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Caregiving and Labor Supply: New Evidence from Administrative Data
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ABSTRACT

A significant share of the rapidly growing demand for long-term care is met by family members, many of whom also work, and family caregiving has been shown to affect labor market outcomes. We use survey responses about family caregiving roles linked to administrative earnings records to estimate the employment trajectories of family caregivers over a 25 year period around the reported start of a caregiving episode. These trajectories vary significantly by gender. Relative to a matched comparison group, caregiving precipitates a drop in both earnings and employment for women, while men only enter caregiving after experiencing significant labor supply disruptions.

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1 Introduction

The US population is aging rapidly, with the number of Americans ages 65 and older expected to double by 2050. As approximately one-third of adults in this age range report multiple functional limitations, the number of people requiring long-term, non-acute care is projected to increase significantly (Hagen 2013). Much of the growing demand for long-term care is met by unpaid caregivers, most commonly family members (Weber-Raley and Smith 2015), and the impacts of caregiving on family caregivers is a topic of growing policy concern. While family-provided care may be an affordable – and even preferable – alternative to formal care, its toll on the economic well-being of caregivers, more than half of whom are also formally employed, is well documented (Freedman and Wolff 2020). Evidence from the US suggests that caregiving affects labor supply on both the intensive and extensive margins: caregivers are more likely than non-caregivers to stop working, exit the labor force, or work at reduced hours and wages as a result of their caregiving obligations (Fahle and McGarry 2017; Van Houtven et al. 2013; Skira 2015; Ettner 1996). The opportunity cost of unpaid family care has been estimated at as much as $5 billion in terms of lost wages alone (Chari et al. 2015).

Although it is known that caregiving reduces labor supply, there is less evidence on how rapidly the adverse labor supply impacts arise once individuals begin providing care.[1] Additionally, despite frequently-cited methodological concerns about selection into caregiving based on unobserved characteristics, reverse causality due to labor market shocks, or pre-caregiving anticipation bias (Van Houtven et al. 2013), there is virtually no research on the evolution of labor supply in the years *before* the start of a caregiving spell. An accurate accounting of the costs of family caregiving requires understanding the nature and timing of potential pre-caregiving trajectories, for example anticipation effects among those who expect to be future caregivers and labor supply disruptions (possibly associated with earlier caregiving experiences) that may propel some workers out of the labor force and into the caregiving role.

These evidence gaps are driven in part by data limitations: observing labor supply trajectories requires high frequency, longitudinal observations of employment outcomes and caregiving status. We bridge these gaps by combining repeated cross-sectional survey data about family caregiving roles with longitudinal administrative data on labor supply to estimate the dynamic relationship

[1] Skira (2015) is the only paper that we are aware of that takes a dynamic perspective in the US context, Schmitz and Westphal (2017) studies the dynamics of employment after caregiving in the German context.

between caregiving and employment outcomes for new caregivers.[2] We identify caregivers using four panels of the Survey of Income and Program Participation (SIPP) between 1996-2008, a nationally representative survey following households for up to six years with interviews occurring every four months. Along with a core longitudinal questionnaire that collects monthly earnings and employment information, the SIPP includes a range of cross-sectional topical modules, including a series of questions about unpaid care provided to family and friends. Using information collected in this module, we identify respondents who are unpaid caregivers and determine the year in which they started providing care. We then link SIPP respondents to their Social Security Administration earnings records to create a panel that allows one to observe annual earnings for caregivers well outside the range of the SIPP survey – up to 33 years before and 10 years after the start of a caregiving spell.

Our objective is to understand how labor supply evolves before and after caregiving begins, and how these paths vary by gender and age of caregiving onset. We start by plotting the earnings and employment trajectories of caregivers before and after the start of a caregiving spell and we compare these trajectories to those of a comparison group of non-caregivers. To construct the comparison group, we match caregivers to SIPP respondents with identical demographic characteristics and similar earnings and employment trajectories more than a decade before the start of a caregiving episode. Compared to the labor supply trajectories of non-caregivers, we show that the start of caregiving coincides with decreases in employment and earnings. We also document differences in labor supply trajectories for some caregivers in the decade prior to the start of a care spell, suggesting important pre-caregiving episode dynamics.

The trajectories in employment and earnings vary by gender and by the age at which caregiving starts. Women who start caregiving at younger ages experience stalled earnings growth before a caregiving episode begins, and a sharp decrease in earnings and employment that persists for five or more years after they become caregivers. For women who start caregiving in their 50s and 60s, declines in earnings and employment relative to a comparison group are both smaller and less persistent. The picture for men is different. Men's labor supply does not seem to respond to the start of caregiving in the same way that women's labor supply does. Instead, men who start caregiving before age 62 experience declines in earnings and employment as early as ten years before they begin caregiving — and their labor supply doesn't recover to the same level as their matched comparison group for at least 10 years after they take on a caregiving role. Men who

[2]We define new caregivers as those who have been caregiving for two years or less.

start caregiving after age 62 do not deviate from their matched counterparts and their labor supply trends smoothly through the caregiving transition.

Next, we use a non-parametric event-study specification to formally estimate the labor supply trajectories of caregivers relative to a comparison group while accounting for individual heterogeneity and both life-cycle and period trends, using age, calendar year, and individual fixed effects. The event study estimates confirm the different dynamics for male and female caregivers before and after the start of a caregiving spell that we observe in the unadjusted comparisons. While female caregivers are on parallel trends with their matched comparison group for over a decade preceding the start of a care spell, the employment and earnings of male caregivers are on a much steeper downward trajectory. We find that earnings and employment begin to decline for women in the year before the start of a caregiving episode and drop by six percent (earnings) and three percent (employment) in the first two years after the start of a caregiving episode, after which they gradually recover. However, for men who become caregivers, employment does not return to pre-caregiving trends until nearly nine years after the start of a caregiving episode. Declines in earnings and employment for male caregivers are more persistent and continue to fall in the first five years after the start of a caregiving spell.

We then employ a stacked difference-in-differences research design, exploiting variation in the timing of caregiving spells among caregivers to compare the outcomes of current caregivers to a comparison group of those who will become caregivers in the near future. This comparison group of future caregivers is similar to the treated group in expectation of future caregiving, but hasn't started caregiving yet (Fadlon and Nielsen 2021; Deshpande and Li 2017). This approach allows us to estimate the ex-post employment response to a self-reported caregiving spell, net of any selection into caregiving or long-running unobserved dynamics among future caregivers. We show that, similar to the matched research design, the likelihood of employment falls by an average of four percent for women in the first two years following the start of a caregiving spell, while earnings fall by a statistically insignificant 4.2 percent. Both outcomes return to the pre-caregiving trend within five years. Once again, men experience pronounced changes in outcomes well before the start of a caregiving episode that are similar in magnitude to the fall in earnings and employment at the realized start of caregiving. From these results we conclude that the pre-caregiving dynamics that we observe for men are not due to the anticipation of future caregiving roles or any smoothly evolving trends among caregivers, but rather discrete labor market shocks.

Having established that men experience labor market disruptions that precede caregiving

episodes, we shed further light on these patterns by examining heterogeneity in trajectories by education. We do not find that the disruptions in employment preceding caregiving episodes are concentrated among men with low levels of education, as we might expect if the intersection of poor health, low earnings and discontinuous labor supply were the driving forces behind the observed patterns. We also test if labor supply disruptions of male future caregivers coincide with transitions into retirement or health shocks by including Social Security retirement benefit claiming and Social Security Disability (SSDI) eligibility as additional outcomes, and do not find any evidence that these factors contribute significantly to our observed results. Although we lack direct evidence, we cautiously conclude that the patterns we observe for men are most consistent with unforeseen disruptions in the labor market, which create circumstances conducive for men to assume caregiving roles.

Our study contributes directly to a literature examining trade-offs between providing care to family members with functional or cognitive limitations and formal employment. Most studies on this topic estimate the effect of caregiving on employment-related outcomes, and report mixed results for both the extensive margin of employment and the intensive margins of wages and hours.[3] Other studies instead estimate the effect of changing employment opportunities on the likelihood that working age adults will provide care, and consistently find that family caregiving increases as the opportunity cost of caregiving, in terms of forgone employment opportunities, decreases (Mommaerts and Truskinovsky 2020; He and McHenry 2015; Costa-Font et al. 2016).

We build on this literature in several ways. First, most of the aforementioned studies focus on estimating causal effects of caregiving on static labor supply outcomes. In contrast, ours is the first study to estimate high-frequency, dynamic labor supply trajectories for a decade or more both before and after the start of a caregiving spell. This is made possible by our unique usage of the SIPP-SSA linkage to identify caregivers in administrative data in the US context. Our approach uncovers striking differences in the labor supply histories of male and female caregivers: while caregiving significantly reduces the employment and earnings of women for multiple years, men who become caregivers experience employment and earnings shocks long before they take on the caregiver role.

Furthermore, most studies rely on surveys (including the Health and Retirement Survey and sister studies in Europe) that sample individuals over 50 and measure care provided by adult

[3]See, for example, Ettner (1996); Carmichael et al. (2010); Van Houtven et al. (2013); Skira (2015); Fahle and McGarry (2017); Bolin et al. (2008); Carmichael and Charles (2003); Schmitz and Westphal (2017); Frimmel et al. (2020); Arrieta and Li (2023) for studies based in the US and Europe.

daughters to elderly parents. Meanwhile, half of all family caregivers in the US were between the ages of 18 and 49 in 2009 and 40% of family caregivers are men (National Alliance for Caregiving and AARP 2009). The SIPP is a nationally representative sample of the full US population, providing a more complete picture of caregiving in the US. Additionally, the SIPP surveys respondents who care for a diverse set of care recipients, including friends, neighbors, and extended relatives. As we document, a surprisingly high amount of care is provided to people who are not spouses or parents, a trend that is mirrored in national statistics (National Alliance for Caregiving and AARP 2009; Houser et al. 2015).

Our paper also complements recent studies of the impact of health shocks on family members' health and employment outcomes (Frimmel et al. 2020; Fadlon and Nielsen 2021; Rellstab et al. 2020; Arrieta and Li 2023). These studies focus on sudden and unanticipated health events, such as heart attack or stroke, to establish a plausibly causal research design. We instead rely on self reports to identify caregiver status and do not restrict our analysis to unexpected health shocks. Although self-reported caregiver status poses econometric identification challenges, this is a key parameter from the perspective of policy, as workers with care responsibilities must self-identify in order to access benefits such as paid family leave and caregiver tax credits. While this may be straightforward in the context of a discrete health shock, it is less clear when disease symptoms and care needs are progressive, such as is often the case with dementia. Our analysis highlights the complexities of the caregiver role and its relationship to labor supply which can be used for more effective and targeted policy design.

Finally, our study is related to a considerable literature looking at the dynamic relationship between caregiving and employment that centers on the effect of bearing and caring for children and on women's labor force participation (for example, Goldin (2006); Goldin and Mitchell (2017); Blau and Kahn (2007)). This literature conceptualizes the costs of caregiving as being incurred both after children are born in the form of reduced hours or wages, as well as through decisions made in the anticipation of child care needs, in the form of forgone education or employment opportunities (Goldin and Katz 2002; Kleven et al. 2019; Adda et al. 2017; Hotz and Miller 1988). Our long-range panel and approach allow us to distinguish "up-front" labor supply costs from the ex-post costs of realized caregiving. If the up-front costs are significant, causal estimates of the static effect of caregiving on labor supply could be dramatically under-valuing the costs of family caregiving. Although we do not find explicit evidence of anticipatory effects, we do uncover significant disruptions in employment that precede care episodes, underscoring the value of a

long-term dynamic analysis of the relationship between work and caregiving.

2 Data

We use the 1996, 2001, 2004 and 2008 panels of the Survey of Income and Program Participation (SIPP).[4] Each panel follows a nationally representative sample of US households for between two and a half to six consecutive years, with regular interviews at four month intervals (referred to as "waves"). Along with the core longitudinal survey, which collects monthly information on demographics, employment, earnings, and program participation, in some waves households respond to topical modules that provide detailed but cross-sectional information on specific topics, including informal caregiving.

We identify caregivers from the informal care topical module, which is administered two to three years into the longitudinal panel and asks all respondents the following question: "There are situations in which people provide regular or unpaid care or assistance to a family member or friend who has a long-term illness or a disability. During the past month, did you provide any such care or assistance to a family member or friend living here or living elsewhere?" Respondents who identify as caregivers on the basis of this question then provide details about who they provide care to, and for how many years they have been providing care (less than one year, one year, two years, etc). Focusing on respondents who have been providing care for two years or less ("new" caregivers), we use this retrospective information to identify the year in which the self-reported caregiving episode began.

We next make use of the SIPP's linkage to administrative earnings records from the Social Security Administration in order to construct a long panel of annual labor supply outcomes that follows caregivers for up to 33 years before and ten years after the start of a reported caregiving episode. The earnings data consist of wage and salary earnings and self-employment earnings as reported in the Summary Earnings Record and Detailed Earnings Record components of the Master Earnings File.[5] Wage and salary earnings originate from IRS Form W-2, and include wages and tips from all employers. Self-employment earnings come from IRS Form Schedule 1040 SE. We construct annual earnings variables that combine (un-topcoded) earnings from all wage and salary and self-employment jobs, indexed to 2018 dollars. We define individuals with positive earnings as employed in a given year. We use monthly data from the Master Beneficiary

[4] Earlier and later panels of the SIPP do not ask about informal caregiving.

[5] See Genadek et al. (2021) for a description of the Master Earnings File.

Record (MBR) to identify Old Age and Survivors Insurance (OASI, or retirement) beneficiaries and Disability Insurance (SSDI) eligibility. OAI beneficiaries include retired workers as well as dependents and survivors of workers; SSDI entitled refers to individuals who have a work-limiting disability entitling them to federal benefits, but who have not necessarily started receiving them yet (since SSDI entitlement precedes receipt by several months or more). We consider individuals as receiving OASI or eligible for SSDI benefits in a given calendar year if they receive benefits or, in the case of SSDI, become entitled to benefits for at least one month during the year.

The SIPP-SSA linkage is based on the respondent's Social Security number (SSN), and requires consent. In our sample of caregivers, 79% of respondents are matched to administrative data. Prior to the 2008 panel, respondents had to provide their SSN, so non-matches are due to a combination of non-consent and failure to recall. Starting with the 2008 Panel, the matching process was automated, so non-matches are due solely to non-consent. Appendix Table A1 compares demographic characteristics for the full SIPP sample and the sub-sample of new caregivers who do and do not have an administrative match. Respondents without an administrative match are younger, more likely to be Hispanic, and have lower levels of education than the matched sample. Caregivers and non-caregivers have similar match rates. Among new caregivers, unmatched respondents are more likely to be caring for a non-specified recipient ("other non-relative") or a child.

We note two important features of our measure of caregiving. First, this measure is subject to selection bias arising from length-biased sampling: the set of individuals who are observed in a caregiving spell at the time of the informal care topical module (a "stock" sample) will tend to over-represent those engaged in longer spells (Kiefer 1988). The retrospective inclusion of individuals who have provided any care in the last month mitigates the degree of bias in comparison to a screening question that would have collected information only from individuals actively providing care, but it is larger than if individuals had been asked to provide information about care ever provided. We further attempt to alleviate the selection bias by including only individuals who have started a caregiving spell within the last two years ("new caregivers"). The average caregiving spell lasts 4.5 years in most nationally representative estimates, though most estimates of caregiving duration are generated from a similar "stock" sample and will therefore suffer from the same bias (Houser et al. 2015; National Alliance for Caregiving and AARP 2009). In addition, any descriptive information about the details of caregiving, including intensity and tasks performed (with the exception of duration), only captures the nature of caregiving at the

time of the survey and we cannot observe how caregiving changes over time. In particular, this means that our sample of caregivers is right-censored: while we observe the reported start of a caregiving spell, we do not observe when it ends. Even though we observe the start of the reported caregiving spell, we do not observe any prior caregiving spells the individual may have had.

The second notable feature is that we rely on self-reports to determine caregiver status. Nationally representative surveys that use self-reports of care*givers* often result in significantly higher numbers of caregivers than estimates that rely on reports from their care recipients (Giovannetti and Wolff 2010). Among surveys that measure caregiving based on self-reports, the estimated number of caregivers also varies substantially based on differences in question wording (Freedman and Wolff 2020). The SIPP wording is relatively precise in that it asks about care provided to someone with a long-term illness or a disability specifically, although the wording is inclusive of care provided to a child or younger adult with a long-term illness or disability. Nonetheless, caregiving prevalence estimates from the SIPP are on the conservative end of the spectrum: 5% of adult respondents self-identify as caregivers in the SIPP, compared to 17% in the American Time Use Survey Eldercare Module.[6] However, there is likely significant heterogeneity in individuals' latent thresholds for reporting a caregiving spell that cannot be identified from this type of survey question.

2.1 Descriptive Statistics

We report sample statistics from the SIPP Informal Care Topical Module in Table 1, corresponding to Wave 9 for the 2008 panel and Wave 7 for the 1996, 2001, and 2004 panels. This cross-section includes 237,385 individuals age 18 and over.[7] Of these, 12,743 individuals, or 5% of the full sample, report having provided unpaid care in the past month. Column 1 presents means for the full sample of caregivers, while columns 2 and 3 present means by gender.

Table 1 first reports statistics describing the caregiving spell, including the recipient's relationship to the caregiver, for the full sample of SIPP caregivers. Some 16% of the sample is providing care to a spouse, 21% to a parent or a parent-in-law, and 19% care for another relative (including a grandparent, aunt/uncle or sibling). Remarkably, 25% of the sample is caring for a non-relative ("Other non-relative").[8] One quarter of the sample is caring for a child with a long-term illness or

[6]Calculated by authors and provided upon request. The ATUS asks about "care or assistance for an adult who needed help because of a condition related to aging" and the look back period is three months, rather than one month in the SIPP.

[7]The full SIPP sample includes respondents 15 and older.

[8]Percentages do not add up to 1 because individuals can specify up to four care recipients.

disability. The identity of the care recipient varies somewhat by gender: Men are more likely to be caring for spouses or children, and less likely to be caring for parents.

Table 1 also presents sample statistics on the duration of the current caregiving spell as reported by respondents, which we use to construct the longitudinal caregiving panel. Some 20% of caregivers started providing care within the last year, 17% have been providing care for a year and 16% have been providing care for two years. Nearly one-half the sample (47%) has been providing care for three years or longer. Men and women report similar caregiving duration. Because the distribution of observed care duration is biased towards longer spells (as described in the previous subsection), we restrict our analysis to "new" caregivers, those who have been providing care for two years or less.

