Financial Determinants and Consequences of Intergenerational Caregiving among US Households

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Abstract

Although caregiving burden has been studied extensively, less is known about the financial precursors of caregiving and its impact on household finances longitudinally and in heterogeneous populations. We use two decades of the Health and Retirement Study data (1996-2018) to examine financial determinants and consequences of intergenerational caregiving among U.S. households who provide care for their parents. We examine an extensive set of household-level financial outcomes, such as wealth, income, and spending, including intergenerational transfers. We use an event study framework to describe trajectories of household finances before and after caregiving. We further employ an instrumental variables design to examine the consequences of caregiving on finances. Overall, we do not find evidence that intergenerational caregiving negatively affects household finances among caregivers of middle to older age. On the other hand, our results highlight decreasing opportunity cost as a key incentive for selection into caregiving, and raise equity concerns for non-White caregivers who are much worse financially compared to their White counterparts.

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1. INTRODUCTION

Family members typically serve as the primary (unpaid) caregivers for older adults with functional limitations. They fulfill the majority of the growing demand for long-term care in the US. (Giovannetti & Wolff, 2010) This trend can be partly attributed to Medicare's limited coverage for such care because its long-term care services are only available for conditions requiring "medically necessary" interventions (i.e., post-hospital care). (Gruber, J; McGarry, 2023) Meanwhile, other alternatives, such as Medicaid and commercial insurance, do exist, and they offer a broad range of long-term care services, including assistance with activities of daily living. However, these programs are not widely accessible to older adults due to additional eligibility criteria, such as financial conditions required for Medicaid, and a lack of comprehensive information on the commercial long-term care insurance market. (Brown et al., 2012; Gruber, J; McGarry, 2023) Consequently, those without adequate long-term care coverage may have to finance their expenses for long-term care services out-of-pocket.[2] Likewise, they may rely on informal caregiving from family members, which could impose a significant financial burden on those families[3].

It is well known that informal caregiving often entails costs for caregivers across different domains, such as their health and labor supply. Coe and Van Houtven (2009) showed evidence of declining mental and physical health among female caregivers for elderly mothers. Additionally, Do and colleagues (2015) observed an increased likelihood of medical utilization among female caregivers due to their caregiving obligation. Many studies have analyzed the impact of caregiving

[2] According to Gruber and McGarry's estimation, 19% of the total long-term care expenses in the US are covered by personal funds.

[3] Around 78% of caregivers incur out-of-pocket expenses related to caregiving, which is equivalent to an average of $7,242 annually. Caregivers allocate a quarter of their income toward caregiving activities. (NAC/AARP, 2020)

on various aspects of employment: caregivers, compared to non-caregivers, tend to exhibit a higher likelihood of quitting their jobs and exiting the labor market (i.e., extensive margin), while also working fewer hours at reduced wages (i.e., intensive margin). (Ettner, 1996; Fahle & McGarry, 2018; Skira, 2015; Van Houtven et al., 2013) Moreover, Maestas and colleagues (2024) underscored gender variation in these impacts. Particularly, they found that women experience a sharp decline in their employment and earnings after caregiving starts; in contrast, male caregivers maintain a similar level of decrease, which had already begun before assuming the caregiving role.

In addition to the immediate impacts on employment-related indicators, caregiving may also influence the future financial well-being and security of caregivers. For example, caregiving responsibilities may require caregivers to cover living costs and other medical expenses for elderly care recipients. (Fast et al., 1999) Moreover, being a caregiver may hinder the continuous accumulation of social security benefits or pension funds, resulting in reduced income in retirement. (Evandrou & Glaser, 2003; Weller, CE; Tolson, 2018) The study by Butrica and Karamcheva also highlights that intergenerational caregiving may impede wealth accumulation and increase the risk of falling into poverty. (Butrica, B, Karamcheva, 2014)

