University Consumer Credit Panel (OSU-CCP), matched to state of Ohio administrative data on their work in state unemployment insurance system-covered jobs to track UI benefit receipt, borrowing, forbearance, and measured creditworthiness through job loss. Owing to the size and coverage of this data resource, we are able to estimate the pattern of government, lender, and family supports that carries displaced workers through the job loss experience, along with the extent of workers' recovery of employment, earnings, and financial stability, and to identify these patterns at a quarterly frequency around job loss in decadal age samples with notable precision.

Our methods follow the mass layoff approach of Jacobsen et al. (1993) and Lachowska et al. (2020), among others, modified to fit our specific data resource, age segments, and contemporary time period. Among workers displaced by mass layoff in 2018Q2, we find that UI reliance in response to job loss over the life cycle follows an inverted u-shaped pattern. While displaced workers in their 20s are 14 percentage points more likely to draw UI benefits in the quarter after layoff, displaced workers in their 30s, 40s, and 50s are 26, 33, and 30 percentage points more likely, respectively. Workers in their 60s are only 19 percentage points more likely to draw UI benefits in the quarter after layoff. Next we ask whether displaced workers make up for lost income by extending their credit card borrowing. Estimates indicate that no age group responds to layoff by increasing borrowing (less repayment). Strikingly, workers in their twenties steeply reduce credit card debt, through some combination of decreased spending, repayment, and charge-off, by as much as 90 percent by five quarters after layoff. Displaced workers in their thirties and forties show much smaller credit card balance reductions after layoff, on the order of 40 percent by five to six quarters beyond layoff. Displaced workers in their 50s and 60s, however, show insignificant and relatively small card debt declines. Putting together estimates on UI and borrowing, we are left to wonder where young displaced workers turn for support, in particular after the 2018Q2 layoff.

We repeat this estimation for mass layoffs that occurred at the peak of the pandemic, in 2020Q2. Counter to the above inverse u-shaped pattern of reliance on UI benefits, we find an extremely stable pattern of UI benefit reliance across age groups in the pandemic. Each age group is approximately 15 percentage points more likely to draw UI benefits, all else equal, during the quarter after layoff. Turning to financial outcomes, we find that credit card balance, delinquency, and credit score responses to layoff are very limited during the pandemic, presumably owing to the various private and public supports households received during this time. We are able to estimate the response of pandemic lender forbearance to mass layoff for our worker age groups. Like the public UI support in more ordinary times, lender forbearance in the pandemic follows an inverted u-shape in worker age. Where workers in their 20s and 60s are roughly 0.5 percentage points more likely to receive lender forbearance following layoff, workers in their 40s are 1.4 percentage points more likely to receive lender forbearance after layoff. (These modest response magnitudes are economically meaningful relative to forbearance prevalence at the time.) Our estimates contain the good news that lender forbearance efforts did indeed differentially support workers experiencing job loss, a clear intention of various lender programs. However, once again, we see traditional job loss supports targeting mid-career workers and largely excluding displaced young workers.

Given this collection of evidence suggesting that younger displaced workers draw substantially less support from each of UI benefits, new consumer borrowing (or slowed repayment), and lender forbearance, we investigate available measurements of intergenerational connections that may support young workers through job loss. (At this point we set aside the question of older workers, who are less reliant than mid-career workers on UI benefits and lender forbearance following layoff, and who do not extend card borrowing. The response of retirement to layoff is well understood by the existing literature, such as Chan and Stevens and Goda et al., and the strength of our data does not lie in measuring retirement wealth, but instead in tracking employment, formal UI benefits, credit, and interpersonal residence and financial connections at the individual level over time.) For the same workers, we use our unusually rich data on networks of Ohioans to investigate the extent to which younger displaced workers turn to their elders for support through job loss, along with the extent to which such reliance substitutes for, or displaces, more traditional UI benefits.

We find that, among independent-living young workers, displaced workers are indeed substantially and significantly more likely to turn to intergenerational living. However, this is only true if we apply relatively lenient sample conditions regarding the workers' pre-displacement employment stability. In addition, young workers who already lived with elders at the time of displacement were 8 percentage points less likely than those who lived independently to draw UI benefits in response to layoff. Given the approximately even split of young workers between co-residence with elders and independent households before displacement, and their overall 14 percentage point increase in UI receipt in response to displacement, (with rounding error) our results imply that

independent young workers increased UI receipt by 19 percentage points and young workers co-residing with elders increased UI receipt by only 10 percentage points in response to job loss.

Finally, in order to understand the effectiveness of each age group's estimated sources of support, we estimate the extent of each age group's recovery from job loss in terms of re-employment, conditional earnings, and credit score. These results tell us the degrees to which the differing combinations of unemployment supports gathered by young, middle aged, and older displaced workers are successful in generating complete and remunerative re-employment and financial stability a year and a half after the initial displacement. In addition, we are able to estimate the extent to which young workers with evidence of family support are able to make a more complete recovery from job loss than are unconnected young workers.

We do see that the particular young workers who live with parents or similar elders are the ones who rely least on UI benefits in the event of job loss, and the magnitude of this difference, alongside the prevalence of intergenerational living among young workers, goes some distance toward rationalizing the low rate of claiming among the young. Putting all of this together, workers in their twenties recover most completely from job loss in terms of their careers, but they suffer persistent credit score setbacks six quarters after job loss. Moreover, young workers who benefit from family support recover a substantially greater share of past earnings by six quarters after layoff. They do not, however, return to work at a different pace or recover financial stability (as measured by credit score) any more or less successfully.

Workers in their thirties and forties rely heavily on UI benefits and lender accommodations to weather job loss; they are not primary drivers of UI under-claiming. They make moderately successful career recoveries, and they show little evidence of financial damage six quarters after job loss.

Older workers are estimated to handle the income loss of job displacement most independently, with displaced workers in their sixties relying little in UI benefits and lender accommodations, and not increasing borrowing despite strong ex ante credit access. They also appear to bear the greatest hardship as a result of mass layoff, with displaced workers in their sixties recovering only 75 percent of employment and less than half of earnings even conditional on employment. Evidence from the literature on layoff and retirement points to the possibility that this apparent hardship may be explained by early retirement in response to layoff; to the extent that this includes initiation of retirement benefits, this employment and earnings drop may entail less welfare damage. However, these same older workers do suffer an average 14 point credit score decline six quarters after the job loss, similar to the decline experienced by workers in their twenties after six quarters and substantially greater than the credit score damage experienced by each of the other worker age groups.

These findings may point to an opportunity for connecting very early- and late-career workers with UI benefits, thereby sparing both younger workers who lack family support and older workers with fewer retirement resources the financial damage from job loss that we have estimated in this study. At the same time, policy

27

inference based on the above connections between the sources of support and the success of recovery of displaced workers at various stages of the life cycle will depend crucially on whether missed opportunities for support arise from information limitations or optimizing choices made by fully informed workers at the time of job loss. Do younger and older workers leave extensive UI benefits on the table out of a lack of knowledge of their benefit eligibility? Or are they motivated by factors such as perceived stigma or inconvenience? Finally, our available measures of family connection are limited. The advancement that we can offer relative to the prior literature is appending novel but incomplete information on connections across workers to large US administrative datasets with market and policy detail. Our measures leave unanswered the question of the various specific means by which family generations may help each other though costly job market shocks, and what kinds of assistance unconnected young workers lack that underlies their greater UI reliance and partial career recovery.