New caregivers spend an average of 10.0 hours per week caring for 1.2 recipients, 71% of whom reside outside the caregiver's household. Some 39% of caregivers report provide help with Activities of Daily Living (ADLs), which include personal care tasks such as bathing, eating, and getting in and out of bed, and dressing, while 91% report providing help with Instrumental Activities of Daily Living (IADLs), which include help with chores and errands such as housekeeping and grocery shopping. Just under one-half of caregivers (48%) report providing help with medical tasks and 42% are the sole caregiver, highlighting that many caregivers in our sample are performing significant, time-intensive caregiving roles. Men provide one hour less of weekly care than women and are less likely to provide help with ADLs and medical tasks. Men are also less likely to provide care to somebody outside the household, in part because they are more likely to care for a spouse. Nonetheless, nearly one-third of male caregivers report providing help with ADLs, 40% report providing help with medical tasks, and they are nearly as likely as female caregivers to report being the sole care provider.

3 Empirical Approach

As caregiving status is not randomly assigned in the population, a key challenge for understanding the effect of caregiving on labor supply is to find an appropriate comparison group from which to measure counterfactual outcomes. Existing studies address this challenge by leveraging panel data techniques and instrumental variable strategies to control for unobserved heterogeneity. For example, Van Houtven et al. (2013) discuss endogeneity concerns in detail with respect to adult children caring for elderly parents, and propose a set of time-varying instruments (related to

parental health) to address these concerns. Their objective is to identify the (static) effect of realized caregiving on the outcomes of somebody who is induced into caregiving based on the changing health of their parent, compared to the counterfactual of a similar person whose parents' health did not change. Our objective is somewhat different. We take as given that caregiving is not randomly assigned for most individuals, and we aim to understand how labor supply evolves before and after caregiving responsibilities begin, and how that path differs by gender – bringing to light any apparent selection into caregiving that is correlated with employment outcomes. To this end, we use two different strategies to estimate counterfactual trends, constructing two different comparison groups, which allow us to conceptualize the caregiving "event" in two different ways.

3.1 Event-Study Specification

We first present our empirical specification before describing the construction of each comparison group in detail. We compare the evolution of earnings and employment as a function of event time for individuals who become a caregiver in a given year with a comparison group. Individual variation in the timing of caregiving allows us to trace out the full dynamic trajectory of both any anticipatory pre-caregiving trends and ex post responses to the start of caregiving. For both the caregivers and the comparison group, we designate $\tau = 0$ as the year in which they reported the start of a caregiving spell (or the placebo year), and index all other years relative to that year, resulting in a balanced panel of annual observations from $\tau = -16$ to $\tau = 9$.

For each research design, we estimate a non-parametric event study specification of the following form:

$$y_{i\tau} = \alpha_i + \gamma_t + \delta_{it} + \sum_{\tau} \mu_r D^{\tau} + \sum_{\tau} \eta_r (Treat_i \times D^{\tau}) + \varepsilon_{i\tau} \tag{1}$$

Here $y_{i\tau}$ is either earnings or employment for individual i in event-time τ. $Treat_i$ is an indicator for if the observation belongs to the caregiver (treatment) group, and the D^{τ} are indicators for event time, or time period relative to the start of the caregiving spell. We omit the event time dummy at $\tau = -13$, the reference period. The coefficients of interest, η_r are on the interactions between the treatment indicator and the full set of event time indicators and capture the changes in outcomes in the treatment group relative to the reference period while controlling for changing outcomes in the comparison group. We include calendar year fixed effects γ_t to control flexibly for time trends including business cycles, age fixed effects δ_{it} to control for lifecycle trends in labor supply, and individual fixed effects α_i to control for time invariant, individual heterogeneity that

might be correlated with both labor supply and caregiving. All standard errors are clustered at the individual level. To summarize the magnitude and statistical significance of the post-period effects, we estimate a version of Equation 1, replacing the individual event-time indicators with a single indicator for the post period.

3.2 Matched Comparison Group

We first use matching to identify a comparison group of demographically similar non-caregivers in the SIPP who have similar earnings and employment trajectories 11 to 16 years before the index year in which a caregiving episode is reported to begin. We do not match on labor supply outcomes in the ten year window before caregiving starts, so pre trends remain flexible and can be used to evaluate selection into caregiving. Therefore, the caregiving event we capture includes any anticipation or ex-ante changes in employment outcomes that may precede (or precipitate) the start of a care episode. The counterfactual that this matched comparison group represents is how labor supply outcomes would have evolved for somebody of a similar age, gender, education, and earlier-life employment and earnings who was not actively caregiving at the time they completed the SIPP informal care module (though we cannot rule out that they were never a caregiver, or would never become one, as the caregiving module is cross-sectional).

Specifically, we construct counterfactuals by matching each caregiver in the SIPP to up to two non-caregivers who are an identical match on sex, age group (in 5-year bins), education (any college v. not), and employment (0/1) in each of years $\tau = -16$, $\tau = -15$, $\tau = -14$, and $\tau = -13$, as well as a caliper match on the level of earnings in each of years $\tau = -16$, $\tau = -15$, $\tau = -14$, and $\tau = -13$.[9] We use demographic characteristics reported in the first wave of the SIPP, before the majority of the caregiving sample has started their caregiving episode. We perform the matching procedure separately for each SIPP panel and for each care episode duration (6 months or less, 1 year, 2 years). Then, we assign a placebo caregiving start date based on duration to match the comparison group on event time. A non-caregiver can be matched to multiple caregivers in each SIPP wave, but never in the same event year. The caliper width is set so that matched individuals differ by no more than \$20,000 in each direction. Given the small number of caregivers, we select matching variables and caliper width to maximize our match rate, which is over 96%. We restrict the sample to those who were 18 or older at $\tau = -16$. The resulting sample includes 4,160 caregivers and 8,079 matched non-caregivers.

[9] We base our approach on an algorithm developed by (Stepner 2019).

Table 2 reports descriptive statistics for the sample of matched caregivers (column 1) and matched non-caregivers (column 3). Matched caregivers and non-caregivers are well balanced on both matched and unmatched covariates. Interestingly, the matched groups also resemble the larger unmatched, non-caregiver sample (column 4), with the exception of being more female. Compared with the matched caregiver sample, the unmatched caregiver sample (column 2) is older, more male, more likely to be married, more likely to be college educated and is less likely to have children under 18 in the household.

Unmatched caregivers also differ significantly in labor supply levels and trends between $\tau = -16$ and $\tau = -13$. Sixteen years before the start of a caregiving spell, this group is more likely to be employed with average earnings more than double the matched caregivers. However, average earnings and employment trend downwards for the sample of unmatched caregivers between $\tau = -16$ and $\tau = -13$, while it trends upwards for everyone else.

These descriptive statistics underscore the advantages of using the SIPP to study family caregiving, compared to the more commonly used Health and Retirement Study (HRS). First, the average age in our new caregiver sample is 55, meaning that a substantial share of caregiving occurs earlier in life than when the HRS sample starts (age 51). Second, most studies of family caregiving focus on care provided only to parents or parents-in-law. The sample statistics in Table 1 reveal that a great deal of care is provided to individuals other than parents, highlighting the need to consider unpaid caregiving more broadly.

3.3 Stacked Comparison Group

If the employment outcomes of caregivers evolve differently from a comparison group matched on early life trends because of expectations about future caregiving roles or precipitating employment shocks, it will be difficult to estimate the contemporaneous effect of starting a caregiving episode net of any pre-trends. In the second research design, we use variation in the *timing* of caregiving spells to identify a comparison group of future caregivers – individuals who are potentially similar to caregivers (treated respondents) in their employment outcomes over the full period, and their ex ante expectations about caregiving, but have not yet started the care spell within the panel (i.e., they remain untreated). In this research design, the counterfactual captures how outcomes would evolve for somebody with the same ex-ante expectations about future caregiving needs, absent the caregiving spell actually occurring.

In this approach, we use a "stacked" method, following Fadlon and Nielsen (2021) and Desh-

pande and Li (2017). Specifically, we compare respondents who experience a caregiving event in a give time period to a comparison group of individuals who will begin caregiving at some time in the near future. These two groups are constructed using only the matched caregivers described in Column 1 of Table 2. This approach requires a different data structure, which we construct as follows: for each calendar year, we take the subset of individuals who begin caregiving in that year and designate them as the treatment group. Every individual who started caregiving at least δ years in the future is assigned to the comparison group. We then redefine event time with respect to caregiving for the comparison group: we define a placebo caregiving spell as starting δ years before the actual report caregiving spell. For the treatment group, the index year that a care spell started remains unchanged.

We repeat this procedure for each calendar year and then append all the data sets together.[10] The resulting data set is comprised of the sample of current caregivers, all matched in redefined event time to a comparison group of future caregivers. One limitation of this approach is that we can only measure effects up to $\delta - 1$ periods post-shock (i.e. until the control group becomes treated). We set δ to be 6 years. In Appendix Figure A1, we demonstrate this empirical approach visually, graphing the raw plots of the evolution of earnings and employment in both the treatment and comparison groups around event-time. For women, the pre-trends in event time for the treatment group (current caregivers) are matched reasonably well by the counterfactual trends in the comparison group (future caregivers), although there is still some evidence of differential trends close to the beginning of the care spell. Among men, however, current and future caregivers do not match as well; there are clear differential trends in both earnings and employment.

4 Results

In this section, we present new evidence on the changes in employment and earnings that occur before and after the reported start of a caregiving spell. We address questions such as: How do the labor supply trajectories of caregivers compare to the matched comparison group, or the population as a whole? Does employment decline once a caregiving spell starts, or even before it starts? Does exit from the labor market after the start of a spell happen immediately, or gradually as caregivers take on more and more care responsibilities? Does the labor supply of caregivers remain permanently lower or does it recover? Do these patterns vary by gender or depending on

[10] An observation does not serve as its own control, however households do appear in the sample multiple times as controls.

when in the lifecycle caregiving begins? Our analysis proceeds in two parts: a graphical analysis of the lifecycle labor supply patterns of caregivers, and estimation of Equation 1 as described above.

4.1 Trends in Labor Supply Before and After Initiation of Caregiving

We begin by documenting the evolution of earnings and employment for a balanced panel of caregivers and a matched comparison group over the 16 years before and nine years after the start of a care spell. Figure 1, Panel A, plots the average annual earnings of caregivers (solid red line) and their matched comparison group (dashed red line) in event time τ. As a point of reference, the figure also shows average earnings for the full SIPP sample aged 18 or older at the beginning of the panel in dashed gray, excluding the matched caregivers and matched non-caregivers in red (see Table 2, column 4 for sample characteristics). The x-axis denotes time relative to the start of the care spell (realized for caregivers and placebo for the matched group and overall SIPP sample). We plot average earnings in levels rather than logs to retain individuals with zero earnings.

We first observe that the matching procedure was effective – average earnings of caregivers and their matched comparison group appear nearly identical in both level and trajectory 13 to 16 years before the start of the care spell (the period used for matching labor supply). Compared to the population as a whole, the matched groups initially evolve along a similar upward earnings trajectory, but depart from the population trend about 10 years prior to the start of the care spell, when the trajectories of the matched caregivers and non-caregivers flatten in tandem. Caregiver earnings continue to track the comparison group until the year that caregiving starts, when they fall abruptly. Caregiver earnings remain below comparison group earnings by approximately $2,000 for at least the next nine years, and never return to match the comparison group in the observable period. By the ninth year after the start of a caregiving spell, caregiver earnings are more than $6,000 below the unmatched population average. Note that because the figures do not restrict the age at which individuals begin caregiving, these earnings trajectories compress life-cycle-related earnings dynamics.

These earnings patterns could be driven by changes in labor supply along the extensive (employment) and/or intensive margins (hours worked, wage rate). Although we do not observe hours worked or hourly wages in the administrative earnings data, we can use the fact that earnings are the mathematical product of extensive- and intensive-margin labor supply to draw inferences about the relative importance of unobserved intensive margin changes from the observed patterns in earnings and employment. We present employment rates (defined as positive earnings) in event

time in Panel B of Figure 1. Once again, the matching procedure ensures that the employment rate of caregivers matches that of the comparison group in years -13 to -16. Beyond the matching period, the groups continue to track one another until the year a caregiving spell is reported to start, when we observe a steep drop in caregiver employment. Caregiver employment is 5 percentage points lower by the first year of the care spell, and remains well below the comparison group's employment rate for the remaining observable period. Compared to the population employment trajectory, both caregivers and their matched comparators have higher employment rates earlier in the life cycle, but markedly lower rates 25 years later. This pattern suggests that caregivers who leave the workforce do not return in the decade that follows. Lastly, the fact that early in the life cycle caregiver earnings (Panel A) are similar to population average earnings but the caregiver employment rate is above the population average (Panel B) implies that caregivers (and their matched comparators) initially have below-average intensive-margin labor supply—either lower average annual work hours and/or lower wages compared to the population as a whole.

4.1.1 Trends in Labor Supply by Gender

While women are typically associated with family caregiving, nearly 40% of caregivers of adults in the US are men (National Alliance for Caregiving and AARP 2009).[11] Existing studies that examine caregiving by gender find that caregiving responsibilities have a different impact on men's and women's labor force participation (Van Houtven et al. 2013). Due to multiple caregiving roles over the life cycle, women may be less attached to the labor force, may be more likely to be working part-time, or may hold more flexible jobs than men who become caregivers (Kleven et al. 2019). Furthermore, men and women may take on different (more or less intensive) caregiving roles (Houser et al. 2015; Van Houtven et al. 2013) or may have different latent thresholds for identifying as a caregiver. The descriptive statistics presented in the previous section suggest that female caregivers provide more hours of care, and are more likely to be helping with ADLs and performing medical tasks than male caregivers. Figure 2 presents the earnings and employment trajectories separately for men and women and reveals noticeably different pre- and post-caregiving patterns.

Throughout the entire 15-year period prior to the start of a caregiving spell, the labor supply of female caregivers tracks the comparison group of female non-caregivers—both in earnings (Figure 2, Panel A) and employment (Figure 2, Panel C)—with little evidence of anticipation or precipitating

[11] In the SIPP, men make up over 38% of caregivers.

labor supply shocks. Throughout much of the pre-caregiving period, female caregivers (and their matched comparators) have about 10% percent higher earnings and are about 10% more likely to be employed compared to the population average. However, in the year a caregiving spell is reported to begin, there is a noticeable decrease in earnings and even larger drop in employment, suggesting that women with lower intensive-margin labor supply are disproportionately transitioning to non-employment. Although female caregiver earnings return to the comparator trend within 5 years, their employment remains persistently below trend for 8 years following the start of a caregiving spell.

The labor supply patterns for men are starkly different. Although male caregivers are reasonably well matched to their comparison group on earnings (Figure 2, Panel B) and employment (Figure 2, Panel D) in years -13 to -16, their earnings depart quickly from trend around 9 years before the start of a reported care spell. The earnings of men who will become caregivers decline faster than those of their matched comparators and also, similar to female caregivers, drop sharply at the start of a care spell. In fact, a notable drop in employment about five years prior to a care spell raises the possibility that for men, a precipitating job loss or related event may push them into a caregiving role. This is consistent with findings in Mommaerts and Truskinovsky (2020) that men are responsive to the opportunity cost of caregiving, as measured by business cycles, while women are not. If men take on caregiving following a job loss or related economic shock while women take on caregiving in response to a need, this may explain the very different pre-caregiving trajectories by gender that we observe. Unlike female caregivers, male caregiver earnings never recover, and in fact the gaps relative to non-caregivers grow for up to five years after the start of a care spell, as male caregivers continue to exit employment. Because the earnings and employment trajectories of male caregivers match each other closely starting five years before a caregiving spell, we conclude that non-employment is the main margin at play and not hours or wages. The patterns for male caregivers (and their comparators) also contrast with the overall population trajectory for men; the earnings of men who will begin caregiving falter earlier in the lifecycle, when male earnings in general are rising. Given the dramatic differences between men and women, we consider each group separately in the rest of our analysis.

4.1.2 Trends in Labor Supply by Gender and Age at Initiation of Caregiving

To this point, we have presented earnings and employment trajectories for caregivers of all ages, emphasizing patterns in event time, but compressing life-cycle-related earnings dynamics. In

Figures 3 and 4, we split the female and male samples, respectively, into three groups based on the age of the caregiver when the caregiving spell started: age 34-50 (N = 1,667), age 51-61 (N = 1,270), and age 62-70 (N = 685). We select these age groups because the majority of caregivers fall into this age range, and we keep the range wide enough to ensure a sufficient number of observations in each group. For each labor supply outcome, we present the three age groups side by side, in order. Looking across the three pictures from left to right, the typical life-cycle earnings patterns are more evident, with earnings rising in earlier life, flattening in midlife, and declining in later life as individuals retire from the labor force. This also allows us to compare caregiving impacts at different points across the life course. Notably, variation in the age when caregiving started is correlated with the identity of the care recipient, which we are not able to untangle due to diminishing sample sizes. Younger caregivers are more likely to care for aging parents, while older caregivers are more likely to be caring for ill (or aging) spouses (Fahle and McGarry 2017).

The women who start caregiving between ages 34-50 (Figure 3, Panels A and D) are ages 18-35 at the beginning of the event time window, and their earnings (Panel A) are increasing, in line with their matched comparators and the population average level and trend. Caregiver earnings begin to deviate from the comparison group around a decade before the care spell starts, growing more slowly before abruptly flattening in event year -3. Earnings turn down sharply the year a care spell starts, and although they quickly begin to grow again, they never reach the comparison group in the nine year period after a caregiving spell starts (when this sample is in their mid 50's). Compared to the population average (dashed gray line), there is a permanent loss in earnings of about 17%. The employment trajectory for this group (Figure 3, Panel D), follows the comparison group much more closely suggesting that some of the differences in earnings are due to changes at the intensive margin, perhaps due to additional caregiving roles. These patterns are consistent with the hypothesis that employment interruptions due to various caregiving roles across the life course are correlated.