Despite extensive research on the effects of caregiving on caregiver's health and labor market outcomes, relatively little attention has been paid to the long-term financial consequences of caregiving. In addition, few studies have explored the household-level consequences of caregiving as many focus solely on primary caregivers. However, over 60% of caregivers are married or living with a partner (NAC/AARP, 2020), and they often rely on supports from their spouses, sharing the caregiving role for aging parents. (Szinovacz & Davey, 2008) Therefore, caregiving can be viewed as part of household labor or production, with every household member facing the same resource constraints. (Henz, 2010) Notably, analyzing the impact of caregiving at

the individual level may offer an incomplete picture, leading to misguided policy recommendations. Thus, it is crucial to understand the effects of caregiving at the household level since this approach broadly reflects the situation where household members frequently share caregiving decisions and burdens regardless of their primary caregiver status. (Henz, 2010; Szinovacz & Davey, 2008)

This paper aims to fill these critical research gaps. We examine the household-level financial trajectories before and after the start of caregiving, using the Health and Retirement Study (HRS) and the inverse probability of treatment weighting (IPTW) and event study framework, by comparing the caregiving households to those without such responsibilities. Additionally, we evaluate the impact of caregiving on household finances using an instrumental variables (IV) using two separate instruments: (1) onset of parental illness and (2) death of an alternative caregiver. To identify heterogeneity in these trajectories and impacts, we further conduct comprehensive sub-population analyses by race, education, household size, caregiving duration, and Alzheimer's disease and related dementias (ADRD) status of care recipients. We hypothesize that caregiving households are more likely to experience financial strains (e.g., decreases in household wealth, income, and spending) as a result of assuming this role compared to non-caregiving households.

Our results highlight several key implications of caregiving for household finances. First, we document that households assuming caregiving responsibilities experience a decline in income and earnings *prior to* the start of caregiving. Notably, this evidence aligns with the predictions of the economic theory of individual's time allocation (Becker, 1965), which considers the relative opportunity costs between labor supply and other activities, such as leisure and caregiving. Additionally, empirical studies examining the trade-offs between family caregiving and employment opportunities show that a reduction in the opportunity cost of caregiving leads to an

increase in caregiving activity. (Costa-Font et al., 2016; He & McHenry, 2016; Mommaerts & Truskinovsky, 2020) As suggested by Van Houtven et al. (2013), the prior decline in household income and earnings may indicate that a household member choose to transition to lower-paying or less demanding jobs to gain greater flexibility in managing their time, especially as they begin assisting with chores or personal care for elderly parents before fully taking on the caregiving role. Furthermore, initial involvement in such tasks may lead to reduced productivity. Similarly, Maestas et al. (2024) provide evidence of labor market disruptions prior to the caregiving period among individual caregivers. Our event study results not only corroborate their findings but also extend them to the household level.

Second, we find no evidence suggesting that caregiving adversely affects household finances. Our event study results show that, although there is a consistent downward trend in household earnings prior to assuming the caregiving role, this does not lead to a decline in household wealth or income. On the contrary, we observe an *increase* in the total wealth of caregiving households after caregiving begins, particularly driven by a rise in capital income. Additionally, our findings from the IV models confirm a non-negative effect of caregiving on total household wealth. However, it is important to note that the IV models yield results that contradict those of the event study models regarding household earnings: the IV models indicate that households experience an increase in earnings after taking on the caregiving role. Since the IV estimates are interpreted as LATE, they apply only to marginal populations – in this case, those who take on the caregiving role due to a parent's "ill health" or the death of one parent, leaving the surviving parent living alone. In these situations, household members may become more involved in the labor market to financially support their caregiving responsibilities. The evidence of increased financial transfers to parents from the IV analyses further supports this hypothesis.

Third, we find strong evidence that caregiving increases both the likelihood and the extent of financial transfers between caregiving children and their parents receiving care. Specifically, our event study results using the full sample suggest that providing intergenerational caregiving results in a temporary increase in transfers to and from parents, lasting up to two years. However, subgroup analyses reveal that for households providing care over multiple periods and for those caring for parents with ADRD, the increase in transfers to parents lasts longer, both in terms of extensive and intensive margins. The IV results generally support these findings; however, we observe no increase in transfers from parents among caregiving households with parents in "ill-health". Combined with the evidence of increased household earnings after caregiving, this finding may suggest a financial burden related to covering the additional expenses of care recipients.