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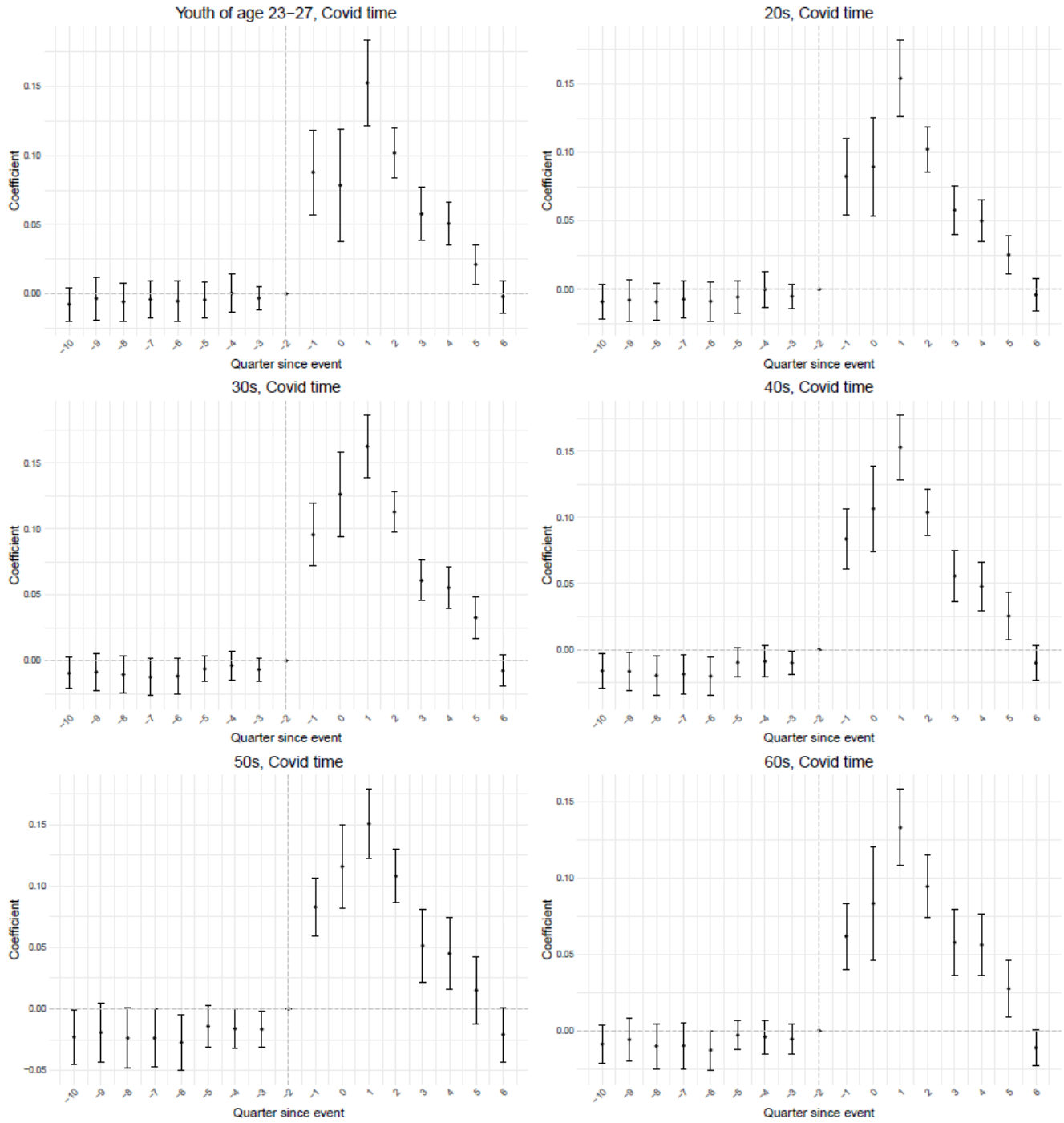
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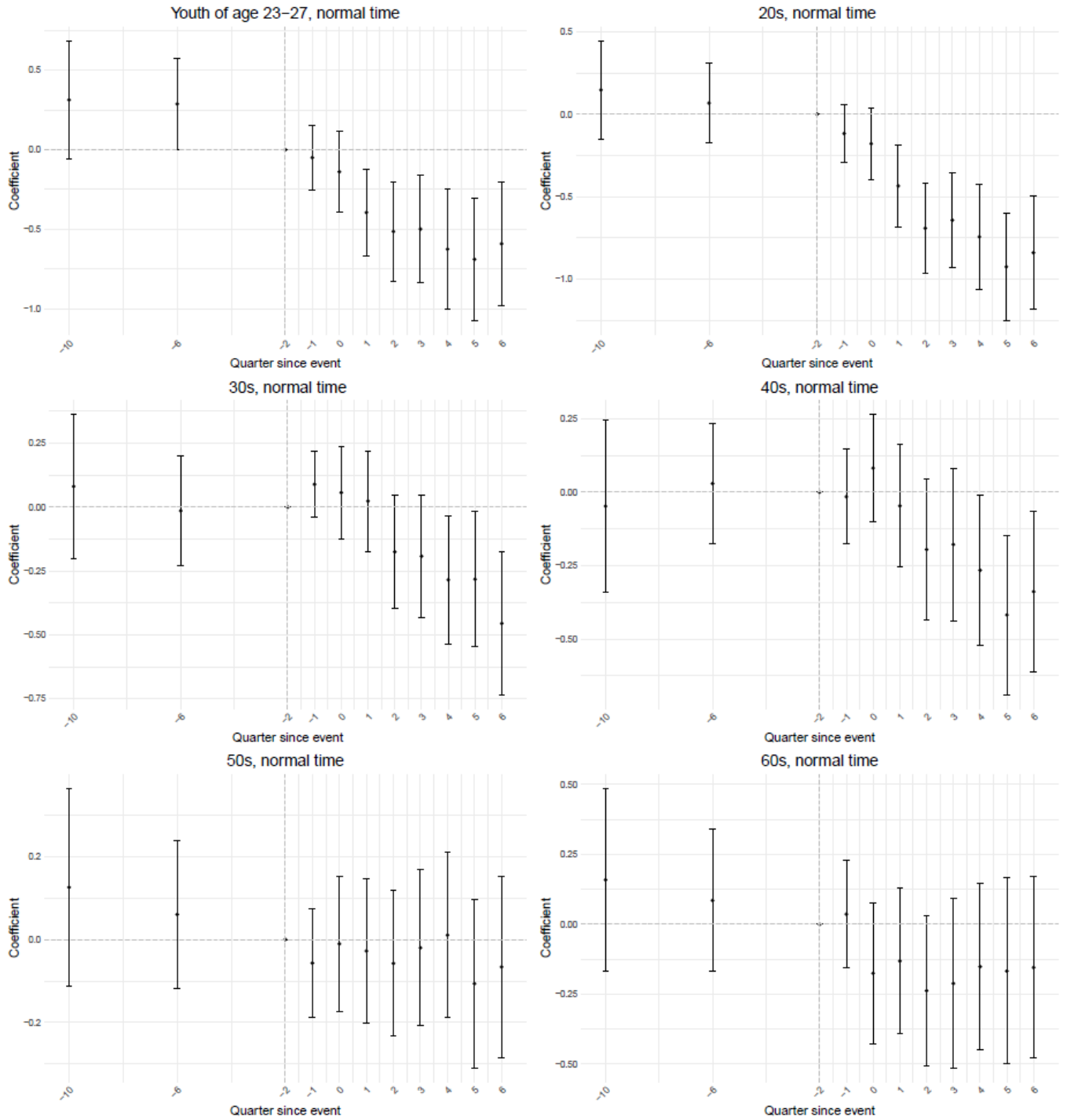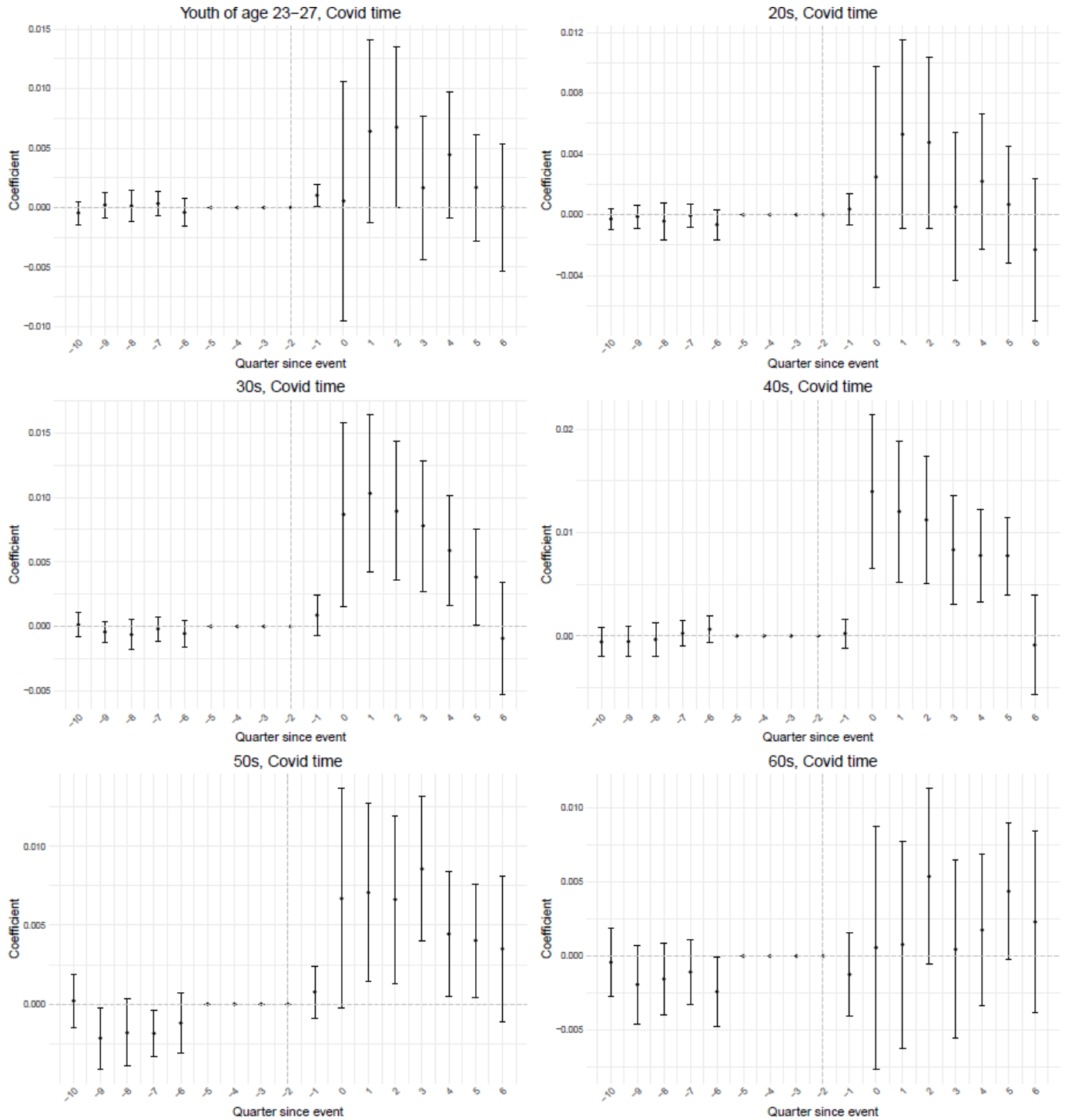Figure 1a. Unemployment insurance receipt by age group around 2018Q2 mass layoff
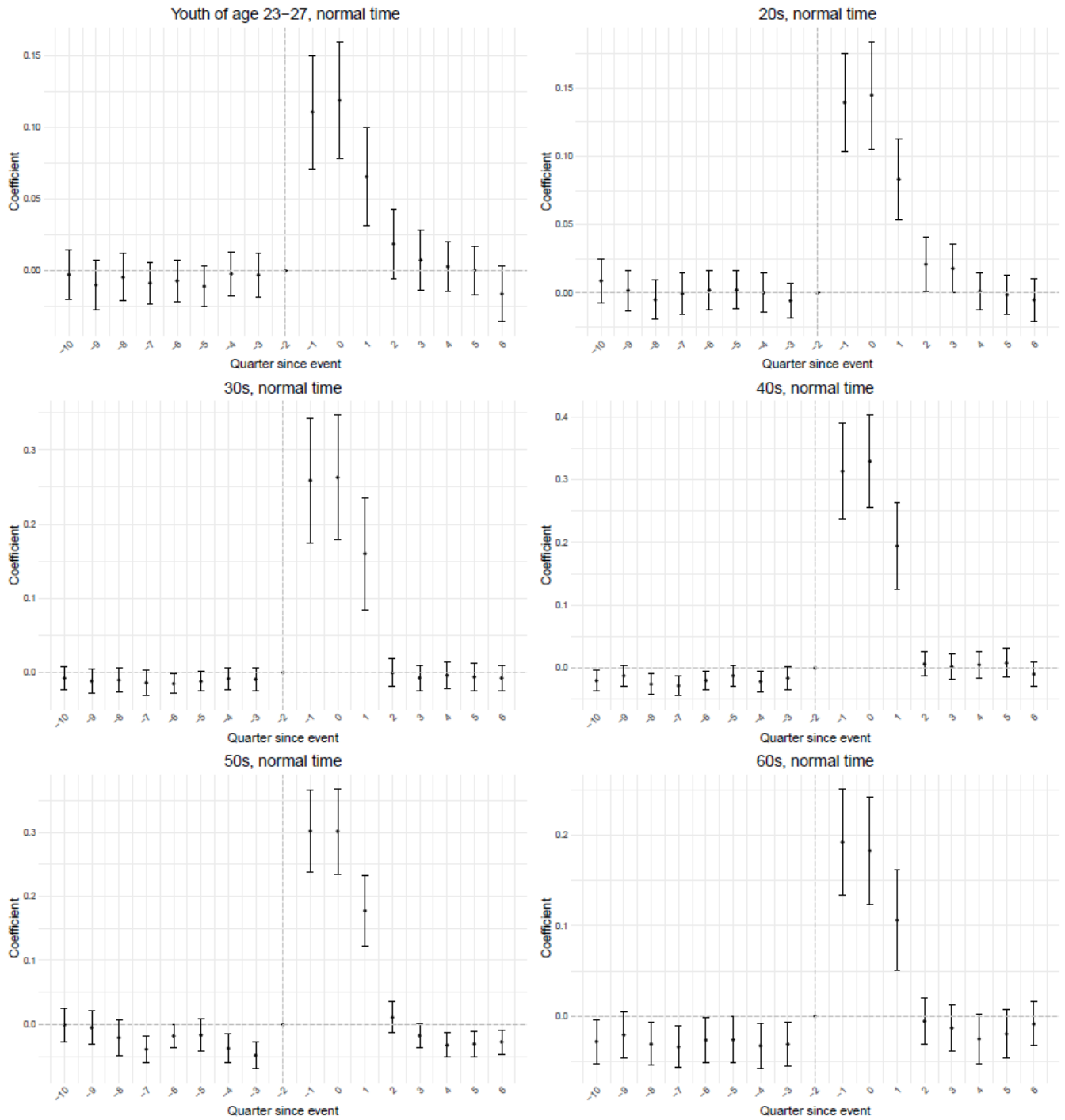
Notes: Figure values reflect event study estimates of the effect of a worker's job displacement on the likelihood of UI benefit receipt, based on expression (1). A worker is said to experience a job displacement if they separate from their primary employer in 2018Q2 and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