In Figure 3, Panels B and E, we present earnings and employment for the sample of women who start caregiving between ages 51-61, and who are 36-46 at the start of the event time window. For this group of caregivers, earnings grow at a faster rate than comparator earnings, closer to the population trend in the decade before caregiving starts. Earnings drop in the year before caregiving starts to match the comparison group, but return to the population average within six years when this sample begins to reach Social Security retirement age. Women who start caregiving in their 50's out-earn their matched comparators in the decade after the start of a caregiving spell. Employment

rates among this group match those of the comparison group over the entire 25-year period, with a small decrease in the first three years after the start of a care spell, which implies that women who become caregivers in their 50s have slightly higher earnings and can better buffer against life-cycle earnings declines, perhaps as a way of compensating for caregiving related losses relative to the population average trend. Finally, women who start caregiving between ages 62-70 are on the downward side of their age-earnings trajectory (Panel C). They have slightly higher earnings across the life cycle, but experience a steeper decline in earnings in the three years preceding the start of a care spell. Employment trajectories (Panel F) are similar to earning, suggesting that this is driven by exit from the labor force.

Figure 4 presents the corresponding pictures for men. Like women who start a care spell in their 40s, the earnings trajectory of men who become caregivers in their 40s (Panel A) flattens prematurely, relative to either the matched comparators or the population average. Unlike women, these gaps continue to widen after the start of a care spell, and these men never recover their lost earnings, and their employment rate (Panel D) remains persistently below that of their comparators. This pattern is even more pronounced for men who become caregivers in their 50s. Their labor supply (Panels B and E) falters at an earlier point in the life cycle—nearly a decade before the start of the care spell—and they never return to comparator or population trends. These results suggest that men's selection into caregiving in early life and midlife is precipitated by significant disruptions in their labor supply. The pattern is similar, though less pronounced for men who begin caregiving in their 60s, whose earnings and employment track the comparison group more closely. Like the older women, the pattern of declines in employment among older men match those of the comparators and trend smoothly through the caregiving transition.

4.2 Results: Event Study with Matched Comparison Group

The unadjusted averages presented in the previous section provide a visual depiction of the labor supply dynamics of family caregivers relative to a matched comparison group, or the population average in event time. In this section, we take a more structured approach and plot the coefficients from the non-parametric event-study specification in Equation 1, which includes the full set of individual, age and year fixed effects, in Figure 5. Horizontal grey bars indicate 95% confidence bands around each event-time coefficient. These estimates capture the differences in outcomes for caregivers relative to the matched comparison group in each event year relative to year -13—the last year in which we mechanically match the sample on employment and earnings trajectories—while

controlling flexibly for life-cycle trends, time trends, as well as any time-invariant heterogeneity. We report the corresponding estimates from difference-in-differences variants of Equation 1 in Table 3. There we show estimates for a single "post" coefficient that captures the full nine years after the start of a caregiving episode, as well as separate coefficients for "post" years 0-2, 3-5 and 6+, to model the dynamics observed graphically in the previous section.

Panels A and C of Figure 5 plot the event-study coefficients for the earnings and employment trajectories of female caregivers relative to the matched comparison group, and Panels B and D present the same for male caregivers.[12] Now that life-cycle and period trends have been removed, it becomes clearer that earnings evolve in a parallel fashion between female caregivers and their matched non-caregivers in the 15 years before the start of a caregiving spell. Earnings paths begin to diverge in the year before a care spell starts, falling sharply for 1-2 years before gradually recovering somewhat. This drop corresponds to an annual decrease of $1,428, more than six percent from a pre-caregiving mean of $23,197, in the first three years following the start of a care spell (Table 3, Column 6, Panel A). The point estimates for remaining post-period years are negative, but not statistically different from zero, although earnings remain nearly $600 (2.6 percent) lower six years after the start of a caregiving spell. Employment follows a similar pattern, falling by 2.1 percentage points, or 3.0 percent from a pre-caregiving mean of 70 percent (Table 3, Column 6, Panel B). From Figure 5 we see that employment rebounds within 7 years to match those of their comparators, while earnings do not (although the confidence intervals are large and point estimates are not statistically significant), suggesting that female caregivers return to the labor force following a caregiving episode, but at lower wages or hours than before.

For male caregivers, the picture is again quite different. Male caregiver earnings are on a steady downward trajectory relative to their non-caregiver peers for nearly the entire pre-caregiving period (Panel B of Figure 5. The relatively delayed decline in employment (Panel D) matches the patterns we observed in the raw data and suggests that the decline in earnings is due first to declining wages or hours, and then to exiting employment altogether in the five years before the start of a caregiving episode. Male caregivers continue to exit after the start of a care spell and stay out of the labor force much longer than women. The point estimates in Figure 5 for men's earnings and employment track each other closely and begin to recover about five years after the start of caregiving, suggesting that when male caregivers return to the labor market, they return to similar

[12]We do not further split the sample by age group in the event study because the samples become to small to infer any meaningful results once we include the full battery of fixed effects. We include difference in differences estimates by age and gender in Appendix Table A2.

jobs, in terms of hours and wages. Overall, there is much less visual evidence for men of a sharp change in labor supply coincident with the start of a care spell, however Table 3 shows that men's earnings are around $3,000 (6.4%) below pre-caregiving levels for up to five years after the start of the care episode, while their employment is three to four percentage points lower.

4.3 Results: Event Study with Stacked Comparison Group

In the previous two sections, we described the dynamics of labor supply outcomes around the start of a caregiving spell, comparing caregivers to matched non-caregivers, or to the full sample of SIPP respondents. Our results reveal that for some caregivers, earnings and employment do not evolve in parallel with non-caregivers prior to the start of a care spell, even conditional on individual, time-invariant heterogeneity. This suggests that, for these caregivers, their experiences in the labor market are different from non-caregivers, either because they experience employment or earnings shocks, or because anticipation of future caregiving roles or other factors puts them on different trajectories from non-caregivers.

In this section, we turn to estimating the effects of caregiving on labor supply using a different comparison group: future caregivers. For this approach we leverage variation in the start of a caregiving spell among the sample of SIPP caregivers. This variation is plausibly exogenous if future caregivers expect a caregiving need but do not know precisely when the need will arise. As such, this approach has the potential to isolate the ex-post response to the realization of caregiving (the costs borne once caregiving starts) apart from the effects of anticipating the need for caregiving (the pre-caregiving costs).

Results from this "stacked" event-study model, which use the outcomes of future caregivers as a counterfactual trend for current caregivers, are presented in Figure 6 for female caregivers (Panels A and C) and male caregivers (Panels B and D). Because of the data structure necessary for this approach, we now have a balanced panel of just nine years prior to and five years following the start of a caregiving spell. To summarize magnitudes, we present the results of a variant of Equation 1 using binary indicators for the full five year period following the start of a care spell, as well as for years 0 through 2 and years 3 through 5 in Table 4. We report corresponding results for the sample split by age and gender in Appendix Table A4.

Panel A of Figure 6 plots the event-study coefficients for female earnings and the corresponding employment results are presented in Panel C. Both outcomes evolve roughly in parallel in the pre-caregiving period, as evidenced in the raw trends (Appendix Figure A1). Earnings slightly

increase among the treatment group of caregivers relative to future caregivers in the three years before caregiving starts, perhaps due to some remaining uncontrolled anticipation effects. A discontinuity in earnings is clearly observable in the year caregiving starts, suggesting that the actual start of even an anticipated care role corresponds to a drop earnings. As reported in Panel A, column 6 of Table 4, earnings fall by nearly $1,000 annually in the first three years following the start of the care spell, or 4.2 percent from a pre-care mean of $23,399, though this is not statistically significant given wide standard errors. The decrease in earnings appears to be driven by the extensive margin, as employment falls sharply by 2.7 percentage points, or nearly 4 percent, in the first 3 years after the start of a care spell (Table 4, Panel B, column 6). As with the matched comparison group results, the point estimates in Figure 6 shows that earnings recover at the same time as employment, although earnings remain below the pre-caregiving trend (we note that the point estimates for earnings are not statistically significant).

Once again, the patterns for male caregivers contrast those for female caregivers (Panels B and D of Figure 6 and Columns 7 and 8 of Table 4). Male caregivers' labor supply in the pre-period evolves in parallel with future caregivers until five years before the start of the caregiving spell, at which point both earnings and employment fall sharply, providing evidence that male caregivers experience significant changes in labor market outcomes, driven by employment exit, well before they become family caregivers. These disruptions in employment and earnings that arise 5 years prior to a care spell are similar in magnitude to the realized onset of a care spell. As in the previous models, men's labor market participation does not recover in the five years following the start of a care spell. Appendix Tables A2 and A4 report pre- and post-period coefficients for the matched and stacked samples by gender and age when caregiving starts, corresponding to Figures 3 and 4.

5 The Role of Education and Health

In this section, we consider additional sources of heterogeneity that may be behind the discontinuous patterns of employment and earnings we observe in male caregivers. First, poor health, low earnings and discontinuous labor force participation are highly correlated, particularly among men and people without a four-year college degree (Krueger 2017; Case and Deaton 2017). This suggests that family caregiving needs may be more likely to arise for men with discontinuous labor force trajectories, especially if alternative sources of care are not available. To investigate this possibility we split the sample further into those with and without a four-year college degree.

Figure 7 plots average annual earnings and employment by educational attainment separately for women (panels (A)-(D)) and men (panels (E)-(H)). We find similar discontinuous trajectories in employment and earnings for men regardless of their educational attainment, although for men with a college degree the effect is driven primarily by the intensive margin of hours or wages rather than employment. College educated men also recover somewhat towards the end of the observed period. Notably, the employment and earnings trajectories of female caregivers with a college degree (panels (B) and (D)) resemble those of male caregivers, while women without a college degree have pre caregiving trends that closely match the comparison group. These figures suggest that the patterns we observe in the main results are not driven by a correlation between low income, low labor force attachment and poor health. The corresponding event-study with fixed effects models are presented in Appendix Figures A2 (matched comparison group) and A3 (stacked comparison group), and difference-in-differences coefficients are reported in Appendix Tables A3 and A5.

Finally, we consider two additional outcomes that are available in the administrative data: the claiming of Social Security retirement benefits and eligibility for Social Security Disability Insurance (SSDI) benefits. Retirement benefit claiming will allow us to observe if changes in employment around caregiving coincide with (possibly planned) transitions into retirement, while SSDI eligibility can tell us if pre-caregiving employment trajectories are driven by health shocks to future caregivers. Notably, our measure of SSDI eligibility is the estimated date of SSDI entitlement - that is, the date of onset of an SSDI-qualifying disability (conditional on having applied for benefits), rather than the date when a beneficiary applied for or began to receive SSDI benefits.

We plot retirement claiming and SSDI eligibility rates in Figure 8 by age when caregiving started, excluding the youngest group from retirement benefits figures. Looking across panels (A)-(C), we note that SSDI eligibility follows expected life cycle patterns, peaking around age 55 and falling to zero by age 65 as the SSDI beneficiaries in our study cohorts transition to Social Security retirement benefits. Younger caregivers track the matched comparison group and the population average closely until the start of the caregiving episode, when SSDI eligibility grows faster than in the comparison group or the population. By nine years after the start of a caregiving spell, caregivers are nearly 50% more likely to be eligible for SSDI than the population. Conversely, for older caregivers, SSDI eligibility remains below both the comparison group and the population average for the full observable period. Most importantly, we do not observe any increases in disability eligibility in the decade preceding caregiving that might explain the discontinuous earnings and

employment patterns we observed for men. The increase in SSDI eligibility shortly before the start of caregiving among the youngest caregivers may indicate that people with disabilities who receive SSDI (and are therefore are not in the labor force), are frequently called upon to care for other family and friends. An alternative explanation is that people with disabilities who were previously working may draw upon SSDI to replace lost wages when caregiving demands arise. We present these results split by gender in Appendix Figure A4.

Finally, in panels (E) and (F) we plot the annual likelihood of claiming retirement benefits by age. Retirement benefit claiming of caregivers follows both the matched group and the population average very closely, with no evidence of caregivers timing their retirement claiming to correspond with the start of a caregiving episode. We present these results split also by gender in Appendix Figure A5. Adjusted models with fixed effects for both retirement and SSDI eligibility are in Appendix Figure A6, and corresponding difference-in-differences coefficients for both the matched and stacked models are included in Appendix Table A6, as well as Panels C and D of Appendix Tables A2, A4, A3 and A5.[13]

6 Discussion and Conclusion

In this paper, we present new evidence on caregiving and labor supply from the SIPP linked to administrative earnings records from the Social Security Administration. We leverage retrospective survey responses about caregiving in the SIPP to create a longitudinal panel with 25 years of labor supply outcomes for caregivers. We study earnings and employment among "new" caregivers, those who start caregiving within two years of the SIPP survey. We show how labor supply evolves before and after the start of a caregiving spell, and compare these trajectories to a comparison group matched on demographic characteristics and earnings trends measured well over a decade before a realized care episode. We also use a "stacked" design that leverages the labor supply of individuals who will become caregivers in the near future as the counterfactual for individuals who have just started caregiving. We compare trajectories by caregiver gender, age and education level to build a comprehensive picture of the relationship between caregiving and employment across the life course and for different groups.

Our empirical analysis uses this survey-linked administrative data to contribute a new set of quantitative facts. First, we document that the relationship between caregiving and labor supply

[13]Some of the SSDI results have been censored by SSA due to small cell sizes.

is dynamic: we find evidence of labor market disruptions in the pre-caregiving period, as well as changes in outcomes after a caregiving spell starts. We find this relationship varies by gender. Male caregivers of all ages experience large downward swings in earnings and employment well before the start of a caregiving episode, which are of similar magnitude to the direct impact of the onset of caregiving on outcomes. This is mirrored in event studies using a comparison group of future caregivers, suggesting that these swings are unanticipated even to future caregivers.

Conversely, the onset of caregiving leads to an immediate – and significant – reduction in earnings and employment for women who take on these roles. Earnings fall by between four and six percent and employment falls by between three and four percent in the first year after the start of a caregiving episode, depending on the control group we use. Female caregivers' earnings and employment also recover faster than male caregivers, returning nearly to pre-caregiving trends within five years after the start of a caregiving spell. For women, effects are also heterogeneous by age. Women who become caregivers at younger ages (who are more likely to be caring for disabled children, parents or other older family members) experience larger earnings and employment changes than women who start caregiving at older ages (and are more likely to be caring for spouses). Results using a comparison group of future caregivers imply that the actual start of even an anticipated care role corresponds to a drop earnings for women.

We are able to rule out that the discontinuous labor supply patterns for men are concentrated among low-income families who face both higher care needs and more structural barriers to labor force participation. We can also cautiously rule out own, work-limiting health shocks which would lead to an increase in SSDI eligibility and claiming. A large literature finds that early life caregiving responsibilities (for routine childcare) are a leading driver of discontinuous labor force participation, which could explain the observed disruptions if early and later life caregiving are correlated. However, this literature finds this to be the case for women and not men, so we do not suspect that early life caregiving roles are a major driver of our results for men. Instead, we hypothesize that for potential caregivers with the strongest labor force attachment (men and highly educated women), family health needs interact with and exacerbate planned or unplanned interruptions in employment or earnings trajectories. This suggests that family caregiving needs, which will only increase in the future, have the potential to turn temporary labor market shocks into long term exit from the labor force.

Our results complement the existing literature on caregiving to adults and employment in the United States. Looking the the static relationship between caregiving and work, Van Houtven et al.

(2013) find no impact on the the likelihood of employment for women, but reductions on hours at the intensive margin. We find that female caregivers do experience reductions on the extensive margin that last for as long as five years. This could be due to labor market frictions as suggested by Skira (2015), who studies the dynamic impacts of caregiving to parents and finds that female caregivers are less likely to receive job offers in the two years following a care spell. We find that high-earning female caregivers may recover faster than their lower earning counterparts. We also see no effects on retirement benefit claiming, while Van Houtven et al. (2013) find an increase in self-reported retirement among women, though this could be due to measurement differences between self-reported retirement status and administrative records. Our results for male caregivers are in line with the findings of Van Houtven et al. (2013), who find that men reduce employment by 2.4 percentage points after starting caregiving. We estimate an effect of similar magnitude and we show that this grows over time, further underscoring that male and female caregivers have starkly different employment trajectories.

Overall, we find that, as with child care, the costs of family caregiving appear to be incurred both before and after the start of a caregiving spell. It is important to note that while we find caregiving depresses employment among new caregivers, our results do not reveal how much of the employment effect is voluntary versus involuntary. Would new caregivers prefer to continue working if their employers could better accommodate them? The fact that adverse labor supply effects arise immediately following the start of caregiving for women, and appear to persist over the following years, suggests there could be scope for employment policies designed to help working individuals cope with caregiving demands, which are often idiosyncratic and intermittent over a period of several years, and not typically resolved during a single, 12-week spell of continuous family leave.

It bears emphasizing that our analysis relies on self reports of caregiving spells, which may not exactly correspond to the initial onset of caregiving responsibilities. Nonetheless, self-identification is arguably of greater policy interest if the aforementioned employer and federal policies around caregiving leave and other caregiver respite programs require caregivers to self-identify as such. Care needs can arise at different points across the life course, and our analysis attempts to capture the complex nature of a broad range of caregiving roles and describe how these interact with employment trajectories of caregivers.

References

Adda, J., C. Dustmann, and K. Stevens (2017). The career costs of children. *Journal of Political Economy 125*(2), 293–337.

Arrieta, G. R. and G. Li (2023). Caring to work or working to care: The intra-family dynamics of health shocks. *American Journal of Health Economics 9*(2), 175–204.

Blau, F. D. and L. M. Kahn (2007). Changes in the labor supply behavior of married women: 1980–2000. *Journal of Labor economics 25*(3), 393–438.

Bolin, K., B. Lindgren, and P. Lundborg (2008). Your next of kin or your own career?: Caring and working among the 50+ of europe. *Journal of Health Economics 27*(3), 718–738.

Carmichael, F. and S. Charles (2003). The opportunity costs of informal care: does gender matter? *Journal of Health Economics 22*(5), 781–803.

Carmichael, F., S. Charles, and C. Hulme (2010). Who will care? employment participation and willingness to supply informal care. *Journal of Health Economics 29*(1), 182–190.

Case, A. and A. Deaton (2017). Mortality and morbidity in the 21st century. *Brookings papers on economic activity 2017*, 397.

Chari, A. V., J. Engberg, K. N. Ray, and A. Mehrotra (2015). The opportunity costs of informal elder-care in the united states: new estimates from the american time use survey. *Health services research 50*(3), 871–882.

Costa-Font, J., M. Karlsson, and H. Øien (2016). Careful in the crisis? determinants of older people's informal care receipt in crisis-struck european countries. *Health economics 25*, 25–42.

Deshpande, M. and Y. Li (2017). Who is screened out? application costs and the targeting of disability programs. Technical report, National Bureau of Economic Research.

Ettner, S. L. (1996). The opportunity costs of elder care. *Journal of Human Resources*, 189–205.