Fourth, the characteristics of caregiving households vary by race. White caregiving households tend to have significantly higher wealth on average compared to White non-caregivers, whereas the opposite is true for non-White households. Moreover, intergenerational caregiving places non-White households at a disadvantage, as evidenced by a decline in total spending and capital income.

The rest of the paper is structured as follows: Section 2 describes economic models of caregiving. Section 3 provides detailed information on the data. Section 4 discusses the identification strategies. Section 5 presents the results. Section 6 discusses our findings and concludes.

2. ECONOMIC MODELS OF CAREGIVING

To understand the factors that affect an individual's decision for caregiving, we review several hypotheses based on economic theories and behavioral models. First, the economic theory of time allocation provides a framework for understanding how individuals' labor market productivity

influences their decision to provide caregiving for elderly parents. (Becker, 1965) By considering the trade-offs between leisure, work, and caregiving, utility maximizing individuals determine the optimal level of engagement in each of these activities. In terms of caregiving, its opportunity costs are the value of forgone earnings and leisure time, which could vary depending on the individuals' wages in the labor market. Thus, all else being equal, individuals with higher wages may be less likely to allocate their time for caregiving than those with relatively lower wages.

The second economic model focuses on strategic behaviors within families, analyzing the interactions between adult children and their elderly parents over two consecutive periods. (Cremer & Roeder, 2017; Zweifel & Strüwe, 1996) In contrast to the time allocation model where adult children are the sole decision maker, this model incorporates a principal-agent relationship for caregivers and care recipients. Hence, the adult children act as the agents, providing care with the expectation of receiving bequests from the elderly parents who are the principals. In the initial period, the elderly parents decide whether to allocate their wealth toward purchasing private long-term care insurance or leaving it as a bequest to their adult children. Then, in the next period, the adult children decide their level of labor supply and caregiving involvement, based on the relative opportunity cost between their earnings and the expected bequests from their parents.

Unlike the previous models, which assume adult children are "selfish" individuals, the third economic model emphasizes altruistic motives of caregiving children. (Klimaviciute et al., 2020; Pestieau & Sato, 2008) In this model, adult children maximize their utility by balancing the trade-offs between consumption and providing (financial) aid to the parents. Similarly, the fourth economic model highlights the significance of social norms as crucial determinants of the supply of caregiving for elderly parents. (Barigozzi et al., 2020) The core assumption of this model posits that daughters have a greater obligation for caregiving compared to sons. This could lead to

negative impacts on their utility if they provide less caregiving than the average woman. Thus, this model is particularly advantageous for understanding the observed gender disparities in the provision of caregiving.

3. DATA

3.1. Data and Sample

We use the HRS from 1996 to 2018. The HRS is a nationally representative longitudinal survey of US older adults aged 51 and above and their partners (regardless of age)[4]. The survey participants are interviewed biennially until they die. The HRS offers unique advantages for studying intergenerational caregiving and household finances. It collects comprehensive and detailed information on respondents' family structure, as well as their allocation of time for caregiving and utilization of financial resources, including wealth, incomes, and intergenerational transfers. Additionally, we use the Consumption and Activities Mail Surveys (CAMS) to obtain information on total household spending over the past 12 months. The CAMS serves as a supplementary survey to the HRS, administered biennially on a random subset of all participating households, which represents nearly half of the total households enrolled in the HRS. The HRS is sponsored by the National Institute on Aging (grant number NIA U01AG009740) and is conducted by the University of Michigan.