Figure 1b. Unemployment insurance receipt by age group around 2020Q2 mass layoff

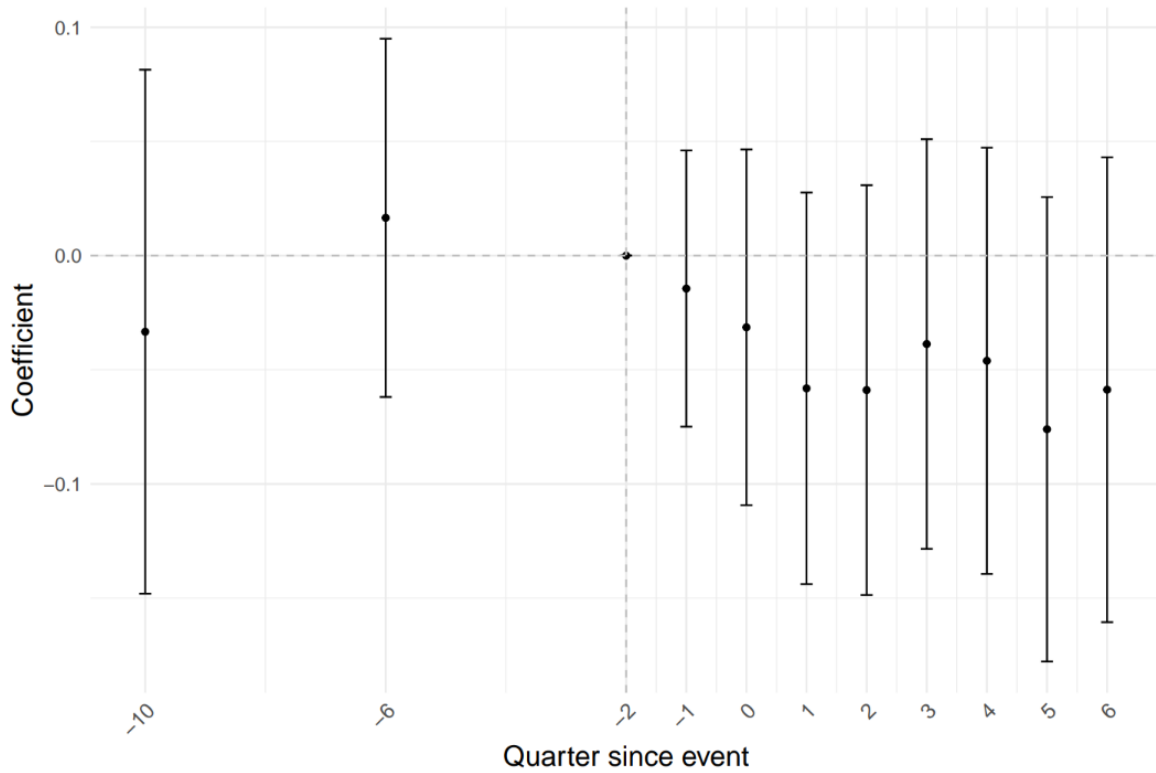*Notes*: Figure values reflect event study estimates of the effect of a worker's job displacement on the likelihood of UI benefit receipt, based on expression (1). A worker is said to experience a job displacement if they separate from their primary employer in 2020Q2 and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

Figure 2. Credit card balance estimates by age group after 2018Q2 mass layoff

Notes: Figure values reflect event study estimates of the effect of a worker's job displacement on the inverse hyperbolic sine of credit card balance, based on expression (1). A worker is said to experience a job displacement if they separate from their primary employer in 2018Q2 and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

Figure 3. Pandemic lender accommodations by age group after 2020Q2 mass layoff

Notes: Figure values reflect event study estimates of the effect of a worker's job displacement on the likelihood of receiving a lender accommodation, based on expression (1). A worker is said to experience a job displacement if they separate from their primary employer in 2020Q2 and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