Fadlon, I. and T. H. Nielsen (2021). Family labor supply responses to severe health shocks: Evidence from danish administrative records. *American Economic Journal: Applied Economics 13*(3), 1–30.

Fahle, S. P. and K. M. McGarry (2017). Caregiving and work: The relationship between labor market attachment and parental caregiving.

Freedman, V. A. and J. L. Wolff (2020). The Changing Landscape of Family Caregiving in the United States. Technical report, AEL-Brookings Paid Leave Project.

Frimmel, W., M. Halla, J. Paetzold, and J. Schmieder (2020). Health of elderly parents, their children's labor supply, and the role of migrant care workers.

Genadek, K. R., C. Hokayem, and P. Pendergast (2021). The summary earnings record and detailed earnings record extracts. Working Paper ADEP-WP-2021-05, U.S. Census Bureau.

Giovannetti, E. R. and J. L. Wolff (2010). Cross-survey differences in national estimates of numbers of caregivers of disabled older adults. *The Milbank Quarterly 88*(3), 310–349.

Goldin, C. (2006). The quiet revolution that transformed women's employment, education, and family. *American economic review 96*(2), 1–21.

Goldin, C. and L. F. Katz (2002). The power of the pill: Oral contraceptives and women's career and marriage decisions. *Journal of political Economy 110*(4), 730–770.

Goldin, C. and J. Mitchell (2017). The new life cycle of women's employment: Disappearing humps, sagging middles, expanding tops. *Journal of Economic Perspectives 31*(1), 161–82.

Hagen, S. A. (2013). *Rising demand for long-term services and supports for elderly people*. Congressional Budget Office.

He, D. and P. McHenry (2015). Does formal employment reduce informal caregiving? *Health economics*.

Hotz, V. J. and R. A. Miller (1988). An empirical analysis of life cycle fertility and female labor supply. *Econometrica: Journal of the Econometric Society*, 91–118.

Houser, A., W. Fox-Grange, and K. Ujvari (2015). Across the states: Profiles of long-term care services and supports. Technical report, AARP.

Kiefer, N. M. (1988). Economic duration data and hazard functions. *Journal of economic literature 26*(2), 646–679.

Kleven, H., C. Landais, and J. E. Søgaard (2019). Children and gender inequality: Evidence from denmark. *American Economic Journal: Applied Economics 11*(4), 181–209.

Krueger, A. B. (2017). Where have all the workers gone? an inquiry into the decline of the us labor force participation rate. *Brookings papers on economic activity 2017*(2), 1.

Mommaerts, C. and Y. Truskinovsky (2020). The cyclicality of informal care. *Journal of Health Economics*, 102306.

National Alliance for Caregiving and AARP (2009). Caregiving in the us 2009.

Rellstab, S., P. Bakx, P. Garcia-Gomez, and E. Van Doorslaer (2020). The kids are alright-labour market effects of unexpected parental hospitalisations in the netherlands. *Journal of Health Economics 69*, 102275.

Schmitz, H. and M. Westphal (2017). Informal care and long-term labor market outcomes. *Journal of health economics 56*, 1–18.

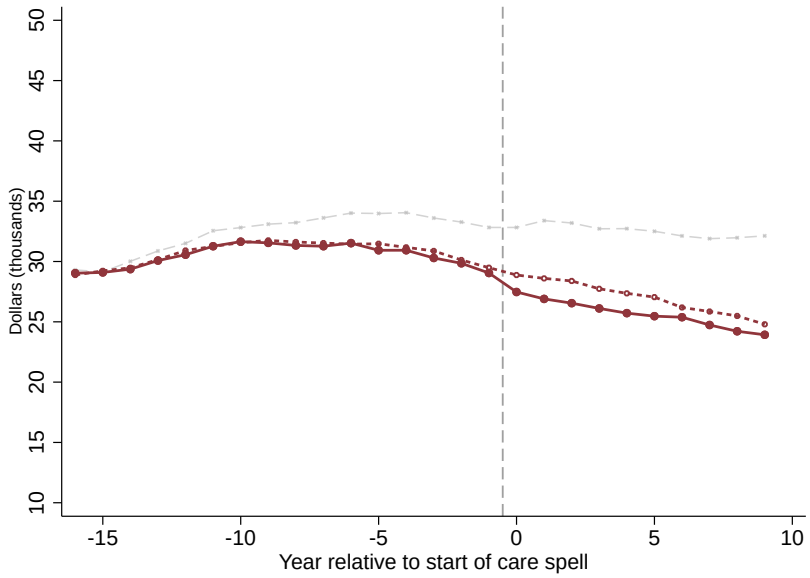
Skira, M. M. (2015). Dynamic wage and employment effects of elder parent care. *International Economic Review 56*(1), 63–93.

Stepner, M. (2019). The insurance value of redistributive taxes and transfers. *Unpublished manuscript*.

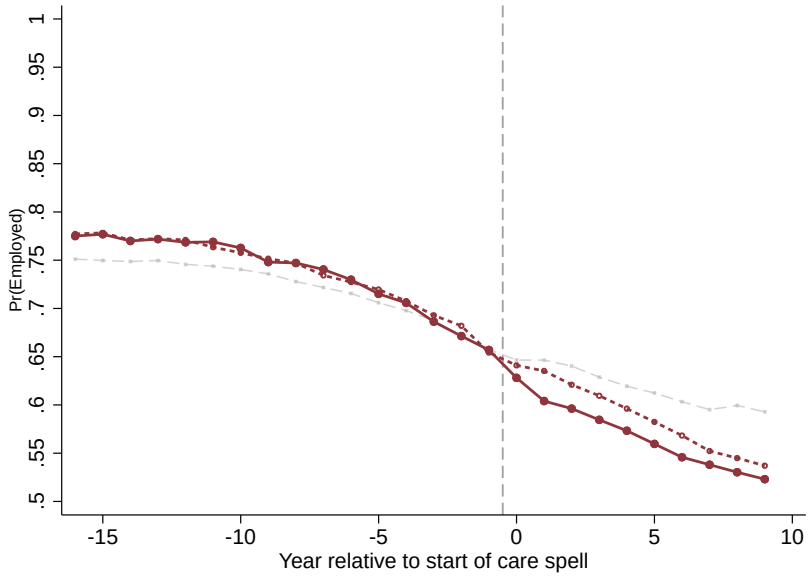
Van Houtven, C. H., N. B. Coe, and M. M. Skira (2013). The effect of informal care on work and wages. *Journal of Health Economics 32*(1), 240–252.

Weber-Raley, L. and E. Smith (2015). Caregiving in the us 2015. *National Alliance for Caregiving and the AARP Public Policy Institute*.

FIGURE 1: Earnings and Employment Trajectories of Caregivers



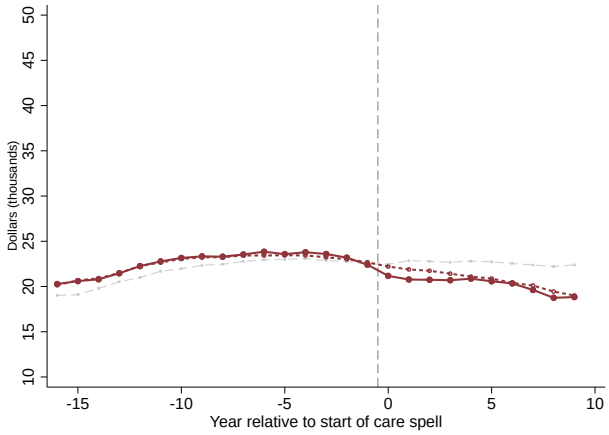
(A) Earnings



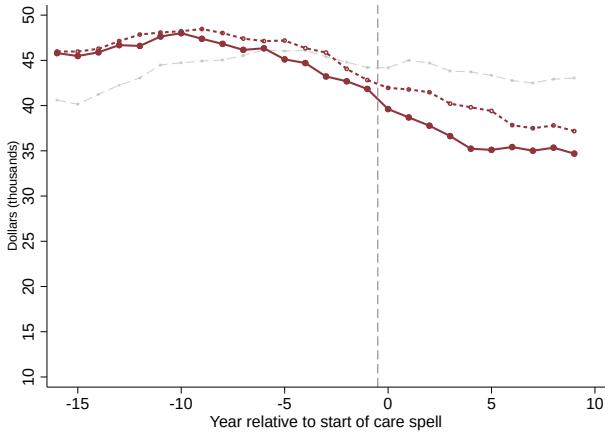
(B) Employment

Notes: Trajectories for the matched caregiver sample are shown in solid red, while trajectories for the matched comparison group are in dashed red. The dashed gray line shows the trajectory for the SIPP sample as a whole (excluding the matched caregivers and non-caregivers in red). The vertical line marks the start of the reported care spell. Earnings are in 2018 dollars.

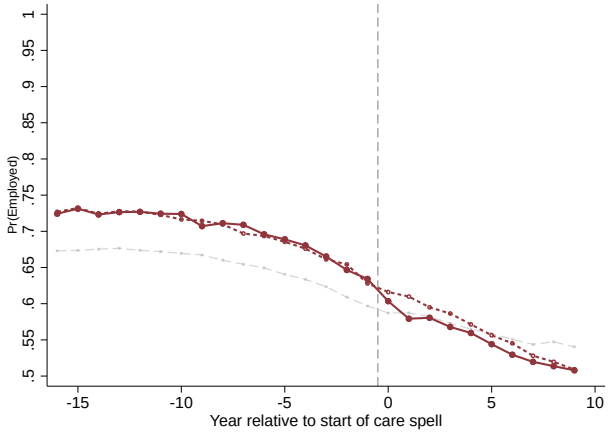
FIGURE 2: Earnings and Employment Trajectories of Caregivers by Gender



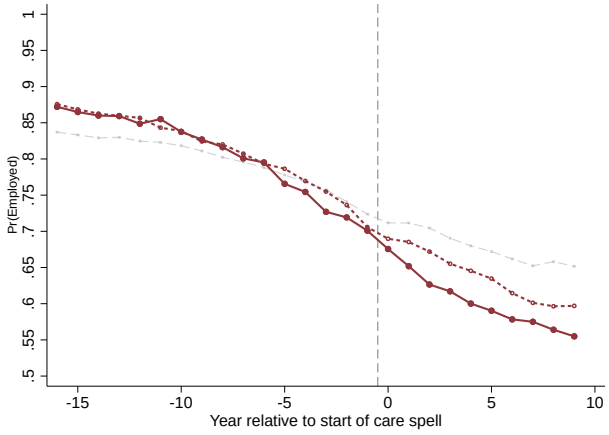
(A) Earnings – Women



(B) Earnings – Men



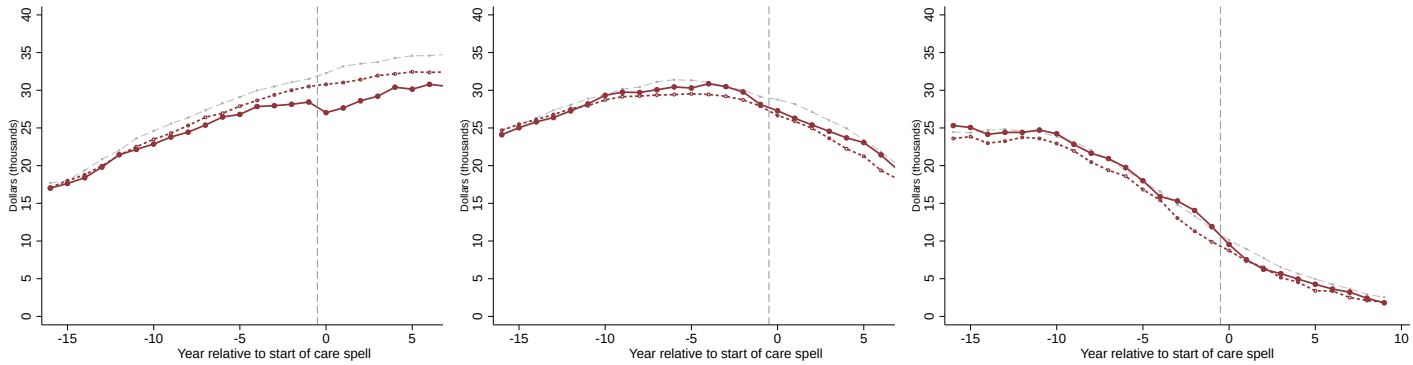
(C) Employment – Women



(D) Employment – Men

Notes: Trajectories for the matched caregiver sample are shown in solid red, while trajectories for the matched comparison group are in dashed red. The dashed gray line shows the trajectory for the SIPP sample as a whole (excluding the matched caregivers and non-caregivers in red). The vertical line marks the start of the reported care spell. Earnings are in 2018 dollars.

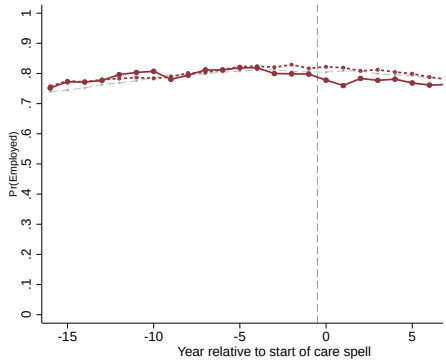
FIGURE 3: Earnings and Employment Trajectories by Age When Care Started – Women



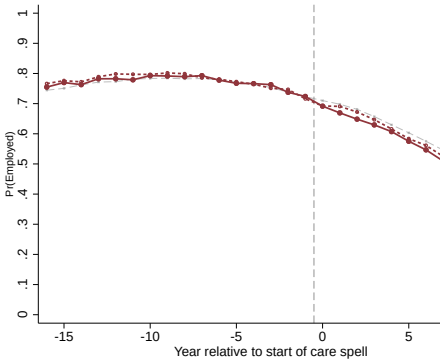
(A) Earnings, Ages 40-50

(B) Earnings, Ages 51-61

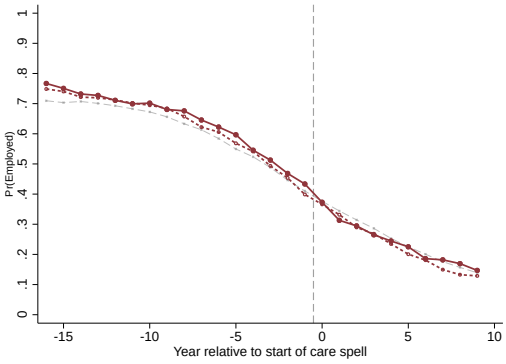
(C) Earnings, Ages 62-70



(D) Employment, Ages 40-50



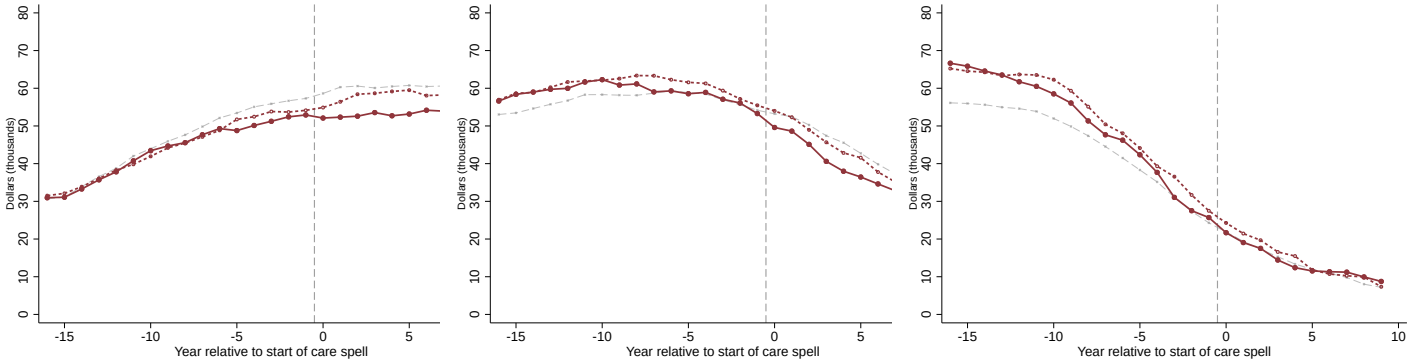
(E) Employment, Ages 51-61



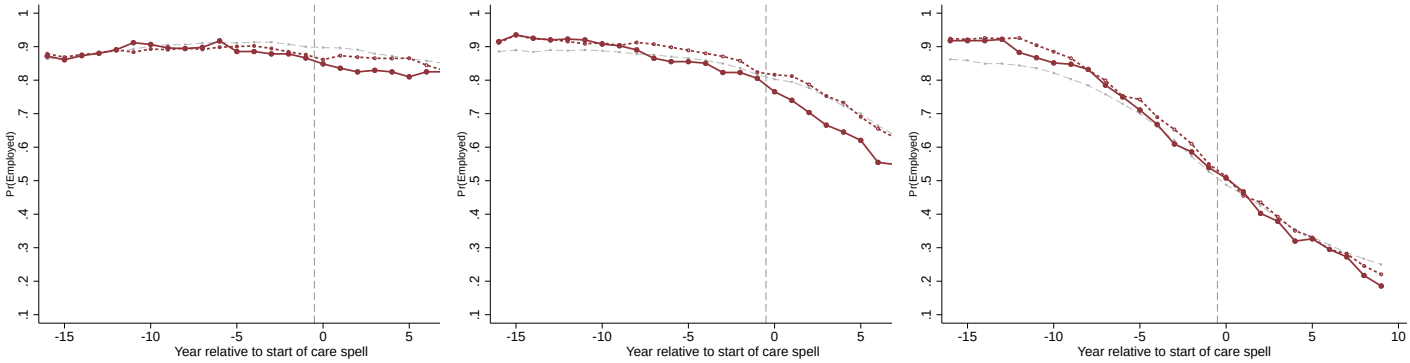
(F) Employment, Ages 62-70

Notes: Trajectories for the matched caregiver sample are shown in solid red, while trajectories for the matched comparison group are in dashed red. The dashed gray line shows the trajectory for the SIPP sample as a whole (excluding the matched caregivers and non-caregivers in red). The vertical line marks the start of the reported care spell. Earnings are in 2018 dollars.