We construct a cohort of households providing caregiving (i.e., personal care or errand help[5]) for either side of parent(s). This cohort is defined by four key variables that represent both

[4] Health and Retirement Study, public use dataset. Produced and distributed by the University of Michigan with funding from the National Institute on Aging (grant numbers NIA U01AG009740 and NIA R01AG073289). Ann Arbor, MI, [2023]. [RAND HRS Longitudinal File 2020 (V1) & RAND HRS Family Data File 2018 (V2) & RAND HRS CAMS Data File 2019 (V2)]. Produced by the RAND Center for the Study of Aging, with funding from the National Institute on Aging and the Social Security Administration. Santa Monica, CA [2023].

[5] Personal care involves assistance with basic activities, such as dressing, eating, and bathing, whereas errand help includes tasks like household chores, running errands, and providing transportation.

the extensive and intensive margins of caregiving: whether personal care or errand help was provided, and the total number of hours used for personal care or errand help within the last two years. Using these variables, we first determine a caregiving individual within the household if he/she has provided more than 100 hours of personal care and errand help over the last two years[6]. Then, we label a household containing at least one caregiver as a caregiving household. Furthermore, we establish a control cohort comprised of non-caregiving households. The control cohort consists of households where no individual provided caregiving at any point during the study period, with the condition that at least one parent of the respondent (or their spouse's) is survived[7]. For both caregiving and non-caregiving households, we apply the following inclusion criteria: first, households with one or two survey respondent(s), and second, households with at least two consecutive waves. In order to ascertain incident caregiving, we ensure the presence of at least one "clean" wave before caregiving onset among cases. However, we exclude households in which the survey respondent(s) live with their parents or parents-in-law to mitigate potential confounding factors. Note that we provide information on the distribution of household-level caregiving hours in Table A1 in the appendix.

3.2. Measures of Household Financial Outcomes

To provide a comprehensive understanding of how intergenerational caregiving is associated with various aspects of household finances over time, we analyze three different types of financial outcomes: wealth, income, and spending. Wealth includes both total wealth and financial wealth; income includes total income, capital income, earnings, unemployment and worker's

[6] Many studies on caregiving using the HRS commonly employ the 100-hour threshold to define caregivers (e.g., Van Houtven et al. (2013) and Butrica, B, Karamcheva (2014)).
[7] The characteristics of the control group with a possibility of future caregiving tend to be more similar to those of cases, than the group whose parents were already deceased.

compensation and transfer from parents; spending measures include total spending, out-of-pocket healthcare spending and transfer to parents. For transfer to and from parents, we examine both any transfer (i.e., extensive margin) and the amount transferred (i.e., intensive margin)[8]. We construct each of the above measures at the household level by dividing the sum of responses from each household member by the total number of interviewed household members excluding co-resident children and other family members, e.g. 1 for single-respondent households and 2 for coupled-households, as only the sampled respondents and their spouses are interviewed in HRS. We adjust financial outcomes to 2018-dollar values using the Consumer Price Index from the Bureau of Labor Statistics. The definitions of each outcome variable are provided in the appendix.

4. IDENTIFICATION STRATEGIES

4.1. Inverse Probability of Treatment Weighting

To address variations in basic household characteristics between cases and controls, for each year in the dataset relative to the start of caregiving among cases (e.g., t = -8, -6, -4, -2, 0, 2, 4, 6, 8), we employ IPTW to all household-year observations among controls. In the model estimating probability weights for controls, we incorporate several covariates, such as the minimum and maximum age of household survey respondents, the household education level (no college degree, a single member with a college degree, and both members with college degrees) and the number of household survey respondents. Specifically, to account for differences in household sizes, we introduce two additional interaction terms in the model: one between the minimum and maximum ages, and another between the household education level and the number of surveyed household

[8] For individuals who provided bracketed responses (i.e., both minimum and maximum values) for transferred amount from/to parents, we computed a simple arithmetic mean by averaging these two numbers.

members. We then plot long-term trajectories between cases and re-weighted controls across various household-level indicators of wealth, income, and spending.