Figure 4. 20s workers' rate of moving to co-residence with elders after 2018Q2 mass layoff
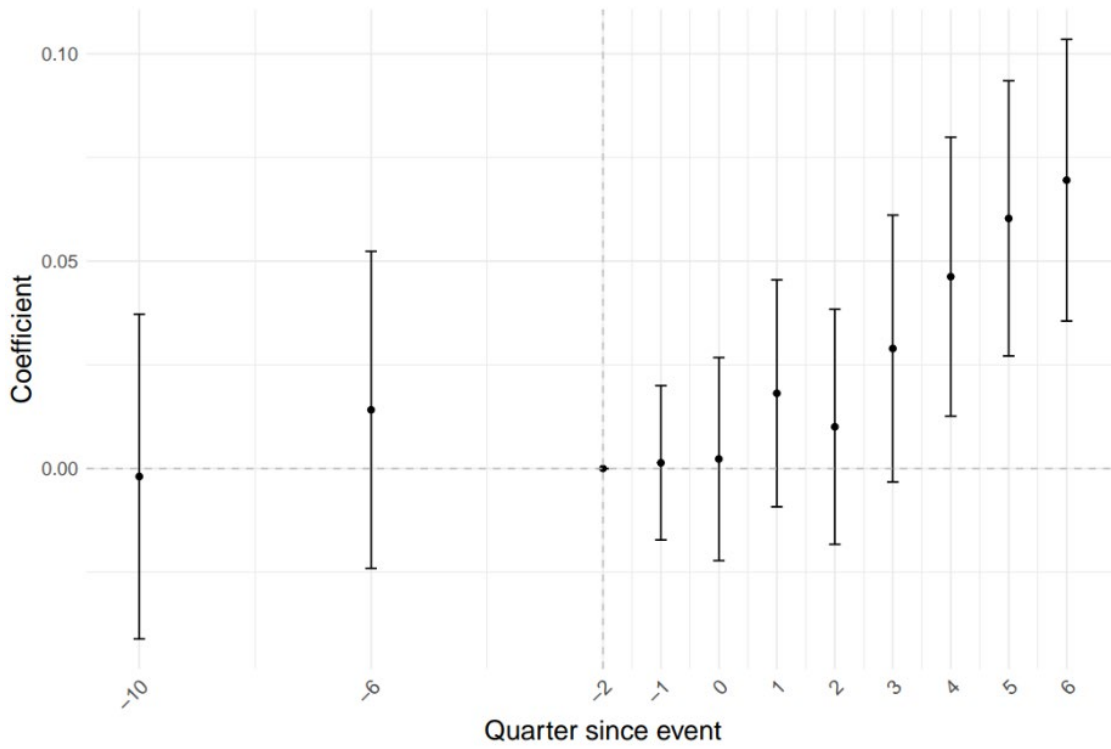
Notes: Figure values reflect event study estimates of the effect of a young worker's job displacement on the probability that the young worker, initially living independently, enters co-residence with an elder, based on expression (1). A worker is said to experience a job displacement if they separate from their primary employer in 2018Q2 and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

Figure 5. 20s workers' rate of becoming a shared credit beneficiary after 2018Q2 mass layoff

Notes: Figure values reflect event study estimates of the effect of a young worker's job displacement on the probability that the young worker, who initially lacked shared credit, newly receives a shared credit account, based on expression (1). A worker is said to experience a job displacement if they separate from their primary employer in 2018Q2 and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

Figure 6. The estimated difference in unemployment insurance receipt between 20s workers in intergenerational co-residence and living independently, derived from specification (2), after 2018Q2 mass layoff (Panel A) and 2020Q2 mass layoff (Panel B)
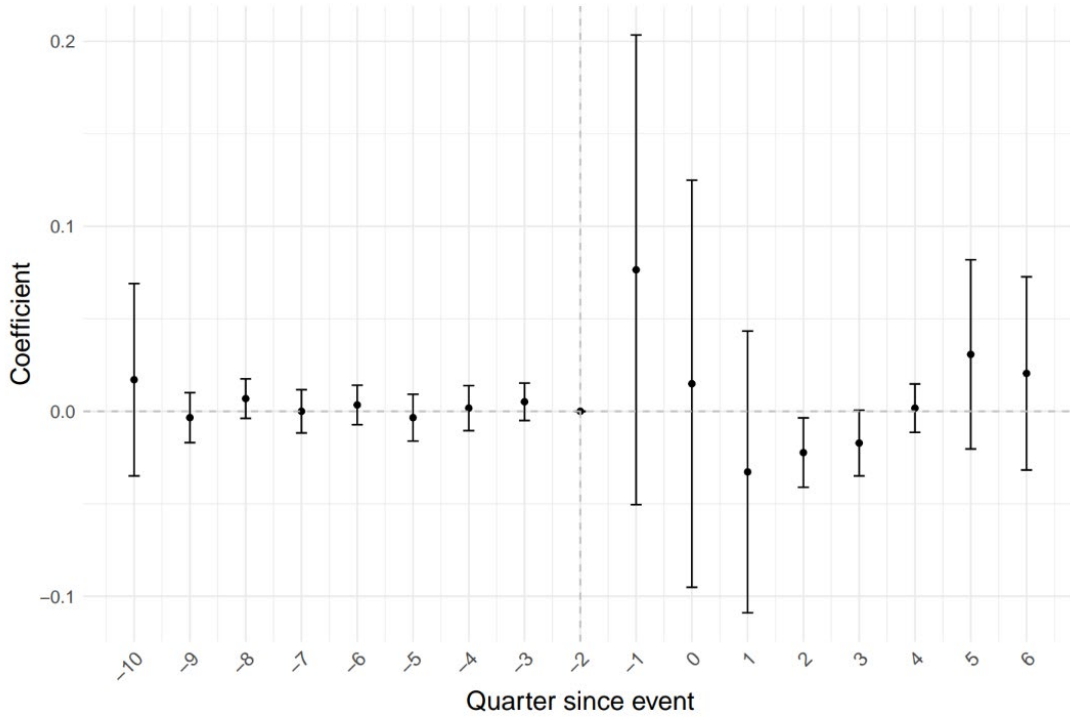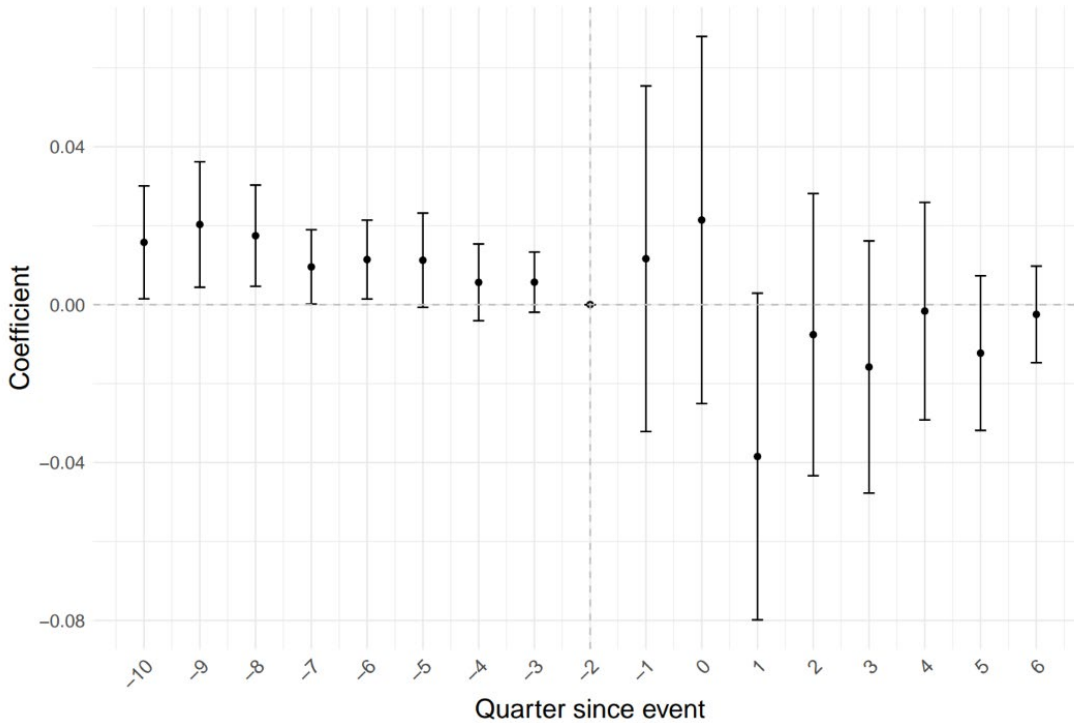
Panel A.
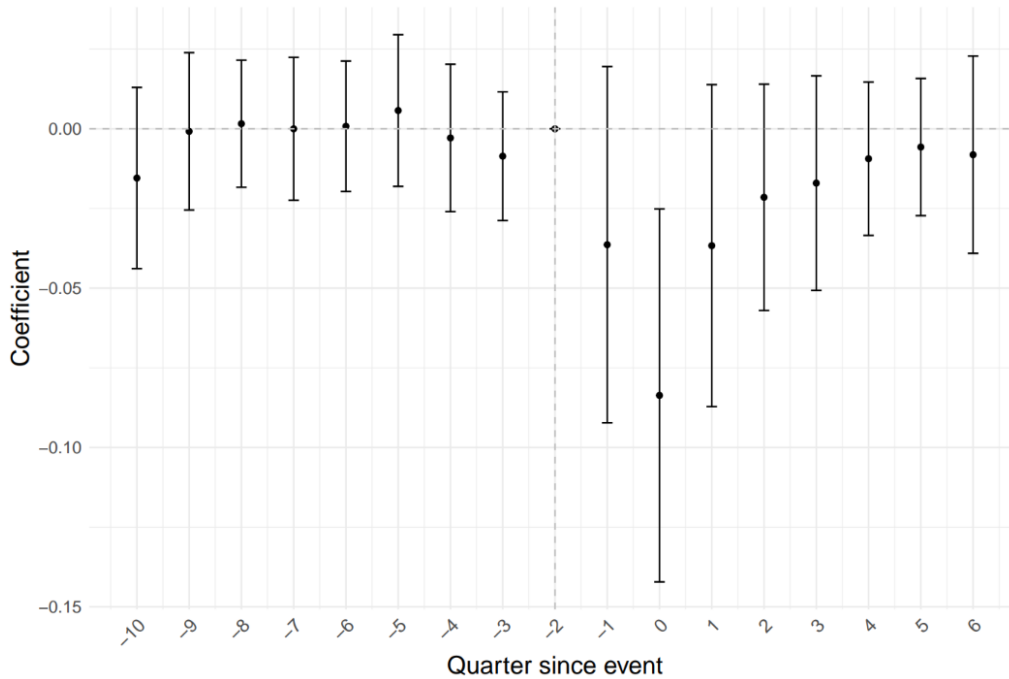
Panel B.
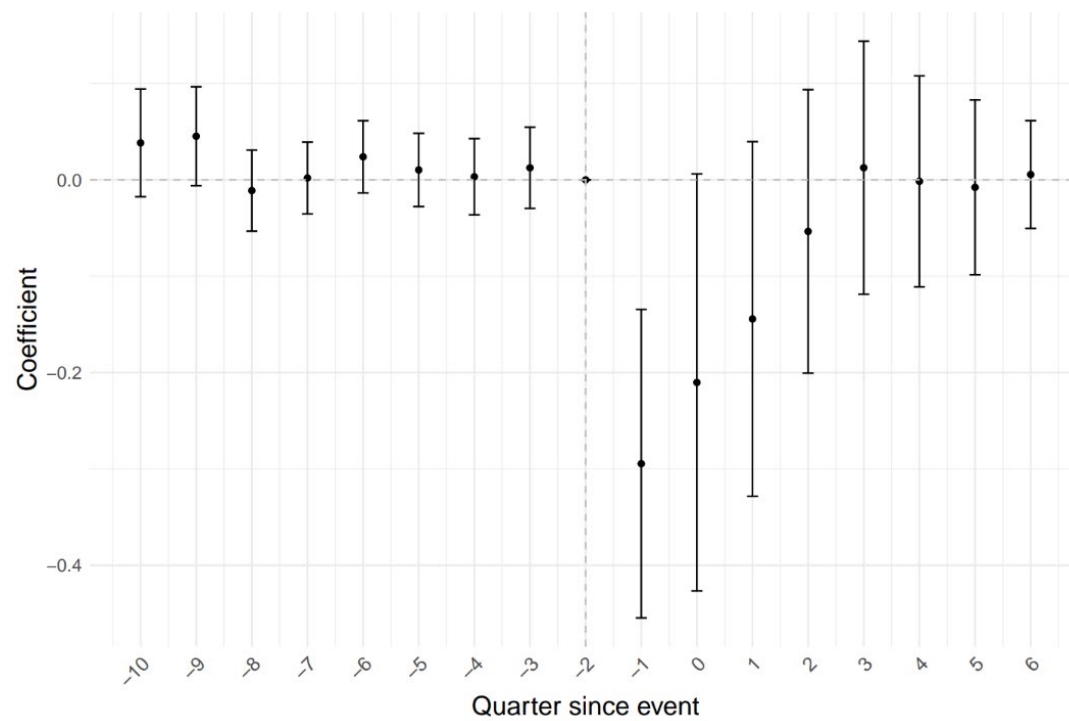
Notes: A worker is said to experience a job displacement if they separate from their primary employer and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