FIGURE 4: Earnings and Employment Trajectories by Age When Care Started – Men



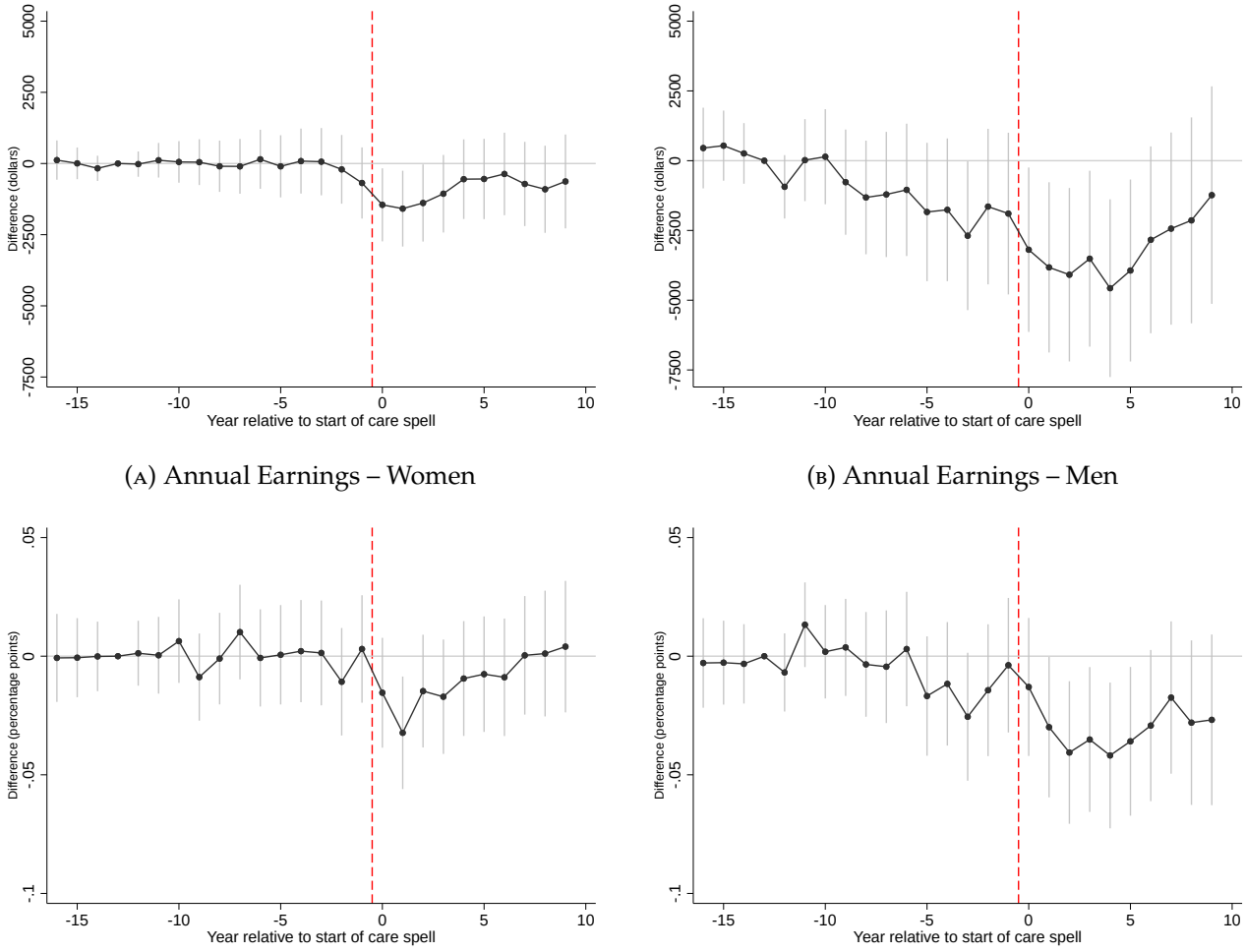
(A) Earnings, Ages 40-50 (B) Earnings, Ages 51-60 (C) Earnings, Ages 62-70



(D) Employment, Ages 40-50 (E) Employment, Ages 51-60 (F) Employment, Ages 62-70

Notes: Trajectories for the matched caregiver sample are shown in solid red, while trajectories for the matched comparison group are in dashed red. The dashed gray line shows the trajectory for the SIPP sample as a whole (excluding the matched caregivers and non-caregivers in red). The vertical line marks the start of the reported care spell. Earnings are in 2018 dollars.

FIGURE 5: Matched Event-Study Coefficients, by Gender



(A) Annual Earnings – Women

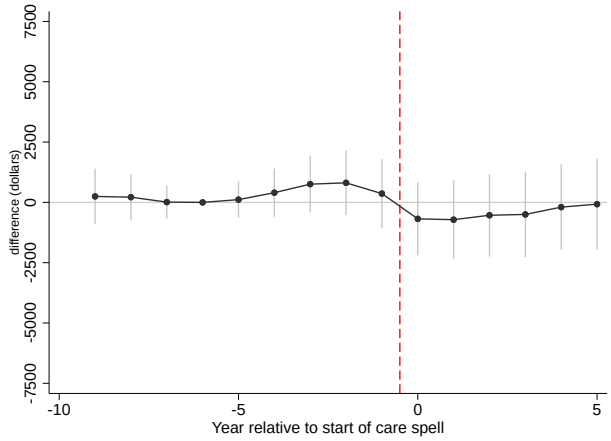
(B) Annual Earnings – Men

(C) Annual Employment – Women

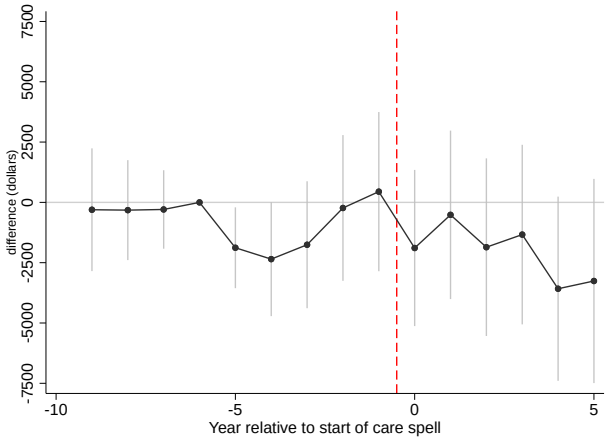
(D) Annual Employment – Men

Notes: Each panel plots the coefficients from event studies estimated using Equation 1 on the sample of caregivers and a matched comparison group. 95% confidence intervals for each coefficient are plotted in grey. Comparison group is matched on age, education and gender, as well as earnings and employment in Years -16 to -13. Panels A and C plot earnings and employment for women and Panels B and D plot earnings and employment for men. Earnings are in 2018 dollars.

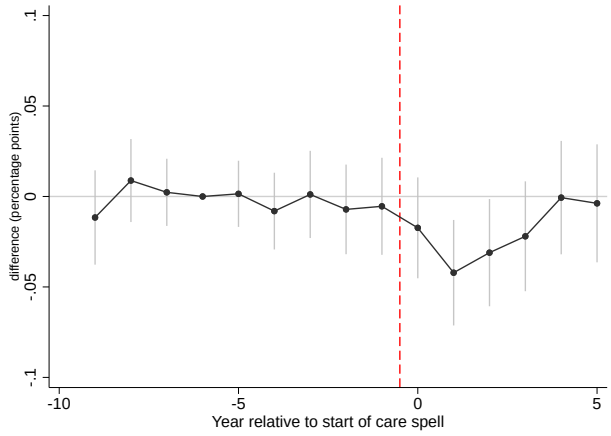
FIGURE 6: Stacked Event Study Coefficients, by Gender



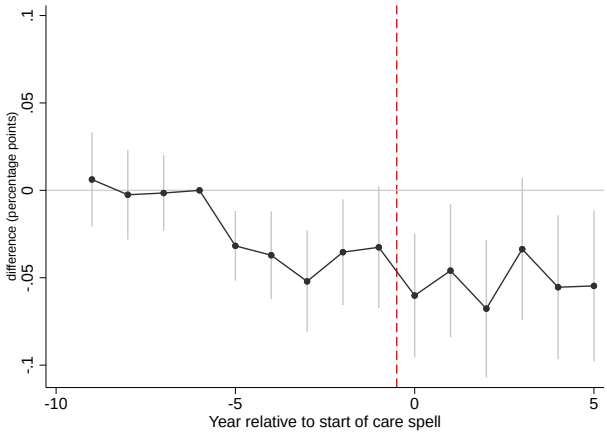
(A) Annual Earnings – Women



(B) Annual Earnings – Men



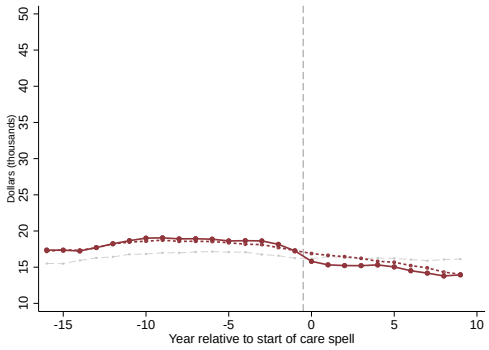
(C) Employment – Women



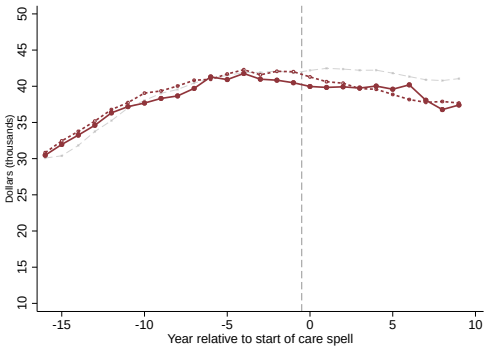
(D) Employment – Men

Notes: Each panel plots the coefficients from event studies estimated using Equation 1 on the sample of caregivers and a comparison group of future caregivers. 95% confidence intervals for each coefficient are plotted in grey. Panels A and B plot outcomes for women and Panels C and D plot outcomes for men. Earnings are in 2018 dollars.

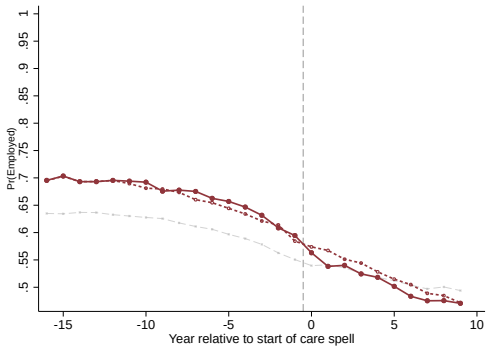
FIGURE 7: Earnings and Employment Trajectories of Caregivers by Educational Attainment and Gender



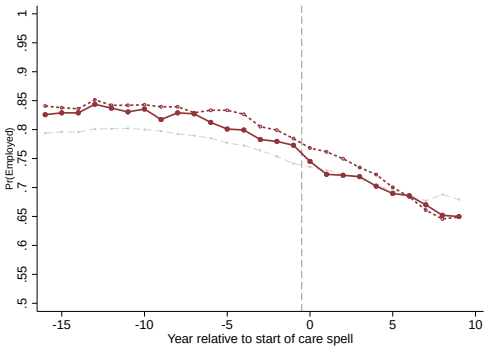
(A) Earnings - No College, Women



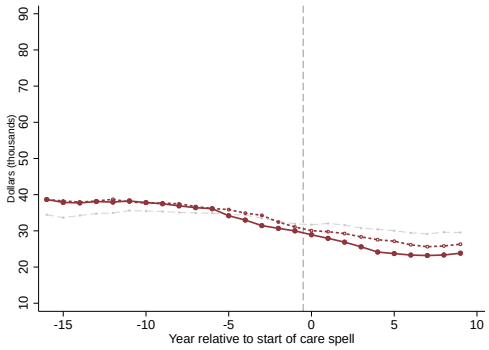
(B) Earnings - College, Women



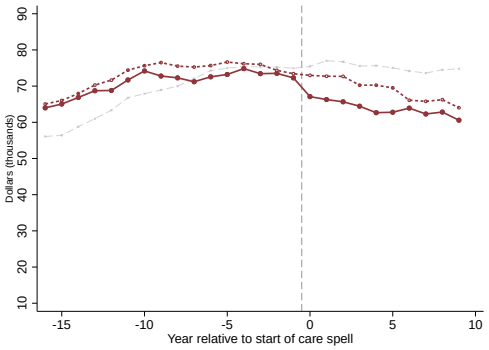
(C) Employment - No College, Women



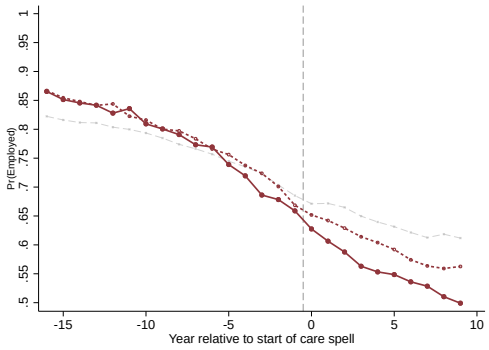
(D) Employment - College, Women



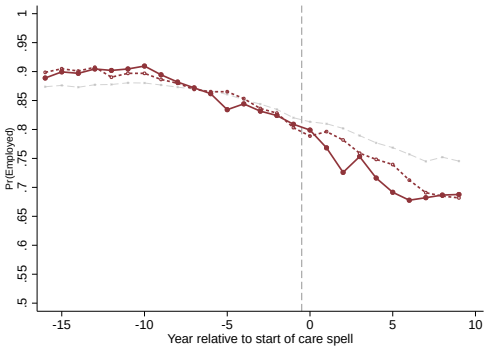
(E) Earnings - No College, Men



(F) Earnings - College, Men



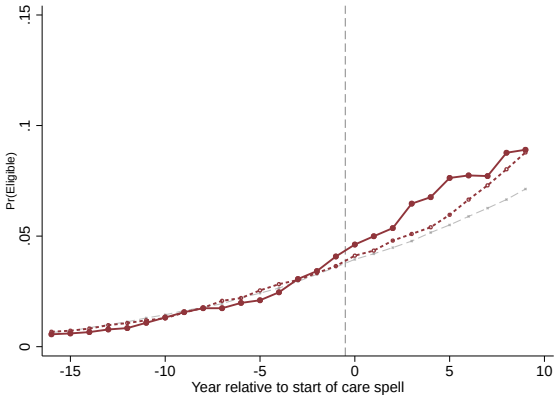
(G) Employment - No College, Men



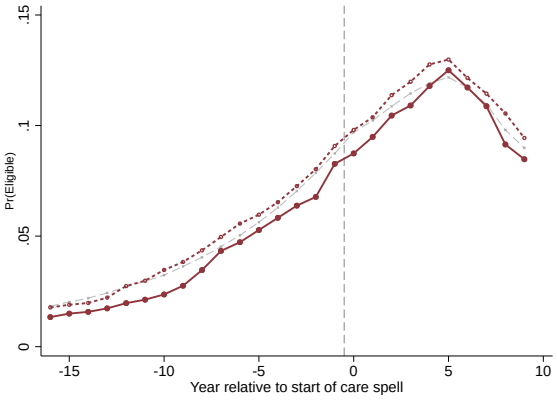
(H) Employment - College, Men

Notes: Trajectories for the matched caregiver sample are shown in solid red, while trajectories for the matched comparison group are in dashed red. The dashed gray line shows the trajectory for the SIPP sample as a whole (excluding the matched caregivers and non-caregivers in red). The vertical line marks the start of the reported care spell. Earnings are in 2018 dollars.

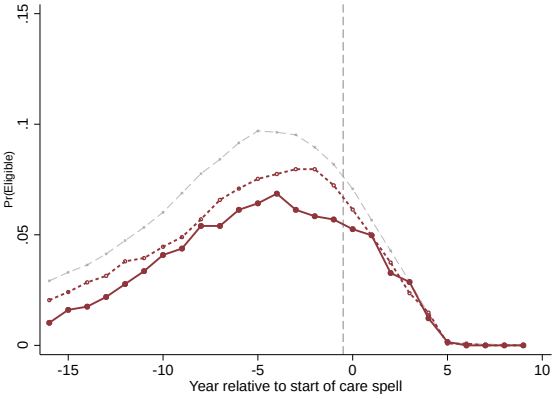
FIGURE 8: Retirement Benefit Claiming and SSDI Eligibility by Caregiver Age



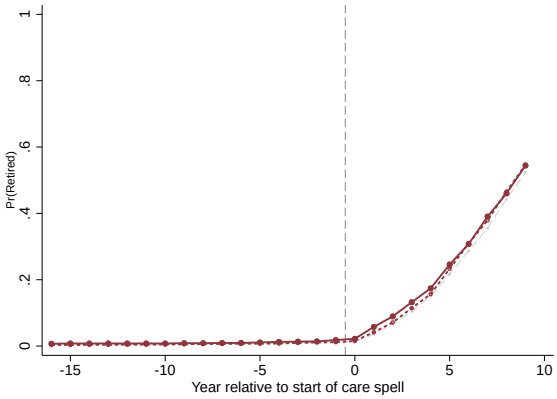
(A) SSDI Eligibility – Ages 34-50



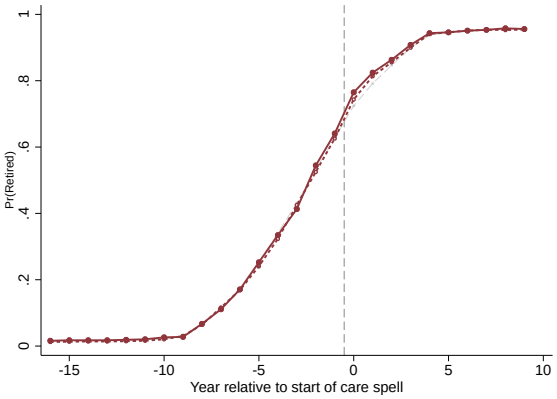
(B) SSDI Eligibility – Ages 51-61



(C) SSDI Eligibility – Ages 62-70



(D) Retirement Benefit Claiming – Ages 51-61



(E) Retirement Benefit Claiming – Ages 62-70

Notes: Trajectories for the matched caregiver sample are shown in solid red, while trajectories for the matched comparison group are in dashed red. The dashed gray line shows the trajectory for the SIPP sample as a whole (excluding the matched caregivers and non-caregivers in red). The vertical line marks the start of the reported care spell. Earnings are in 2018 dollars.