4.2. Event Study with Fixed Effects Model

To assess the robustness of our findings from comparisons between cases and re-weighted controls, we further employ an event study model, examining within-household variations over time using a household fixed effects approach. We specify our event study model as follows:

$$Y_{ht} = \delta_t + \eta_h + \sum_{r=-8}^{8} 1[R_{ht} = r]\beta_k + \gamma X'_{ht} + \varepsilon_{ht} \quad (1)$$

where Y_{ht} is an outcome of interest for household h in calendar year t. $1[R_{ht} = r]$ is a dummy variable indicating a specific year relative to the start of caregiving for a given household, with $r \in$ (-8, -6, -4, -2, 0, 2, 4, 6, 8). X'_{ht} includes co-residence with minor child(ren), and the number of household members surveyed (1 or 2), all of which may vary over time. The reference year for comparing estimates is -2. All the dummy variables for controls are set to 0. δ_t and η_h indicate calendar year and household fixed effects, respectively. We apply inverse hyperbolic sine transformation to all outcomes representing dollar values to account for the skewedness of these variables. The financial outcome variables are winsorized at the top 5%. Household-level sampling weights in HRS are applied to all regression models. The standard errors are clustered at the household level.

4.3. 2SLS IV Model

Estimating the causal effects of caregiving through a naïve regression model may yield biased results due to potential endogeneity in the decision to assume the caregiving role. To address this concern, we implement two separate 2SLS IV models. Following Van Houtven et al. (2013), we construct two individual-level indicator variables: (1) whether a parent (or in-law) is in “ill-health”,

defined as satisfying at least one of the three conditions: the need for help with personal care, the presence of a memory disease, and the inability to be left alone; [9] (2) the death of an alternative caregiver, defined as death of one parent (or in-law) in a household where both parents (or in-law) were alive in the previous wave. We then aggregate these individual-level responses to determine the household-level status of "ill-health" or the death of an alternative caregiver among parents or parents-in-law. For these IVs to be valid, the health status of parents or parents-in-law or their death must be directly linked to the likelihood of caregiving provision by adult children; however, it should not be directly associated with the financial circumstances of caregiving households, other than the channel of intergenerational caregiving.

To test the validity of our IV analyses, we evaluate several underlying assumptions of the IVs, namely monotonicity, relevance, and conditional random assignment. (Imbens & Angrist, 1994) Our findings in Table A2 indicate that both monotonicity and relevance assumptions are satisfied for both IVs: the likelihood of providing caregiving is 16 and 15 percentage points higher ($p < 0.001$) in households with parent(s) who experienced "ill-health" or the death of a spouse or partner, respectively, compared to those without such conditions. Additionally, the F-statistics for both IVs, 233 and 145, respectively, exceed the conventional threshold of 10[10]. (Staiger & Stock, 1997) To assess random assignment, we compare sample characteristics stratified by the endogenous caregiving status [Columns (1) and (2)] with those by the IV status [Columns (3) and (4), and Columns (5) and (6)] (Table A3). We observe a notable improvement in sample balance across variables, particularly among financial outcome variables. We also conduct an event study robustness check, where the treatment is first-time reporting of "ill-health" of parents (or in-law)

[9] Given that the variable, parental diagnosis of a memory-related disease, is available in survey waves collected since 1998, we exclude the data from the year 1996 for IV analysis.
[10] The outcome for the IV of parental "ill-health" is derived from the joint F-statistic estimate.

or the death of an alternative caregiver. Overall, we find no significant pre-trends in our financial outcome measures (Figures A1 and A2).

The effects of intergenerational caregiving on various financial outcomes are estimated in two stages, using Equation (2) in the first stage and Equation (3) in the second stage.