Figure 7. The estimated difference in UI benefit receipt in response to job displacement between 20s workers with and without shared credit, 2018Q2 layoff (Panel A) v. 2020Q2 layoff (Panel B)
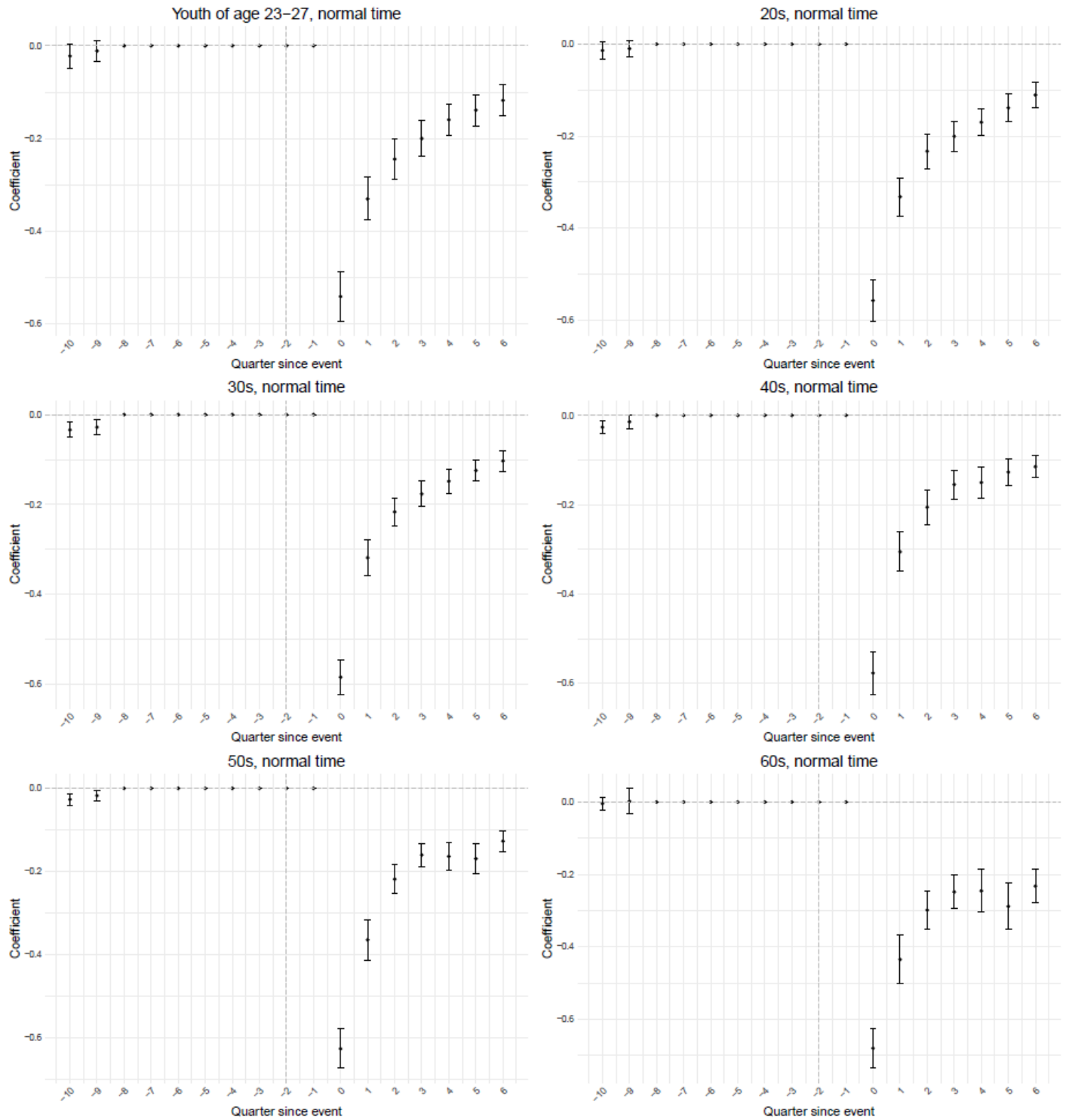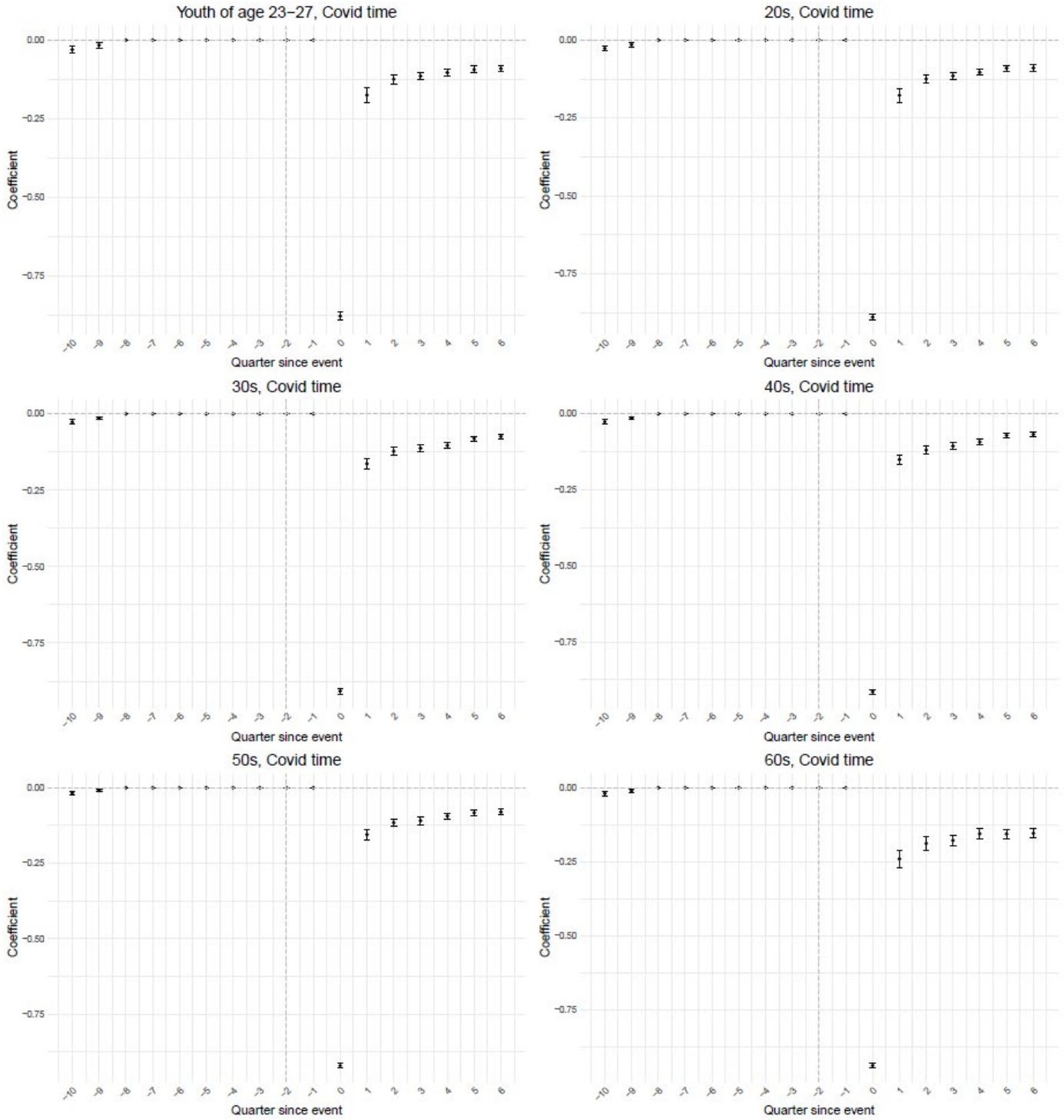
Panel A.