Table 1: Descriptive Statistics: SIPP Informal Care Topical Module

	All (1)	Female (2)	Male (3)
Full Sample	(N = 237,385)		
Any caregiving (%)	5.2	6.3	3.9
Caregiver Sample	(N = 12,592)		
Caring for:			
Spouse (%)	15.6	14.5	17.5
Parents or in-laws (%)	20.8	22.3	18.1
Other relative (%)	19.4	19.9	18.6
Other non-relative (%)	24.7	23.9	26.1
Child (%)	25.6	26.1	24.7
Started Care:			
Within the past year (%)	19.8	20.2	19.1
1 year ago (%)	17.4	17.3	17.5
2 years ago (%)	15.8	15.9	15.7
3+ years ago (%)	47.0	46.6	47.7
Caring for 2 years or less	(N = 6,665)		
Hours of care per week (hours)	10.0	10.5	9.2
Number of care recipients (n)	1.2	1.2	1.2
Care recipient outside household (%)	71.0	73.4	66.7
Helps with ADLs (%)	39.2	43.4	31.7
Helps with IADLs (%)	90.8	90.5	91.3
Helps with medical tasks (%)	47.6	51.6	40.5
Sole caregiver (%)	41.9	42.4	41.0

Notes: Data are from the 1996-2008 panels of the Survey of Income and Program Participation. The first column includes the full sample of caregivers identified in the SIPP, the second column includes female caregivers and the third column includes male caregivers. All statistics are weighted using survey weights and all measures collected in the SIPP Informal Care Topical Module. ADL stands for Activities of Daily Living and consist of tasks such as eating, bathing, dressing and using the toilet. IADL stands for Instrumental Activities of Daily Living and includes activities such as grocery shopping, meal preparation and transportation.

TABLE 2: Demographic and Employment Characteristics of Matched and Unmatched Caregivers and Comparison Group

	Caregivers		Non-Caregivers	
	Matched (1)	Unmatched (2)	Matched (3)	Unmatched (4)
Female (%)	65.8	42.2	66.2	52.4
Age at t-16 (years)	39.1	45.7	39.3	38.8
Age at t = 0 (years)	55.1	61.7	55.3	54.8
White non-Hispanic (%)	78.3	87.1	75.9	76.3
Married (%)	65.2	74.3	65.9	66.2
Any College (%)	27.1	56.5	25.7	28.2
Children under 18 (n)	54.1	32.6	61.8	71.3
Employment				
Year $\tau = -16$ (%)	77.5	83.7	77.8	75.0
Year $\tau = -13$ (%)	77.2	80.3	77.2	75.0
Year $\tau = 0$ (%)	62.8	57.8	64.1	64.7
Earnings				
Year $\tau = -16$ ($)	28,614	68,802	28,601	28,614
Year $\tau = -13$ ($)	29,986	62,294	30,056	30,768
Year $\tau = 0$ ($)	27,218	37,327	28,660	32,509
Total Unweighted N	4,160	147	8,079	125,707

Notes: Data are from the 1996-2008 panels of the Survey of Income and Program Participation and the SSA Administrative records from 1978-2018. The first column includes the sample of caregivers caring for an adult for two years or less and who are at least 34 when they start caregiving, who are matched to at least one non-caregiver based on demographic characteristics and earnings trajectories. The second column includes the sample of caregivers who are not matched to a non-caregiver. The third column includes matched non-caregivers, and the fourth column included SIPP respondents who are at least 34 when they enter the SIPP sample and are not matched to a caregiver. τ corresponds to the year that caregiving starts for caregiving and a placebo caregiving start for non-caregivers. Earnings are in 2018 dollars.

Table 3: Matched Difference-in-Differences Coefficients

	Full Sample				Women		Men	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Earnings								
Post × Treat	-1677.9***		-1512.7***		-894.6*		-2443.3**	
	(522.3)		(512.2)		(493.9)		(1103.9)	
Post × Treat (years 0-2)		-2029.8***		-1987.7***		-1428.4***		-2840.6***
		(485.0)		(483.5)		(469.2)		(1044.2)
Post × Treat (years 3-5)		-1709.0***		-1613.3***		-674.3		-3144.9***
		(566.1)		(560.9)		(539.8)		(1214.0)
Post × Treat (years 6+)		-1325.5**		-973.0		-597.0		-1401.4
		(661.0)		(637.4)		(611.3)		(1401.0)
Pre Care Mean	$31,397	$31,397	$31,397	$31,397	$23,197	$23,197	$46,640	46,640
Panel B: Employment								
Post × Treat	-0.019***		-0.017***		-0.011		-0.025**	
	(0.006)		(0.006)		(0.008)		(0.010)	
Post × Treat (years 0-2)		-0.023***		-0.022***		-0.021***		-0.023**
		(0.006)		(0.006)		(0.008)		(0.010)
Post × Treat (years 3-5)		-0.022***		-0.019***		-0.012		-0.033***
		(0.007)		(0.007)		(0.009)		(0.012)
Post × Treat (years 6+)		-0.013*		-0.009		-0.002		-0.021
		(0.008)		(0.008)		(0.009)		(0.013)
Pre Care Mean	0.74	0.74	0.74	0.74	0.70	0.70	0.81	0.81
Unique Observations	11,804	11,804	11,804	11,804	7,832	7,832	4,158	4,158
Individual Fixed Effects			X	X	X	X	X	X

Notes: Data are from the 1996-2008 panels of the Survey of Income and Program Participation and the SSA Administrative records from 1978-2018. The sample includes all SIPP caregivers taking care of an adult for two years or less and who are at least 34 when they start caregiving and a comparison group matched on age in 5-year bins, gender, education and earnings 16 to 13 years before the start of the caregiving spell. Each cell reports the result from a separate regression using Equation 1. The outcomes in Panel A are annual earnings, and the outcomes in Panel B are a binary indicator for employment. All columns include calendar time and event time fixed effects. columns 3-8 also include individual fixed effects. Robust standard errors clustered at the individual level are reported in parentheses. (* $p < 0.10$, ** $p < 0.05$,*** $p < 0.01$)

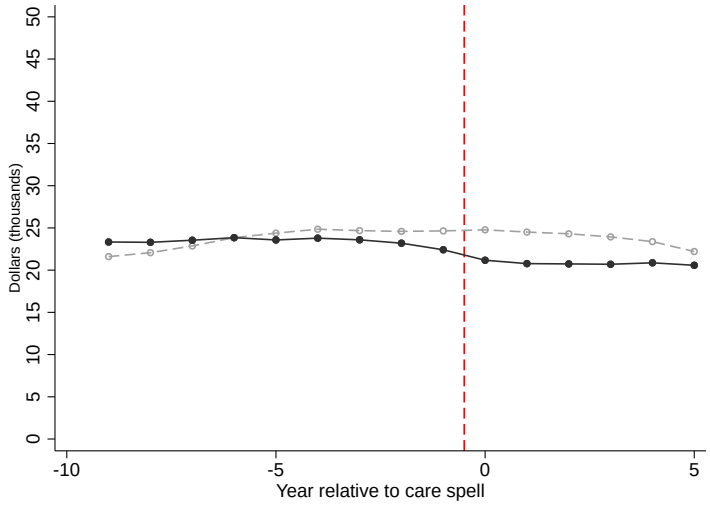
Table 4: Stacked Difference-in-Differences Coefficients

	Full Sample				Women		Men	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Earnings								
Post × Treat	-596.3		-549		-544.4		-819.1	
	(627.8)		(594.1)		(617.5)		(1228.8)	
Post × Treat (years 0-2)		-877.3		-821.8		-972.6		-784.9
		(606.5)		(586.5)		(610.5)		(1218.2)
Post × Treat (years 3-5)		-988.8		-845.6		-596.1		-1919.3
		(759.1)		(705.9)		(724.5)		(1476.8)
Pre Care Mean	$30,749	$30,749	$30,749	$30,749	$23,399	$23,399	$44,918	$44,918
Panel B: Employment								
Post × Treat	-0.022***		-0.022***		-0.018*		-0.032**	
	(0.008)		(0.008)		(0.010)		(0.013)	
Post × Treat (years 0-2)		-0.030***		-0.030***		-0.027***		-0.037***
		(0.008)		(0.008)		(0.001)		(0.013)
Post × Treat (years 3-5)		-0.012		-0.014		-0.007		-0.027
		(0.010)		(0.010)		(0.012)		(0.016)
Pre Care Mean	0.71	0.71	0.71	0.71	0.68	0.68	0.77	0.77
Unique Observations	4,117	4,117	4,117	4,117	2,714	2,714	1,419	1,419
Individual Fixed Effects			X	X	X	X	X	X

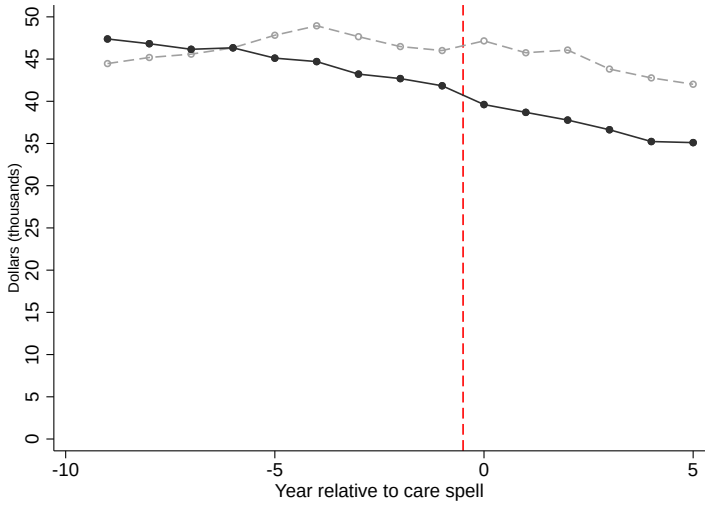
Notes: Data are from the 1996-2008 panels of the Survey of Income and Program Participation and the SSA Administrative records from 1978-2018. The sample includes all SIPP caregivers taking care of an adult for two years or less and who are at least 34 when they start caregiving. Each cell reports the result from a separate regression using Equation 1. The comparison group is constructed from the sample of future caregivers as described in Section 3.3. The outcomes in Panel A are annual earnings, and the outcomes in Panel B are a binary indicator for employment. All columns include calendar time and event time fixed effects. columns 3-8 also include individual fixed effects. Robust standard errors clustered at the individual level are reported in parentheses.(* $p < 0.10$, ** $p < 0.05$,*** $p < 0.01$)

Appendix Figures and Tables

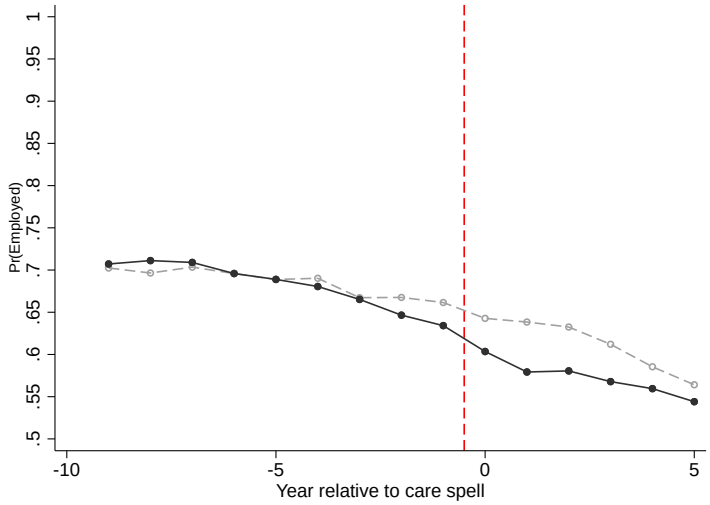
FIGURE A1: Earnings and Employment Trajectories of Caregivers and Stacked Comparison Group



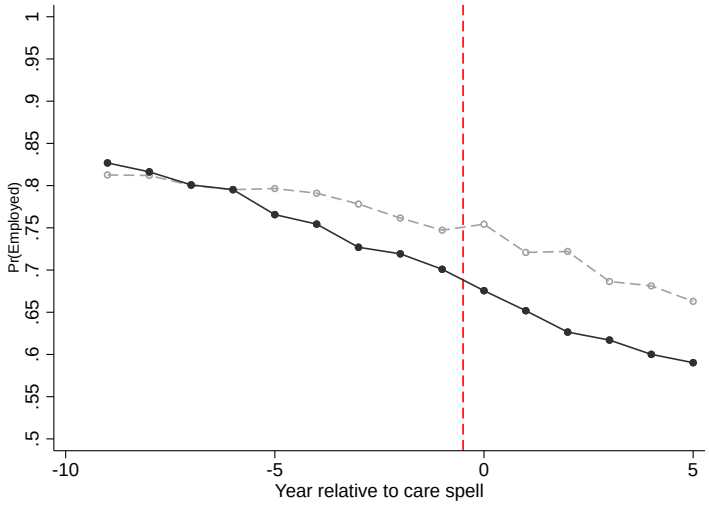
(A) Earnings - Women



(B) Earnings - Men



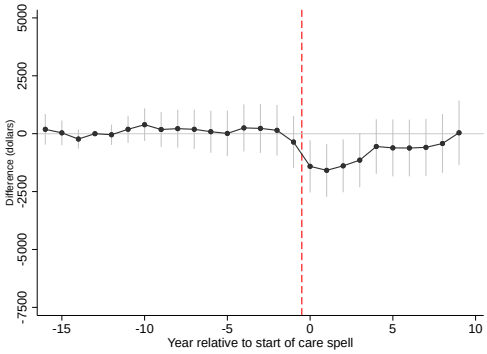
(C) Employment - Women



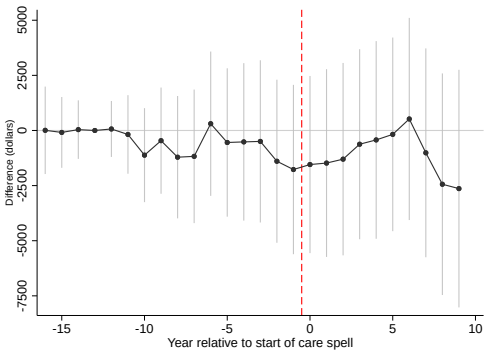
(D) Employment - Men

Notes: The sample includes all SIPP caregivers taking care of an adult for two years or less and who are at least 34 when they start caregiving and a stacked comparison group of future caregivers as described in Section 3.3. Unadjusted trajectories for the caregiver sample are shown in solid black, and trajectories for the stacked comparison group of future caregivers are shown in dashed grey. The vertical line marks the start of the reported care spell for caregivers and a placebo spell for the comparison group. Earnings are in 2018 dollars.

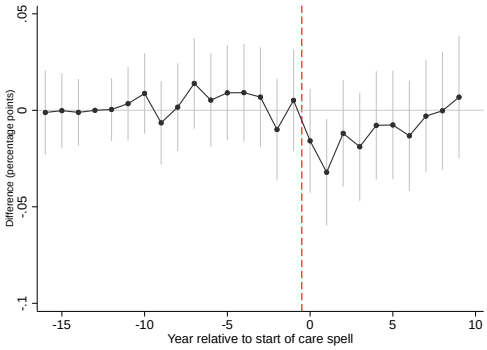
FIGURE A2: Matched Event-Study Coefficients by Gender and Education



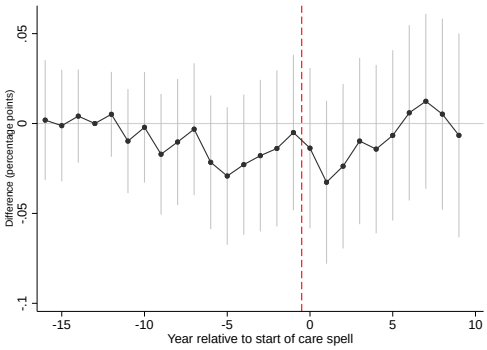
(A) Earnings – Women, no college



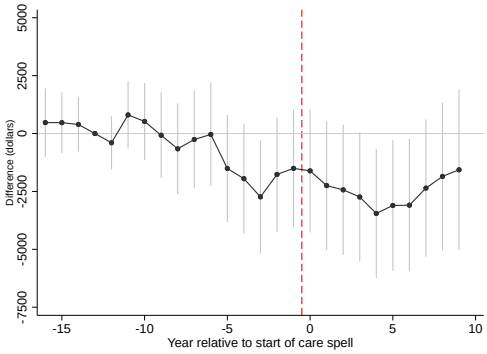
(B) Earnings – Women, college



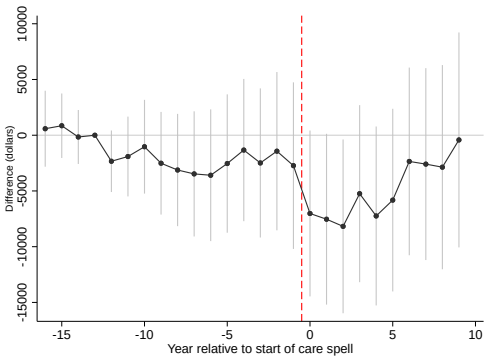
(C) Employment – Women, no college



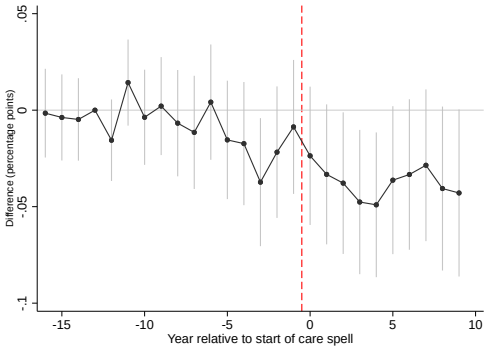
(D) Employment – Women, college



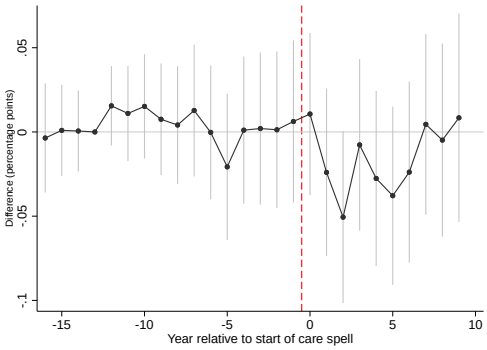
(E) Earnings - Men, no college



(F) Earnings – Men, college



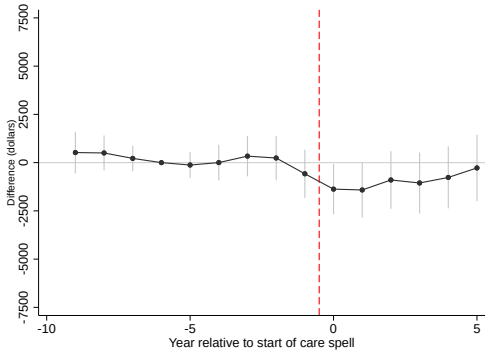
(G) Employment – Men, no college



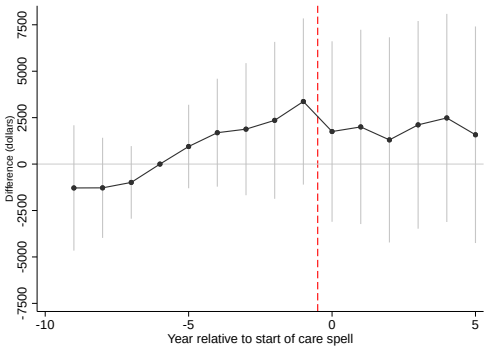
(H) Employment – Men, college

Notes: Each panel plots the coefficients from event studies estimated using Equation 1 on the sample of caregivers and a matched comparison group. 95% confidence intervals for each coefficient are plotted in grey. Comparison group is matched on age, education and gender, as well as earnings and employment in Years -16 to -13. Panels (A)-(D) plot earnings and employment for women by educational attainment and Panels (E)-(H) plot earnings and employment for men by educational attainment. Earnings are in 2018 dollars.