$$Caregiving_{ht} = \delta_t + \eta_h + IV_{ht} + \beta X'_{ht} + \nu_{ht} \quad (2)$$

$$Y_{ht} = \delta_t + \eta_h + \varphi \widehat{Caregiving}_{ht} + \beta X'_{ht} + \varepsilon_{ht} \quad (3)$$

where our endogenous regressor of interest $\widehat{Caregiving}_{ht}$ is a dummy variable with the value of 1 if household h provides caregiving in calendar year t. IV_{ht} is a dummy variable, indicating the parental "ill-health" or the death of an alternative caregiver in household h in calendar year t. δ_t is a calendar year fixed effect. η_h is a household fixed effect. The vector X'_{ht} denotes time-varying household-level controls, including co-residence with minor child(ren), and the number of surveyed household members (1 or 2). Y_{ht} is an outcome of interest for household h in calendar year t. Household-level sampling weights in HRS are applied to all regression models. Standard errors are clustered at the household-level. We apply inverse hyperbolic since transformation to all outcomes representing dollar values to account for the skewedness of these variables.

4.4. Heterogeneity in Financial Trajectories and Long-Term Effects

We explore the heterogeneity in trends and estimates of within-household variations from the IPTW, event study with fixed effects models, and 2SLS models, respectively, across household financial outcomes. We classify our samples by baseline characteristics of household and the caregiving type: race (White vs. Non-White; a household is classified as non-White if at least one member is non-White), education (no college degree vs. college degree and above; a household is classified as college degree and above if at least one member has college degree), the number of

surveyed household member (single member vs. dual members), the duration of caregiving (single wave vs. multiple waves) and ADRD related caregiving (ADRD vs. Non-ADRD).

5. RESULTS

We present the results of our analyses in three parts: a visual analysis of unadjusted trends in financial outcomes (e.g., wealth, income, spending) of caregiving households, adjusted estimates from event study with fixed effects models, and adjusted estimates from 2SLS models. Additionally, we characterize the heterogeneity among subgroups (e.g., race, education level, length of caregiving) within each part of the analyses. We first begin by describing our sample dataset.

5.1. Descriptive Statistics

Table 1 presents household-level summary statistics for cases and controls. In Column 1, we provide information on cases derived from observations collected two years prior to the start of caregiving. Columns 2 and 3 show the characteristics of weighted and unweighted controls, respectively. Our study sample includes 1,563 cases (8,435 household-years) and 3,556 controls (10,462 household-years). We observe that household characteristics, such as race, household employment and health status, become similar between cases and weighted controls after applying IPTW. The average age of cases and weighted controls is 56 years, with approximately 39% comprising non-White households. Among cases, the average duration of caregiving is 4.4 years. Additional details regarding the distribution of the number of observations in cases and their proportion of caregiving households across events relative to caregiving onset are provided in Table A4.

5.2. Long-Term Trends Before and After the Start of Caregiving

Figure 1 depicts the average values of various household-level financial outcomes, comparing caregiving and (inverse probability weighted) non-caregiving households across event time *t*.

A few main patterns emerge. First, total wealth appears to trend in parallel between caregiving and non-caregiving households throughout the entire study period (Figure 1, Panel A), with caregiving households having a higher median value (about $50,000 more) than control households at every time point. Second, caregiving households exhibit a more rapid decline in total and capital incomes, as well as total earnings before caregiving begins, compared to controls, and the two groups converge in income after the start of caregiving (Figure 1, Panels E to G). By contrast, unemployment and workers' compensation increases much more among caregiving households relative to controls already before caregiving starts. Third, there appears to be a transient spike in both transfer from and to parents among caregiving households relative to controls around the start of caregiving.

5.3. Results from Event Study with Fixed Effects Models

Figure 2 presents the results from event study with fixed effects models. Overall, these results are consistent with the trend graphs in Figure 1, especially the downward pre-trends in total income and earnings (Figure 2, Panels E and G), and in the temporary increase in both transfers from and to parents (Figure 2, Panels I to L). There are also a few findings that are not obvious from Figure 1. First, it appears that total wealth increases more among caregiving households relative to controls about six years after caregiving (Figure 2, Panel A). Second, there is a transient increase in out-of-pocket healthcare spending at the start of caregiving (Figure 2, Panel D). Third, unemployment and workers' compensation start to increase more prominently among caregiving households compared to controls in the same year that caregiving starts (Figure 2, Panel H).