Panel B.

Notes: Estimates based on specification (2). A worker is said to experience a job displacement if they separate from their primary employer and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

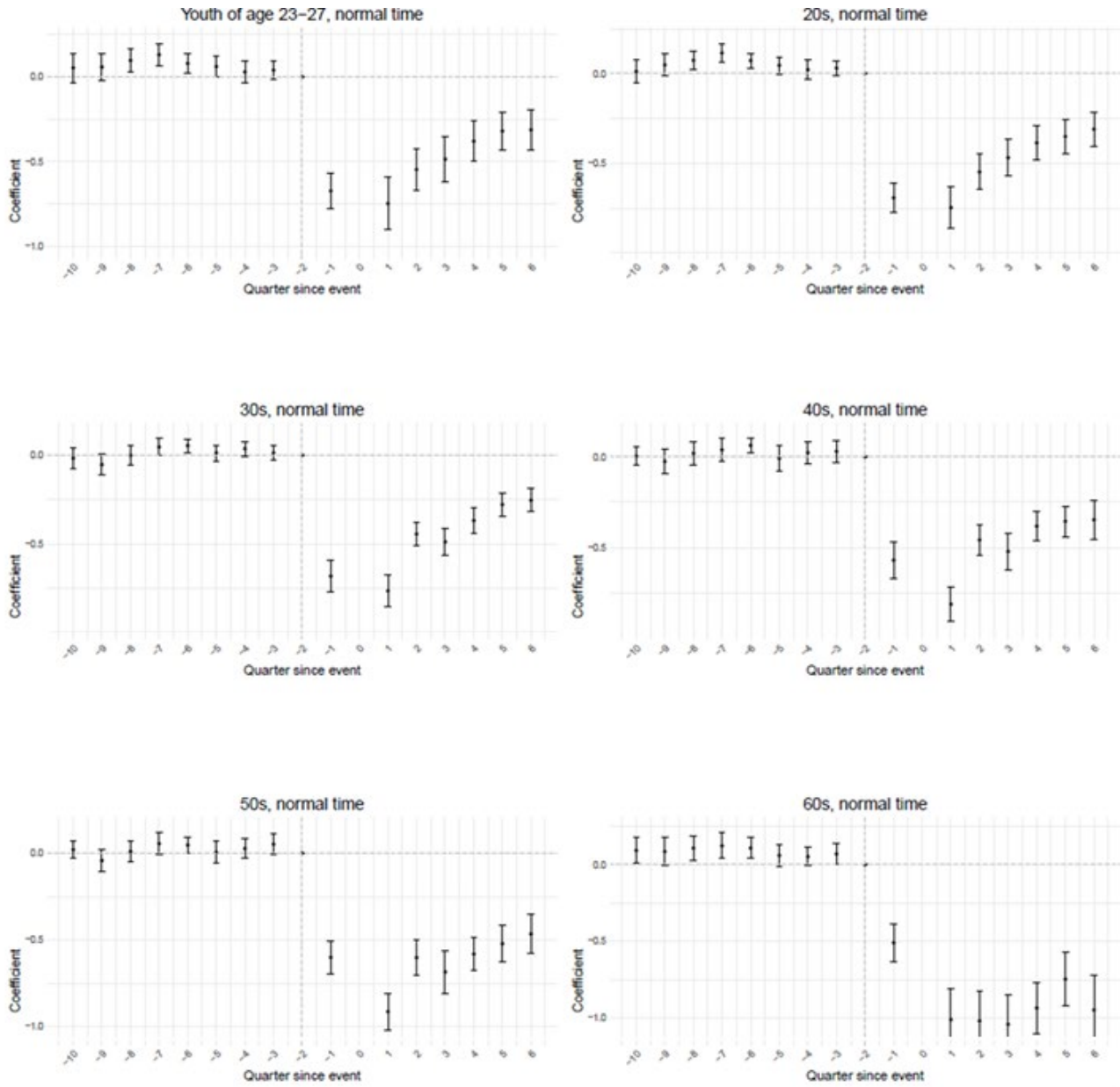Figure 8a. Employment recovery by age group after 2018Q2 mass layoff

Notes: Figure values reflect event study estimates of the effect of a worker's job displacement on the likelihood of being employed after *k* quarters, based on expression (1). A worker is said to experience a job displacement if they separate from their primary employer in 2018Q2 and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

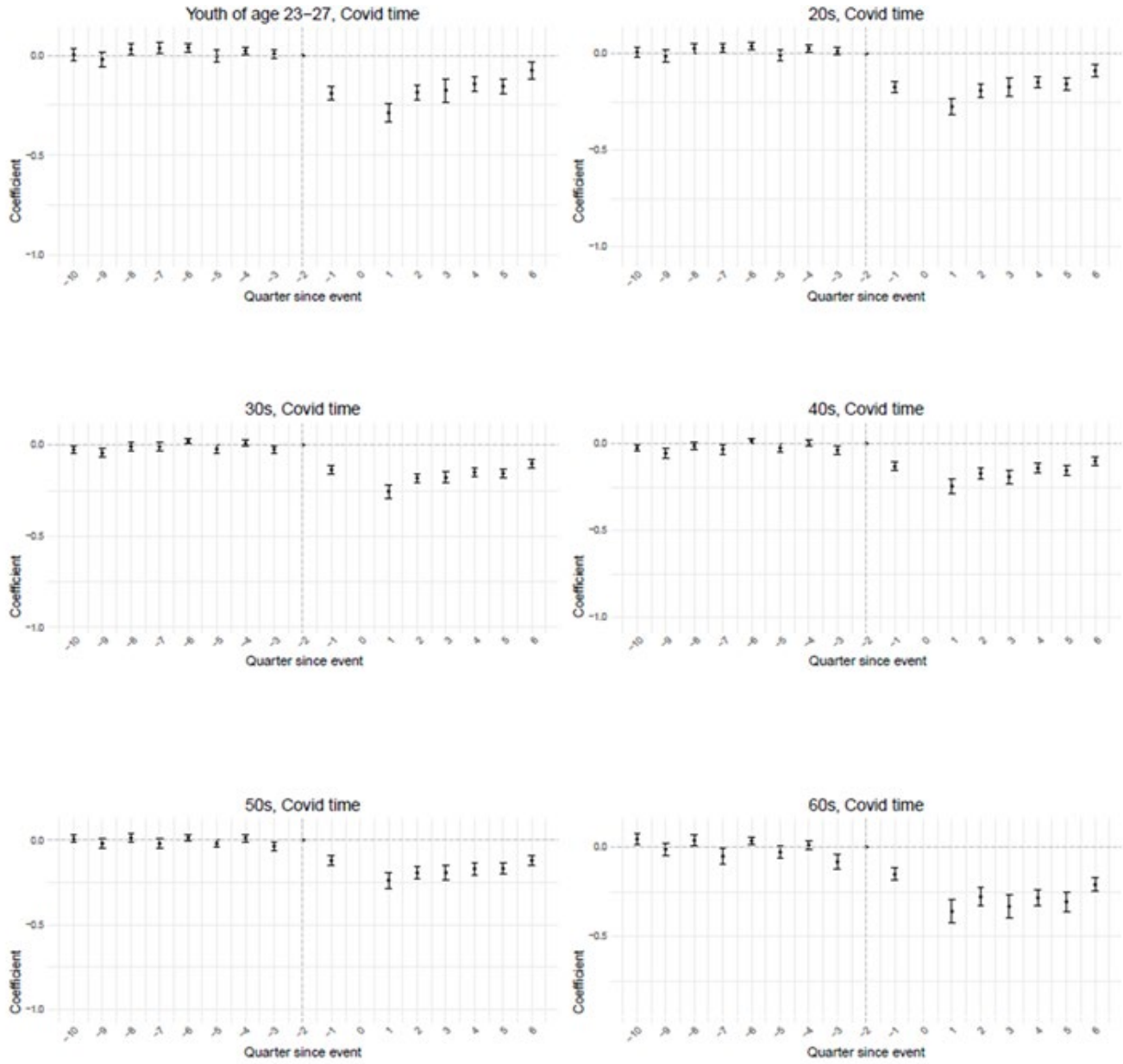Figure 8b. Employment recovery by age group after 2020Q2 mass layoff

Notes: Figure values reflect event study estimates of the effect of a worker's job displacement on the likelihood of being employed after *k* quarters, based on expression (1). A worker is said to experience a job displacement if they separate from their primary employer in 2020Q2 and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