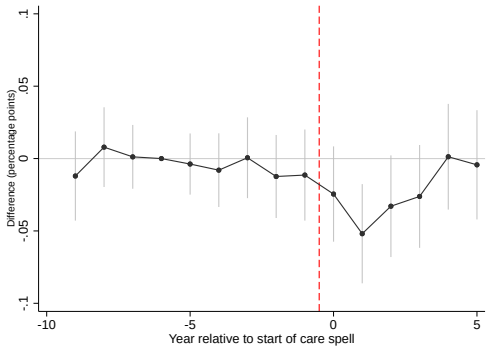
FIGURE A3: Stacked Event-Study Coefficients by Gender and Education



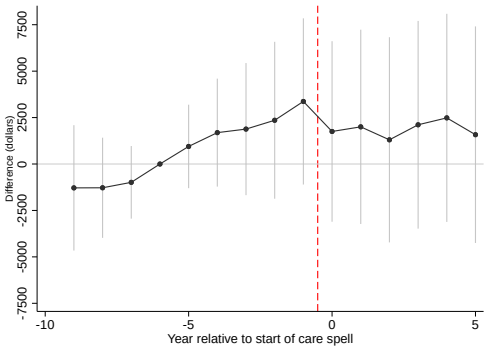
(A) Earnings – Women, no college



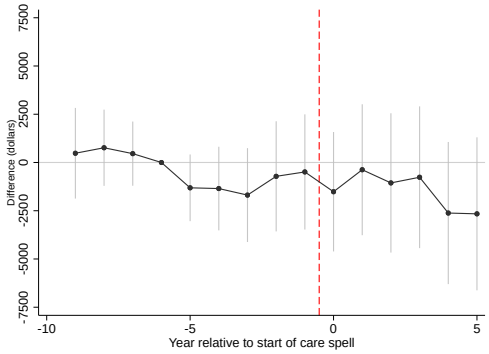
(B) Earnings – Women, college



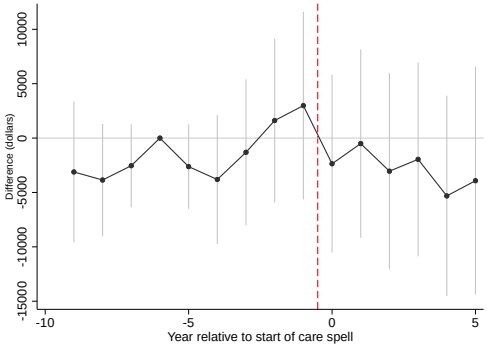
(C) Employment - Women, no college



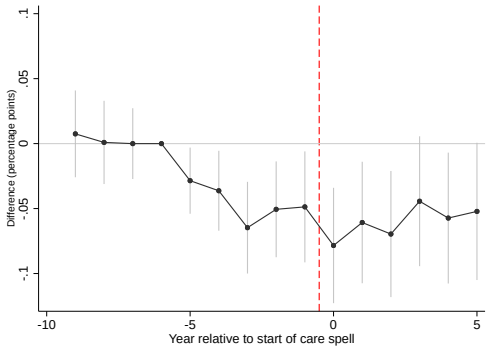
(D) Earnings – Women, college



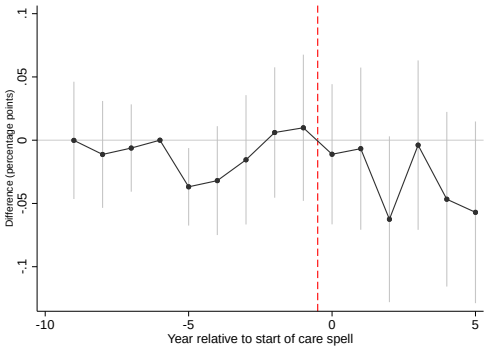
(E) Earnings – Men, no college



(F) Earnings – Men, college



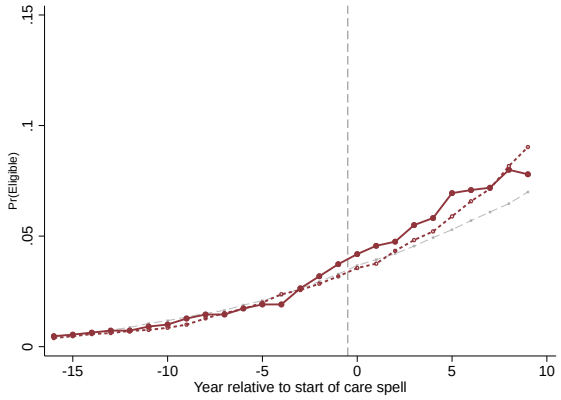
(G) Employment – Men, no college



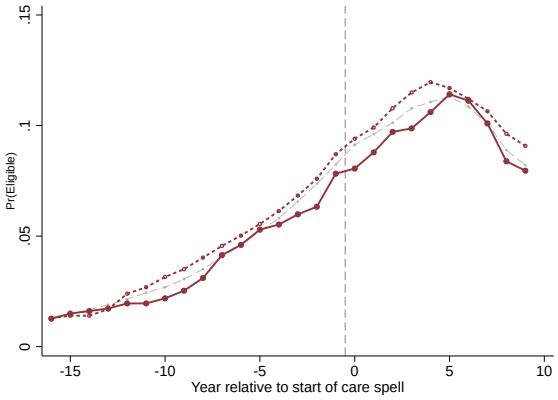
(H) Employment – Men, college

Notes: Each panel plots the coefficients from event studies estimated using Equation 1 on the sample of caregivers and a comparison group of future caregivers. 95% confidence intervals for each coefficient are plotted in grey. Panels (A)-(D) plot earnings and employment for women by educational attainment and Panels (E)-(H) plot earnings and employment for men by educational attainment. Earnings are in 2018 dollars.

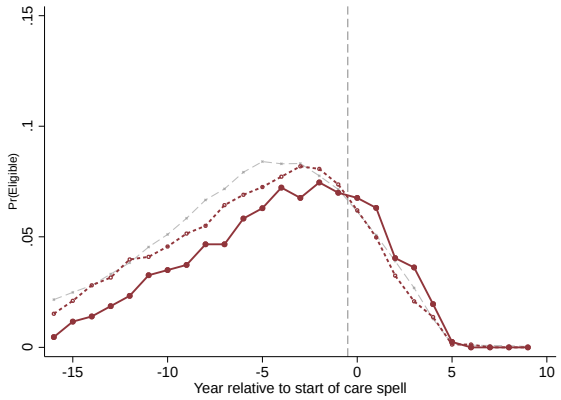
FIGURE A4: SSDI Eligibility by Caregiver Age and Gender



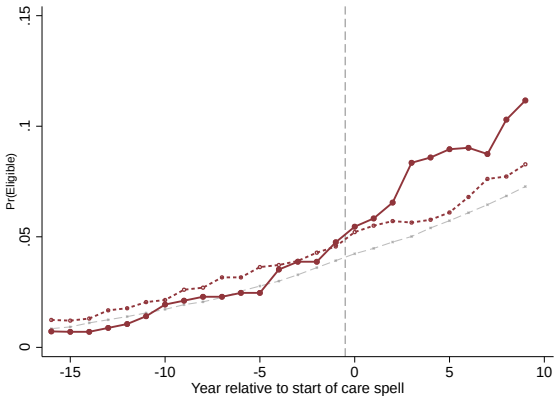
(A) SSDI Eligibility – Women ages 34-50



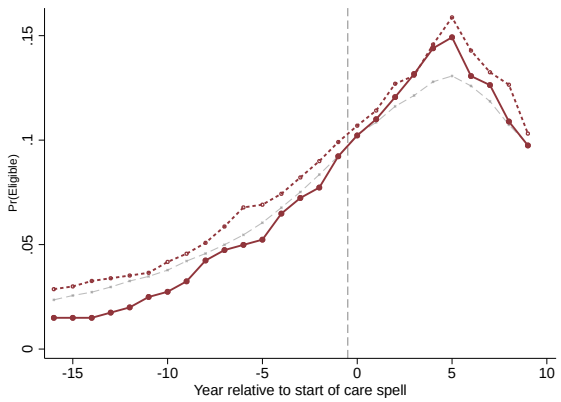
(B) SSDI Eligibility – Women ages 51-61



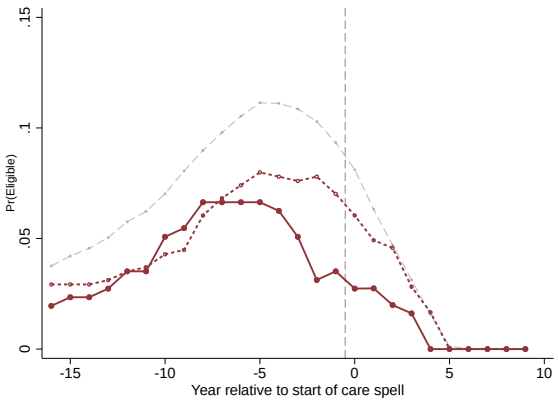
(C) SSDI Eligibility – Women ages 62-70



(D) SSDI Eligibility – Men ages 34-50



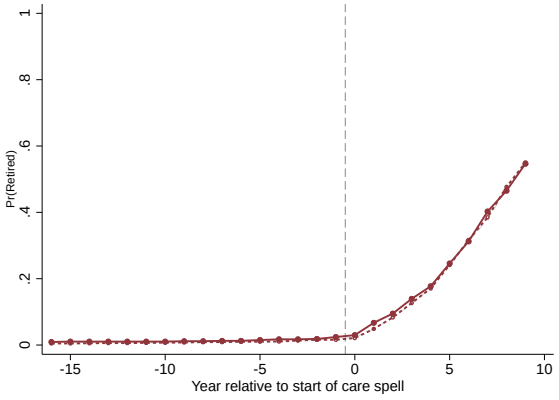
(E) SSDI Eligibility – Men ages 51-61



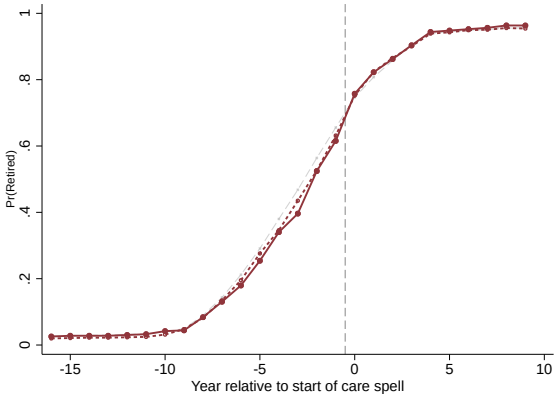
(F) SSDI Eligibility – Men ages 62-70

Notes: Trajectories for the matched caregiver sample are shown in solid red, while trajectories for the matched comparison group are in dashed red. The dashed gray line shows the trajectory for the SIPP sample as a whole (excluding the matched caregivers and non-caregivers in red). The vertical line marks the start of the reported care spell. Earnings are in 2018 dollars.

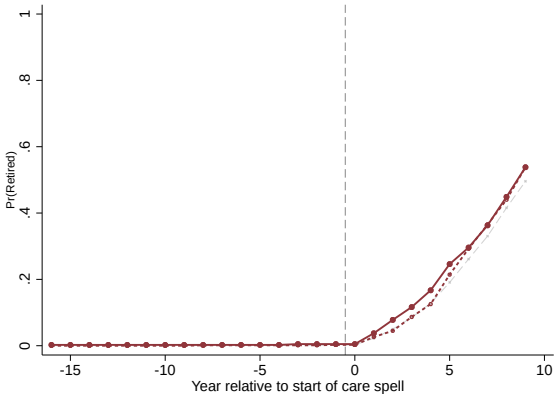
FIGURE A5: Retirement Benefit Claiming by Caregiver Gender and Age



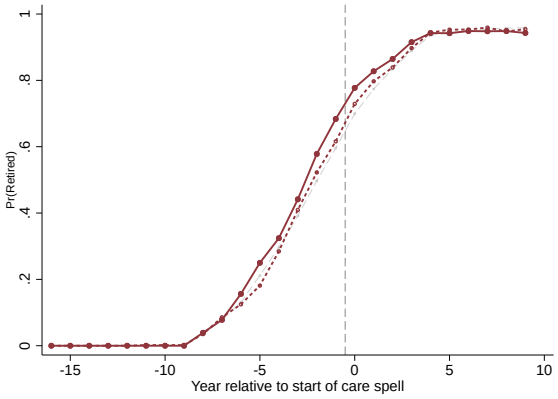
(A) Retirement – Women ages 51-61



(B) Retirement – Women ages 62-70



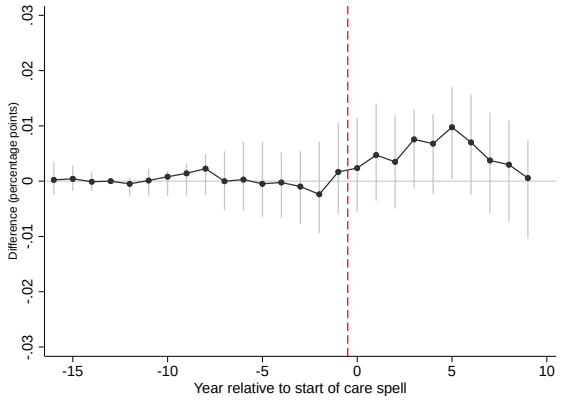
(C) Retirement – Men ages 51-61



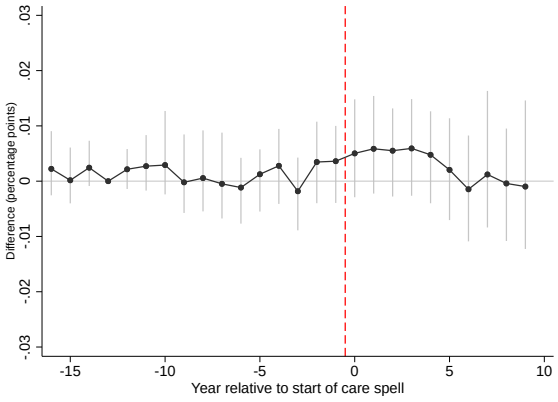
(D) Retirement – Men ages 62-70

Notes: Trajectories for the matched caregiver sample are shown in solid red, while trajectories for the matched comparison group are in dashed red. The dashed gray line shows the trajectory for the SIPP sample as a whole (excluding the matched caregivers and non-caregivers in red). The vertical line marks the start of the reported care spell. Earnings are in 2018 dollars.

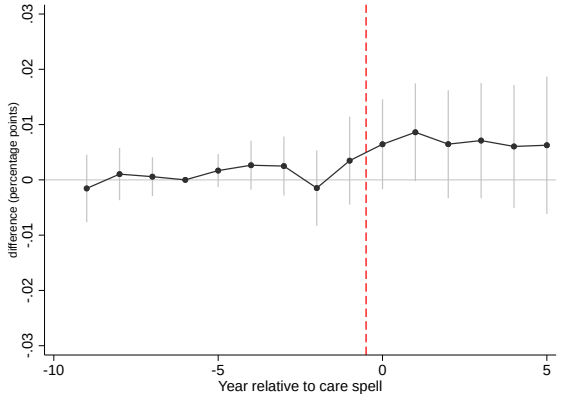
FIGURE A6: SSDI Eligibility and Retirement Claiming of Caregivers - Event Study Coefficients



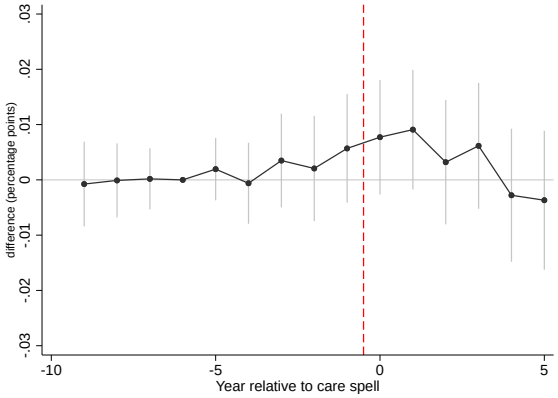
(A) SSDI eligibility – Matched Comparison Group



(B) Retirement claiming – Matched Comparison Group



(C) SSDI eligibility – Stacked Comparison Group



(D) Retirement claiming – Stacked Comparison Group

Notes: Each panel plots the coefficients from event studies estimated using Equation 1 on the sample of caregivers and a comparison group of either matched non-caregivers (matched comparison group) or future caregivers (stacked comparison group). 95% confidence intervals for each coefficient are plotted in grey.

TABLE A1: DESCRIPTIVE STATISTICS FOR SAMPLES WITH AND WITHOUT SSA EARNINGS MATCH

	Caregiver Sample		Full SIPP	
	No SSA Match (1)	SSA Match (2)	No SSA Match (3)	SSA Match (4)
Age	47.9	55.0	44.5	47.6
Female	0.63	0.64	0.53	0.54
Education:				
Less than high school	0.19	0.11	0.19	0.14
High school	0.31	0.27	0.32	0.28
Some college	0.30	0.36	0.28	0.33
Bachelor's degree or more	0.21	0.26	0.21	0.25
Race/Ethnicity:				
Non-Hispanic White	0.70	0.78	0.64	0.75
Non-Hispanic Black	0.13	0.10	0.13	0.11
Hispanic	0.11	0.08	0.17	0.09
Caring for:				
Spouse/partner	0.13	0.15		
Parent	0.20	0.25		
Other relative	0.19	0.21		
Other non-relative	0.34	0.29		
Child	0.17	0.14		
N	1,150	4,307	48,600	185,047

Notes: Table reports descriptive statistics for SIPP respondents with and without a match to their Social Security earnings records. Statistics are measured in the year of the caregiving module for the pooled 1996, 2001, 2004 and 2008 samples of SIPP caregivers (columns 1 & 2) and the full SIPP sample (columns 3 & 4).