Taken together, the results thus far suggest, not surprisingly, that caregiving is by no means randomly distributed among households: those households that start caregiving already experience a decline in total income, particularly in total earnings that perhaps lowers the opportunity cost of providing care to their parents or in-laws. These prospective caregiving households may have elected to withdraw from the labor force altogether and start receiving unemployment compensation around the same time when they start providing care. Additionally, these results suggest that caregiving is typically accompanied by transfers in both directions between caregiving households and care recipients.

5.4. Results from Subpopulation Analyses

5.4.1. White Versus Non-White Households

Figure 3 and Figure A3 show analogous event study and trend graphs stratified by household race (White vs. non-White). These yield a few additional observations that are noteworthy. First, White caregiving households have about twice as much median wealth as their counterparts not providing care throughout the study period (about $300K vs. $150K at the start of caregiving) (Figure A3, Panel A). By contrast, both non-White caregiving households and non-White controls have much lower wealth relative to even White controls (with median net value less than $100k for both groups at the start of caregiving). Non-White caregiving households also have even lower wealth than the non-White control households (so the relationship is flipped compared to Whites), though the difference is not as drastic. Second, the downward pre-trends in total income and earnings are somewhat more conspicuous among non-White caregiving households compared to the pre-trends for White caregiving households (Figure 3, Panels E and G). Finally, the increase in transfer *from* parents (both any transfer and amount of transfer) accompanying the start of caregiving is statistically significant only for White caregiving households (Figure 3, Panels I and J). On the

other hand, the increased transfer *to* parents appears to be longer lasting for non-White caregiving households relative to the White counterparts, with the event study coefficients remain significant and positive at Year 2 relative to the start of caregiving.

5.4.2. College Graduate Versus Non-College Graduate Households

Most of the differential findings between White and non-White households do not carry over to college vs. non-college graduate households (Figures 4 and A4). While non-college graduate households have lower total wealth than their college educated counterparts overall (Figure A4, Panel A), the caregiving households appear wealthier than the control households in both groups. Caregiving households without college education do also experience a more conspicuous downward pre-trends in total income and earnings compared to caregiving households with college education (Figure 4, Panels E and G), but there does not seem to be much difference in either transfer from or to parents (Figure 4, Panels I to L).

5.4.3. Single-Member Versus Dual-Member Households

Findings overall are very similar between single- vs. dual-member caregiving households (Figures 5 and A5). However, the dual-member caregiving households experience a steeper decrease in total income prior to the start of caregiving, compared to the single-member caregiving households. Both groups follow a similar downward trend in total earnings before caregiving starts (Figure 5, Panels E and G). Single caregiving households have a more persistent increase in unemployment and workers' compensation after caregiving starts, perhaps due to lack of another household member being in the labor force (Figure 5, Panel H).

5.4.4. Caregiving for Single Period Versus Multiple Periods

A few differences exist between households who provide care for only one versus multiple periods (Figures 6 and A6). The most noticeable is that those providing care for only a single period experience a large decrease in transfer to parents in the periods after caregiving relative to before, possibly because the parents were deceased, whereas caregivers for multiple periods experience elevated transfer to parents for up to about 4 years after caregiving starts (Figure 6, Panels K and L). Additionally, those who provide care for only a single period experience an increase in capital income after caregiving starts (Figure 6, Panel F). This may be because they exit the labor force – evidenced by the increase in unemployment compensation after caregiving starts among households with single period caregiving (Figure 6, Panel H) – but have time to participate in other investment activities due to the short duration of their caregiving.

5.4.5. ADRD Versus Non-ADRD Caregiving Households

While caregiving households for parents with and without ADRD show similar patterns in wealth and spending, their income including transfers exhibit differences in ways similar to those that exist between caregivers for single vs. multiple periods (Figures 7 and A7). There is some evidence that caregivers for non-ADRD parents experience slightly higher total income, in particular their capital income after caregiving, which is insignificant for caregivers for ADRD parents (Figure 7, Panels E and F). Transfer from parents increases temporarily only for non-ADRD caregivers, and ADRD caregivers have more persistent increases in transfer to parents that last until 2 years after caregiving onsets (Figure 7, Panels I to L).