Figure 9a. Conditional log earnings estimates by age group after 2018Q2 mass layoff

Notes: Figure values reflect event study estimates of the effect of a worker's job displacement on log earnings conditional on employment k quarters after separation, based on expression (1). A worker is said to experience a job displacement if they separate from their primary employer in 2018Q2 and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

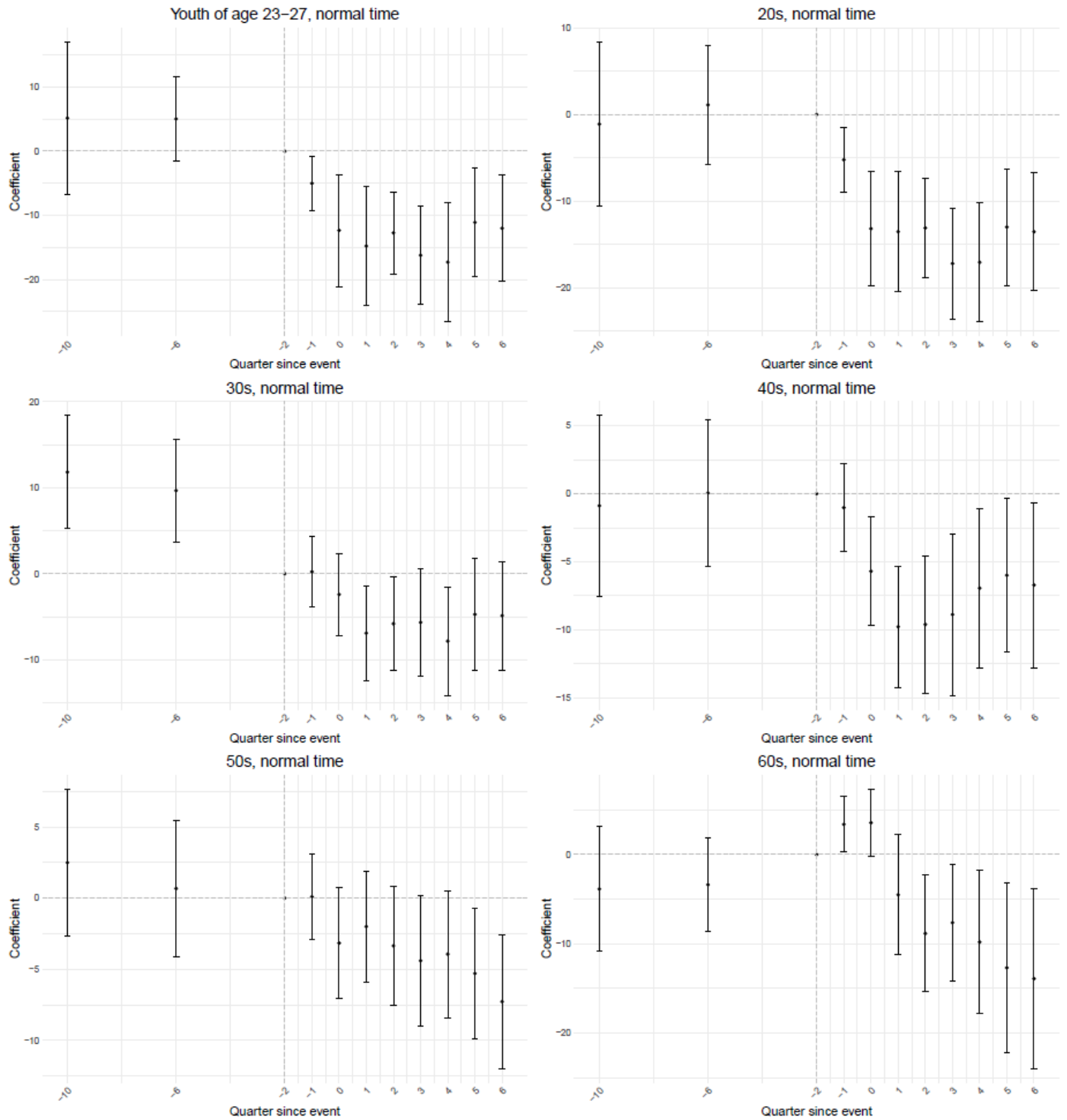Figure 9b. Conditional log earnings estimates by age group after 2020Q2 mass layoff

Notes: Figure values reflect event study estimates of the effect of a worker's job displacement on log earnings conditional on employment *k* quarters after separation, based on expression (1). A worker is said to experience a job displacement if they separate from their primary employer in 2020Q2 and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

Figure 10. Credit score estimates by age group after 2018Q2 mass layoff

Notes: Figure values reflect event study estimates of the effect of a worker's job displacement on credit score, based on expression (1). A worker is said to experience a job displacement if they separate from their primary employer in 2018Q2 and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

Figure 11. Earnings recovery by co-residence: Conditional earnings recovery difference, young workers who live independently v. co-reside with elders, 2018Q2 layoff (Panel A) & 2020Q2 layoff (Panel B)
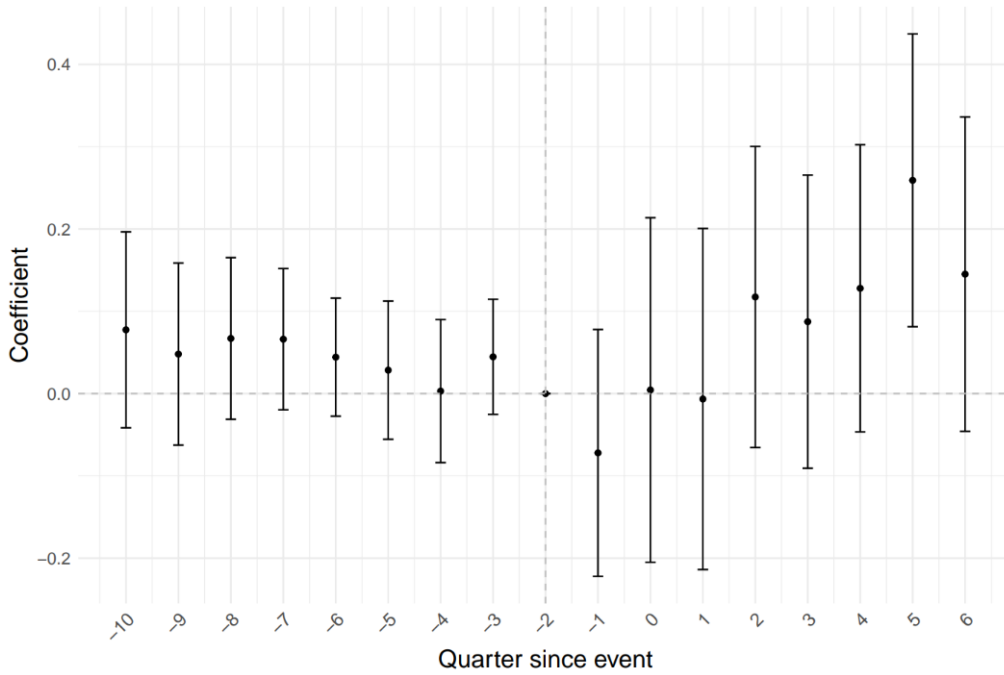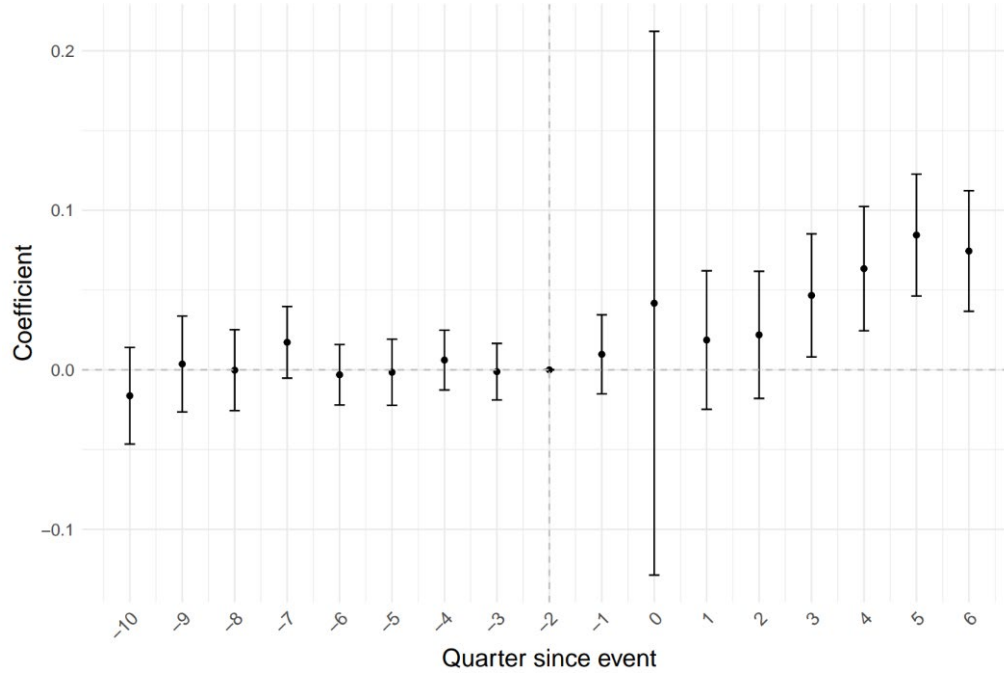
Panel A.