Table A2: Matched Difference-in Differences-Coefficients – Age and Gender

	Age 34-50				Age 51-61				Age 62-70			
	Women		Men		Women		Men		Women		Men	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: Earnings												
Post × Treat	-2154**		-3998**		572		-2484		-1073		1124	
	(893)		(1812)		(901)		(2105)		(1084)		(2839)	
Post × Treat (yrs 0-2)		-2869***		-3855**		-120		-2799		-998		-793
		(854)		(1745)		(856)		(2001)		(1095)		(2717)
Post ×Treat (yrs 3-5)		-2071**		-5187***		992		-3188		-701		1107
		(943)		(1916)		(1035)		(2418)		(1197)		(3199)
Post × Treat (yrs 6+)		-1612		-3098		823		-1537		-1498		3117
		(1072)		(2239)		(1121)		(2686)		(1318)		(3543)
Pre Care Mean	$24,596	$24,596	$45,420	$45,420	$29,210	$29,210	$59,592	$59,592	$21,478	$21 478	$51,078	$51,078
Panel B: Employment												
Post × Treat	-0.033***		-0.026*		-0.003		-0.058***		0.005		0.017	
	(0.012)		(0.014)		(0.014)		(0.020)		(0.021)		(0.026)	
Post × Treat (yrs 0-2)		-0.044***		-0.029**		-0.008		-0.051**		-0.015		0.018
		(0.012)		(0.014)		(0.014)		(0.020)		(0.023)		(0.028)
Post × Treat (yrs 3-5)		-0.035***		-0.040**		-0.004		-0.063***		0.006		0.017
		(0.013)		(0.016)		(0.016)		(0.024)		(0.025)		(0.032)
Post × Treat (yrs 6+)		-0.022		-0.011		0.002		-0.061**		0.025		0.015
		(0.014)		(0.017)		(0.018)		(0.027)		(0.025)		(0.032)
Pre Care Mean	0.80	0.80	0.89	0.89	0.77	0.77	0.88	0.88	0.64	0.64	0.79	0.79
Panel C: SSDI Eligibility												
Post × Treat	0.003		0.020**		-0.007		0.004		0.014*		-0.003	
	(0.007)		(0.010)		(0.009)		(0.014)		(0.008)		(0.012)	
Post × Treat (yrs 0-2)		0.005		0.008		-0.007		0.007		0.018*		-0.014
		(0.006)		(0.008)		(0.008)		(0.013)		(0.010)		(0.014)
Post × Treat (yrs 3-5)		0.007		0.030***		-0.009		0.009		0.014		0.001
		(0.007)		(0.010)		(0.010)		(0.017)		(0.010)		(0.013)
Post × Treat (yrs 6+)		-0.001		0.022*		-0.005		-0.002		0.008		0.005
		(0.009)		(0.012)		(0.010)		(0.017)		(0.010)		(0.012)
Pre Care Mean	0.02	0.02	0.02	0.02	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Panel D: Retirement Benefit Claiming												
Post × Treat					0.001		0.012		0.001		-0.007	
					(0.007)		(0.010)		(0.015)		(0.016)	
Post × Treat (yrs 0-2)						0.007		0.010		0.002		0.006
						(0.006)		(0.006)		(0.019)		(0.022)
Post × Treat (yrs 3-5)						0.003		0.029*		-0.001		-0.013
						(0.011)		(0.015)		(0.016)		(0.018)
Post × Treat (yrs 6+)						-0.005		-0.000		0.001		-0.013
						(0.012)		(0.018)		(0.015)		(0.016)
Pre Care Mean					Censored	Censored	Censored	Censored	0.18	0.18	0.16	0.16
N	3,061	3,061	1,605	1,605	2,533	2,533	1,179	1,179	1,269	1,269	776	776

Notes: Data are from the 1996-2008 panels of the Survey of Income and Program Participation and the SSA Administrative records from 1978-2018. The sample includes all SIPP caregivers taking care of an adult for two years or less and who are at least 34 when they start caregiving and a comparison group matched on age in 5-year bins, gender, education and earnings 16 to 13 years before the start of the caregiving spell. Each cell reports the result from a separate regression using Equation 1. The outcome in Panel A is annual earnings, in Panel B is an indicator for employment, in Panel C is an indicator for any SSDI benefit claiming and in Panel D an indicator for claiming OASI benefits. All columns include calendar time, event time, and individual fixed effects. Robust standard errors clustered at the individual level are reported in parentheses.(* $p < 0.10$, ** $p < 0.05$,*** $p < 0.01$)

TABLE A3: MATCHED DIFFERENCE-IN-DIFFERENCES COEFFICIENTS – EDUCATION AND GENDER

	Less than college				College plus			
	Women		Men		Women		Men	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Earnings								
Post × Treat	-971.4**		-1970.9**		-485.7		-3489.6	
	(413.1)		(960.2)		(1596.0)		(2808.4)	
Post × Treat (years 0-2)		-1552.7***		-1578.5*		-906.7		-5873.3**
		(397.6)		(954.6)		(1516.4)		(2645.8)
Post × Treat (years 3-5)		-864.3*		-2580.2**		123.5		-4398.7
		(459.6)		(1067.4)		(1724.1)		(3089.8)
Post × Treat (years 6+)		-527.2		-1792.3		-647.8		-482.4
		(510.4)		(1247.5)		(1978.8)		(3461.3)
Pre Care Mean	$18,460	$18,460	$36,588	$36,588	$38,970	$38,970	$70,908	$70,908
Panel B: Employment								
Post × Treat	-0.014		-0.029**		-0.000		-0.020	
	(0.009)		(0.012)		(0.015)		(0.017)	
Post × Treat (years 0-2)		-0.023**		-0.024*		-0.014		-0.025
		(0.009)		(0.012)		(0.015)		(0.017)
Post × Treat (years 3-5)		-0.014		-0.036**		-0.001		-0.028
		(0.010)		(0.014)		(0.017)		(0.019)
Post × Treat (years 6+)		-0.006		-0.027*		0.014		-0.009
		(0.010)		(0.016)		(0.019)		(0.021)
Pre Care Mean	0.67	0.67	0.78	0.78	0.80	0.80	0.86	0.86
Panel C: Disability- CENSORED								
Post × Treat								
Post × Treat (years 0-2)								
Post × Treat (years 3-5)								
Post × Treat (years 6+)								
Pre Care Mean								
Panel D: Retirement								
Post × Treat	0.001		0.006		-0.000		0.000	
	(0.004)		(0.005)		(0.007)		(0.009)	
Post × Treat (years 0-2)		0.003		0.009*		0.003		-0.002
		(0.004)		(0.005)		(0.007)		(0.009)
Post × Treat (years 3-5)		0.000		0.006		0.001		0.011
		(0.005)		(0.006)		(0.008)		(0.011)
Post × Treat (years 6+)		-0.000		0.002		-0.005		-0.008
		(0.006)		(0.007)		(0.010)		(0.013)
Pre Care Mean	0.15	0.15	0.15	0.15	0.08	0.08	0.11	0.11
Unique Observations	6,114	6,114	2,996	2,996	1,773	1,773	1,182	1,182

Notes: Data are from the 1996-2008 panels of the Survey of Income and Program Participation and the SSA Administrative records from 1978-2018. The sample includes all SIPP caregivers taking care of an adult for two years or less and who are at least 34 when they start caregiving and a comparison group matched on age in 5-year bins, gender, education and earnings 16 to 13 years before the start of the caregiving spell. Each cell reports the result from a separate regression using Equation 1. The outcome in Panel A is annual earnings, in Panel B is an indicator for employment, in Panel C is an indicator for any SSDI benefit claiming and in Panel D an indicator for claiming OASI benefits. All columns include calendar time, event time, and individual fixed effects. Robust standard errors clustered at the individual level are reported in parentheses. (* $p < 0.10$, ** $p < 0.05$,*** $p < 0.01$)

Table A4: Stacked Difference-in-Differences Coefficients – Age and Gender

	Age 34-50				Age 51-61				Age 62-70			
	Women		Men		Women		Men		Women		Men	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A: Earnings												
Post × Treat	-2574.9*		-913.7		121.5		-2352.9		-2825.6		-2021.4	
	(1388.7)		(2157.3)		(1382.5)		(2975.8)		(2053.0)		(4971.3)	
Post × Treat (years 0-2)		-2465.3*		-1316.2		-195.7		-1460.6		-2471.1		-823.1
		(1329.4)		(2180.5)		(1245.2)		(2795.0)		(1924.6)		(4622.6)
Post × Treat (years 3-5)		-2724.4		-352.3		608.3		-3804.9		-3423.6		-4192.5
		(1656.7)		(2470.6)		(1767.2)		(3791.1)		(2492.1)		(6159.7)
Pre Care Mean	$26,932	$26,932	$49,712	$49,712	$29,945	$29,945	$58,251	$58,251	$17,817	$17,817	$40,626	$40,626
Panel B: Employment												
Post × Treat	-0.025		-0.026		-0.035		0.020		-0.039		-0.073	
	(0.018)		(0.019)		(0.022)		(0.034)		(0.043)		(0.050)	
Post × Treat (years 0-2)		-0.036**		-0.039**		-0.039*		0.008		-0.045		-0.060
		(0.018)		(0.019)		(0.020)		(0.030)		(0.040)		(0.046)
Post × Treat (years 3-5)		-0.010		-0.007		-0.030		0.039		-0.029		-0.097
		(0.022)		(0.024)		(0.028)		(0.045)		(0.054)		(0.063)
Pre Care Mean	0.80	0.80	0.89	0.89	0.77	0.77	0.85	0.85	0.58	0.58	0.70	0.70
Panel C: Disability Benefit Claiming												
Post × Treat	0.005		0.012		0.005		-0.018		-0.002		0.026	
	(0.006)		(0.012)		(0.012)		(0.025)		(0.014)		(0.023)	
Post × Treat (years 0-2)		0.010		0.005		0.007		-0.014		0.010		0.007
		(0.006)		(0.010)		(0.010)		(0.020)		(0.013)		(0.018)
Post × Treat (years 3-5)		-0.001		0.021		0.006		-0.026		-0.021		0.061
		(0.009)		(0.015)		(0.016)		(0.034)		(0.020)		(0.038)
Pre Care Mean	0.021	0.021	0.031	0.031	0.050	0.050	0.059	0.059	0.059	0.059	0.056	0.056
Panel D: Retirement Benefit Claiming												
Post × Treat					-0.000		0.015**		-0.004		-0.043	
					(0.008)		(0.007)		(0.030)		(0.033)	
Post × Treat (years 0-2)						0.000		0.011*		-0.001		-0.025
						(0.007)		(0.006)		(0.031)		(0.038)
Post × Treat (years 3-5)						-0.001		0.021*		-0.009		-0.074**
						(0.012)		(0.011)		(0.034)		(0.038)
Pre Care Mean												
Pre Care Mean					Censor	Censor	Censor	Censor	0.285	0.285	0.283	0.283
N	1049	1049	554	554	868	868	401	401	429	429	256	256

Notes: Data are from the 1996-2008 panels of the Survey of Income and Program Participation and the SSA Administrative records from 1978-2018. The sample includes all SIPP caregivers taking care of an adult for two years or less and who are at least 34 when they start caregiving and a comparison group matched on age in 5-year bins, gender, education and earnings 16 to 13 years before the start of the caregiving spell. Each cell reports the result from a separate regression using Equation 1. The outcome in Panel A is annual earnings, in Panel B is an indicator for employment, in Panel C is an indicator for any SSDI benefit claiming and in Panel D an indicator for claiming OASI benefits. All columns include calendar time, event time, and individual fixed effects. Robust standard errors clustered at the individual level are reported in parentheses. (* $p < 0.10$, ** $p < 0.05$,*** $p < 0.01$)

TABLE A5: STACKED DIFFERENCE-IN-DIFFERENCES COEFFICIENTS – EDUCATION

	Less than college				College plus			
	Women		Men		Women		Men	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Panel A: Earnings				
Post × Treat	-1110.5**		-1025.1		1077.2		-1449.6	
	(556.0)		(1229.0)		(2008.8)		(2969.2)	
Post × Treat (years 0-2)		-1335.0**		-601.2		834.1		-851.5
		(535.2)		(1186.9)		(1999.7)		(3058.8)
Post × Treat (years 3-5)		-849.9		-1543.4		1373.9		-2178.3
		(665.0)		(1508.8)		(2337.9)		(3445.5)
Pre Care Mean	$18,568	$18,568	$34,028	$34,028	$40,331	$40,331	$72,908	$72,908
				Panel B: Employment				
Post × Treat	-0.020*		-0.037**		-0.008		-0.020	
	(0.011)		(0.016)		(0.020)		(0.021)	
Post × Treat (years 0-2)		-0.031***		-0.044***		-0.010		-0.019
		(0.011)		(0.017)		(0.020)		(0.021)
Post × Treat (years 3-5)		-0.006		-0.027		-0.006		-0.022
		(0.014)		(0.020)		(0.024)		(0.027)
Pre Care Mean	0.648	0.648	0.735	0.735	0.802	0.802	0.85	0.85
				Panel C: Disability Benefit Claiming- CENSORED				
Post × Treat								
Post × Treat (years 0-2)								
Post × Treat (years 3-5)								
Pre Care Mean								
				Panel D: Retirement Benefit Claiming				
Post × Treat	0.003		-0.010		0.009		0.011	
	(0.006)		(0.007)		(0.009)		(0.011)	
Post × Treat (years 0-2)		0.003		-0.005		0.017*		0.004
		(0.006)		(0.008)		(0.009)		(0.013)
Post × Treat (years 3-5)		0.002		-0.016*		-0.000		0.018
		(0.007)		(0.009)		(0.011)		(0.014)
Pre Care Mean	0.187	0.187	0.192	0.192	0.089	0.089	0.140	0.140
Unique Observations	2,115	2,115	1,022	1,022	607	607	398	398

Notes: Data are from the 1996-2008 panels of the Survey of Income and Program Participation and the SSA Administrative records from 1978-2018. The sample includes all SIPP caregivers taking care of an adult for two years or less and who are at least 34 when they start caregiving and a comparison group matched on age in 5-year bins, gender, education and earnings 16 to 13 years before the start of the caregiving spell. Each cell reports the result from a separate regression using Equation 1. The outcome in Panel A is annual earnings, in Panel B is an indicator for employment, in Panel C is an indicator for any SSDI benefit claiming and in Panel D an indicator for claiming OASI benefits. All columns include calendar time, event time, and individual fixed effects. Robust standard errors clustered at the individual level are reported in parentheses. (* $p < 0.10$, ** $p < 0.05$,*** $p < 0.01$)

TABLE A6: DIFFERENCE-IN-DIFFERENCES COEFFICIENTS – OASI AND SSDI

	Full Sample				Women		Men	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Panel A: SSDI Eligibility Matched DiD Coefficients							
Post × Treat	0.006*		0.005		0.003		0.009	
	(0.003)		(0.003)		(0.004)		(0.006)	
Post × Treat (years 0-2)		0.003		0.003		0.003		0.003
		(0.003)		(0.003)		(0.004)		(0.006)
Post × Treat (years 3-5)		0.009**		0.008**		0.004		0.015**
		(0.004)		(0.004)		(0.005)		(0.007)
Post × Treat (years 6+)		0.006		0.004		0.001		0.010
		(0.005)		(0.004)		(0.005)		(0.008)
Pre Care Mean	0.027	0.027	0.027	0.027	0.026	0.026	0.03	0.03
	Panel B: Retirement Claiming Matched DiD Coefficients							
Post × Treat	0.002		0.002		0.002		0.004	
	(0.003)		(0.003)		(0.004)		(0.004)	
Post × Treat (years 0-2)		0.004		0.004		0.003		0.006
		(0.003)		(0.003)		(0.004)		(0.005)
Post × Treat (years 3-5)		0.003		0.004		0.001		0.007
		(0.004)		(0.003)		(0.004)		(0.006)
Post × Treat (years 6+)		-0.002		-0.002		-0.001		-0.001
		(0.004)		(0.004)		(0.005)		(0.006)
Pre Care Mean	0.133	0.133	0.133	0.133	0.131	0.131	0.138	0.138
Unique Observations	11,804	11,804	11,804	11,804	7,832	7,832	4,158	4,158
	Panel C: SSDI Eligibility Stacked DiD Coefficients							
Post × Treat	0.005		0.006		0.002		0.014**	
	(0.004)		(0.004)		(0.004)		(0.007)	
Post × Treat (years 0-2)		0.006		0.006*		0.006		0.008
		(0.003)		(0.003)		(0.004)		(0.007)
Post × Treat (years 3-5)		0.005		0.006		-0.001		0.021**
		(0.005)		(0.005)		(0.005)		(0.009)
Pre Care Mean	0.037	0.037	0.037	0.037	0.035	0.035	0.040	0.040
	Panel D:Retirement Claiming Stacked DiD Coefficients							
Post × Treat	0.001		0.002		0.004		-0.006	
	(0.004)		(0.004)		(0.005)		(0.006)	
Post × Treat (years 0-2)		0.004		0.005		0.007		-0.002
		(0.004)		(0.004)		(0.005)		(0.007)
Post × Treat (years 3-5)		-0.003		-0.001		0.001		-0.006
		(0.006)		(0.006)		(0.006)		(0.007)
Pre Care Mean	0.170	0.170	0.170	0.170	0.166	0.166	0.178	0.178
Unique Observations	4,117	4,117	4,117	4,117	2,714	2,714	1,419	1,419
Individual FE			X	X	X	X	X	X

Notes: Data are from the 1996-2008 panels of the Survey of Income and Program Participation and the SSA Administrative records from 1978-2018. The sample includes all SIPP caregivers taking care of an adult for two years or less and who are at least 34 when they start caregiving and a comparison group matched on age in 5-year bins, gender, education and earnings 16 to 13 years before the start of the caregiving spell. Each cell reports the result from a separate regression using Equation 1. The outcome in Panels A and C is an indicator for any SSDI benefit claiming and in Panels b and D an indicator for claiming OASI benefits. All columns include calendar time, event time, and individual fixed effects. Robust standard errors clustered at the individual level are reported in parentheses. (* $p < 0.10$, ** $p < 0.05$,*** $p < 0.01$)