Panel B.

Notes: Estimates based on specification (2). A worker is said to experience a job displacement if they separate from their primary employer and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

Figure 12. Earnings recovery by family AUA: Conditional earnings recovery difference, young workers who do v. do not receive shared credit from elders, 2018Q2 layoff (Panel A) & 2020Q2 layoff (Panel B)
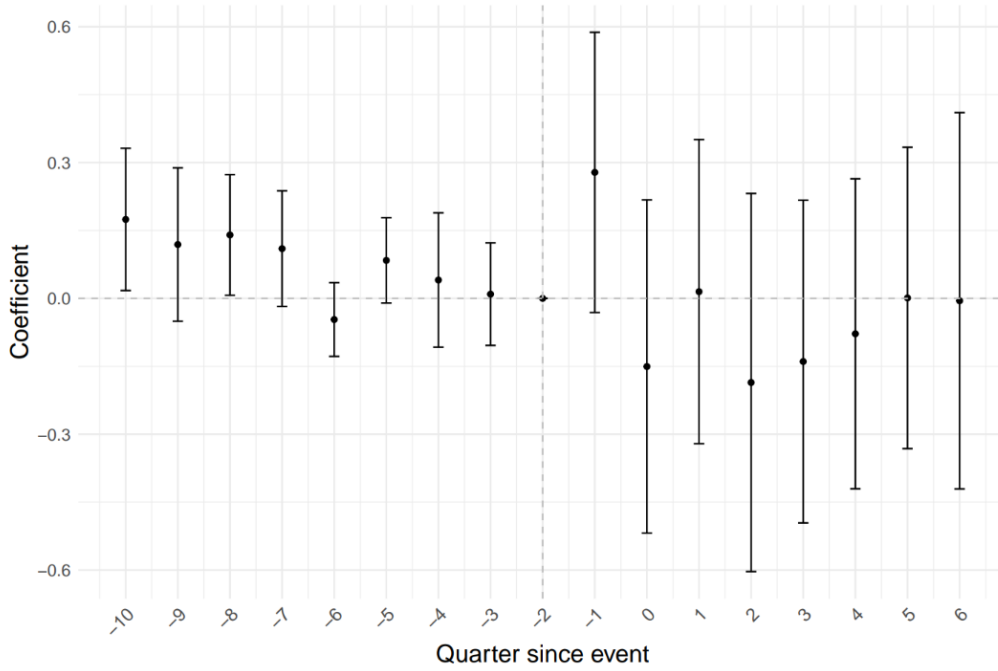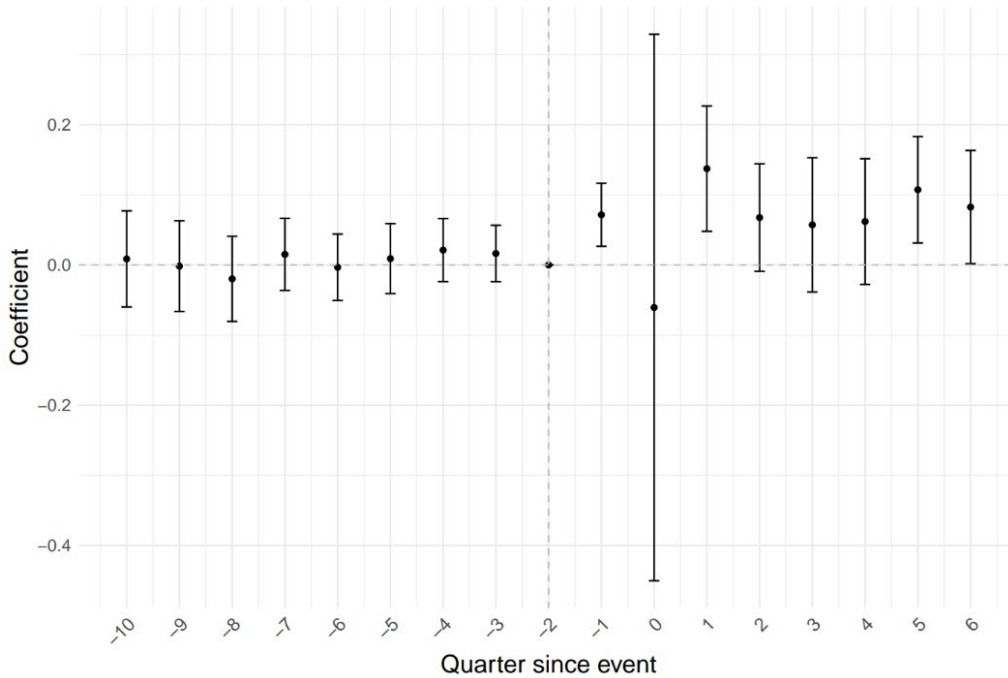
Panel A.

Panel B.

Notes: Estimates based on specification (2). A worker is said to experience a job displacement if they separate from their primary employer and display a fifty percent or greater decline in earnings. Error bars represent 95% confidence intervals.

Tables

Table 1. Pre-pandemic and Pandemic Sample Sizes

Age	Pre-pandemic			Pandemic		
	Control	Treated	All	Control	Treated	All
23-27	2,146	444	2,590	4,667	5,339	10,006
20s (23-29)	3,482	622	4,104	8,185	7,848	16,033
30s	7,149	873	8,022	16,903	10,721	27,624
40s	8,905	806	9,711	19,192	10,912	30,104
50s	9,298	757	10,055	21,893	10,552	32,445
60s	2,716	392	3,108	8,451	5,773	14,224
All	33,696	3,894	37,590	79,291	51,145	130,436

Note: This table shows the number of workers contained in each sample. The *pre-pandemic* sample includes the period from the last quarter of 2015 to the last quarter of 2019. The *pandemic* sample includes the period from the last quarter of 2017 to the last quarter of 2021. The *treated* group consists of individuals who worked for the same mass-layoff firms for eight quarters before separating from the firm and displaying fifty percent or less of pre-seaparation earnings in the subsequent quarter. The control group consists of individuals who worked for the same mass-layoff firms throughout the period.

Table 2. Summary statistics of workers before job displacement – all ages

	Pre-pandemic				Pandemic			
	Control	Treated	Difference		Control	Treated	Difference	
Averages								
Age	44.8	43.0	-1.8	***	45.3	43.7	-1.6	***
Quarterly earnings	15,143.8	11,818.1	-3325.7	***	16,403.8	11,195.7	-5208.1	***
% who are								
Male	53.9	49.1	-4.8	***	52.7	50.1	-2.6	***
Single	20.8	26.1	5.3	***	19.2	26.3	7.1	***
Married	60.7	52.7	-8	***	60.7	51.9	-8.8	***
Of unk marital status	18.6	21.2	2.6	**	20.1	21.8	1.7	***
% who have								
Credit scores	96.9	95.9	-1.0	**	97.2	96.8	-0.4	***
Any debt	87.6	77.3	-10.3	***	90	81.7	-8.3	***
Any card debt	75.7	61.3	-14.3	***	79.3	67.4	-11.9	***
Averages among > 0								
Credit score	682	636	-46	***	698.5	650.7	-47.8	***
Total debt	84,595	66,349.5	- 18,245.5	***	95,732.4	65,042.1	-30,690.3	***
Card debt	7,273.5	5,941.4	-1,332.1	***	7,169.5	5,732.1	-1,437.4	***
20s only: % who								
Share credit	6.8	6.3	-0.5		8.5	6.4	-2.1	***
Co-reside	51	56.1	5.1	**	47.6	52.6	5	***

Notes: The summary statistics for the pre-pandemic and post-pandemic samples represent 2017Q4 and 2019Q4, respectively.

Table 3. Percent of young workers in industries before job displacement

2-digit NAICS	Description	Pre-pandemic		Pandemic	
		Control	Treated	Control	Treated
11	Agriculture, Forestry, Fishing, Hunting	0.5	0.4	0.5	0.0
21	Mining, Quarrying, Oil & Gas Extract.	0.7	0.0	0.4	0.3
22	Utilities	0.2	0.0	0.1	0.0
23	Construction	7.4	2.0	7.3	2.8
31-33	Manufacturing	11.6	7.3	15.3	9.7
42	Wholesale Trade	3.6	2.9	3.0	2.5
44-45	Retail Trade	11.0	12.7	9.0	9.6
48-49	Transportation and Warehousing	6.8	3.7	5.0	3.4
51	Information	1.9	1.3	1.0	1.3
52	Finance and Insurance	4.4	3.3	2.8	2.0
53	Real Estate and Rental and Leasing	1.5	2.2	0.8	1.5
54	Profess'l, Scientific, & Tech. Services	4.5	5.1	4.1	3.2
55	Mgmt. of Companies & Enterprises	2.2	1.1	1.3	1.3
56	Admin, Support, Waste & Remediation	6.6	17.8	5.4	9.8
61	Educational Services	5.7	2.9	16.0	1.7
62	Health Care and Social Assistance	9.6	13.6	8.8	11.9
71	Arts, Entertainment, and Recreation	5.5	3.1	4.6	4.4
72	Accommodation and Food Services	11.6	19.3	10.1	31.0
81	Other Services (no Public Admin.)	2.7	0.9	2.5	3.4
92	Public Administration	2.0	0.4	2.0	0.2

Notes: Numbers indicate the percent of young workers (23-27) in each 2-digit NAICS industries before job displacement, as of 2017Q4 (pre-pandemic) and 2019Q4 (post-pandemic).