5.5. Long-Term Impact of Caregiving on Household Financial Outcomes

Table 2 presents the results from the 2SLS models using the full sample with two different IVs. The 2SLS results using parental “ill-health” as the instrument show that overall, the provision of

caregiving does not significantly impact household financial outcomes, with the exception of transfers to parents and total earnings (Table 2, Panel A). Moreover, the 2SLS results using the death of an alternative caregiver as the instrument mirror those in Panel A, although the impact is slightly attenuated (Table 2, Panel B). Specifically, intergenerational caregiving results in an approximately 26- and 18-percentage point increase in the probability of any transfer to parents across different IVs, equivalent to about 170% and 120% increase, respectively. Additionally, there is a significant increase in the transferred amount of 2.38 and 1.52 log points, compared to the mean of 1.37 log points (Table 2, Panels A and B, Columns (11) and (12)). Notably, caregiving increases transfers from parents only when the death of an alternative caregiver is used as an IV (Table 2, Panel B, Columns (9) and (10)).

The increase in total earnings seems counterintuitive, however (Table 2, Panels A and B, Column (7)). One possible explanation is that these 2SLS estimates represent local average treatment effects among households that would provide care as long as their parents are in "ill-health" or have lost a spouse or partner. These households may be able to seek out means to increase earnings (e.g. if there is one member of the household who can increase labor supply while the other provides care) to cover the additional expenses required of the transfer to care recipients.

The results from our subpopulation analyses closely align with those from the full sample (Tables 3 and 4). Across the different subgroups, we observe no significant changes in household financial outcomes, except for a few variables, such as total earnings and transfers to and from parents. In particular, the evidence of increased total earnings after caregiving among certain subgroups, including dual-member caregiving households, may support the potential pathway we proposed previously with the full sample – one member of the household providing care due to the

"ill-health" of their parents may engage in the labor market more actively to offset caregiving expenses (Table 3, Panel C2, Column (7)). Additionally, we find a divergent pattern in total earnings between subgroups within the same category, providing insights into the characteristics of caregiving households that increase their labor supply after caregiving. For example, White and college graduate caregiving households experience an increase in total earnings, whereas no such increase is observed among their counterparts (Table 3, Panels A and B, Column (7)). Regarding transfers to parents, most subgroups show an increase in both the likelihood and the extent of transfers. Additionally, only non-White caregiving households experience a decrease in total spending and capital income following caregiving (Table 4, Panel A2, Columns (3) and (6)).

6. DISCUSSION AND CONCLUSIONS

In this paper, we present novel evidence on the interplay between caregiving and dynamics in household finances, focusing both on the financial determinants of caregiving and its long-term consequences. Leveraging two decades of HRS data, we study a comprehensive list of household-level financial outcomes, including wealth, income, and spending (including intergenerational transfers). We demonstrate the progression of these variables before and after the start of caregiving, comparing their trajectories between the caregiving and non-caregiving households using the IPTW matching method and event study framework. To estimate causal effects of caregiving on static household-level financial outcomes, we also employ the 2SLS IV models using two distinct IV measures – parental "ill-health" and death of alternative caregiver – which can address bias from the self-selection of caregiving. We present the results by various household demographics (i.e., race, education, household size) and caregiving types (i.e., multiple periods, ADRD) to provide a comprehensive understanding of how caregiving affects the evolution of household economy across different subgroups.

Taken together, our findings highlight a strong selection in the type of households who provide care for older parents. While it is reassuring that caregiving does not negatively affect overall finances of households who provide care, it appears that whether older individuals in need of care from family members end up receiving it will depend largely on their adult children's income and wealth circumstances. Further, caregiving may reinforce existing racial inequity in wealth and income if high wealth is a determining factor of caregiving among Whites but not non-Whites.

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FIGURES AND TABLES

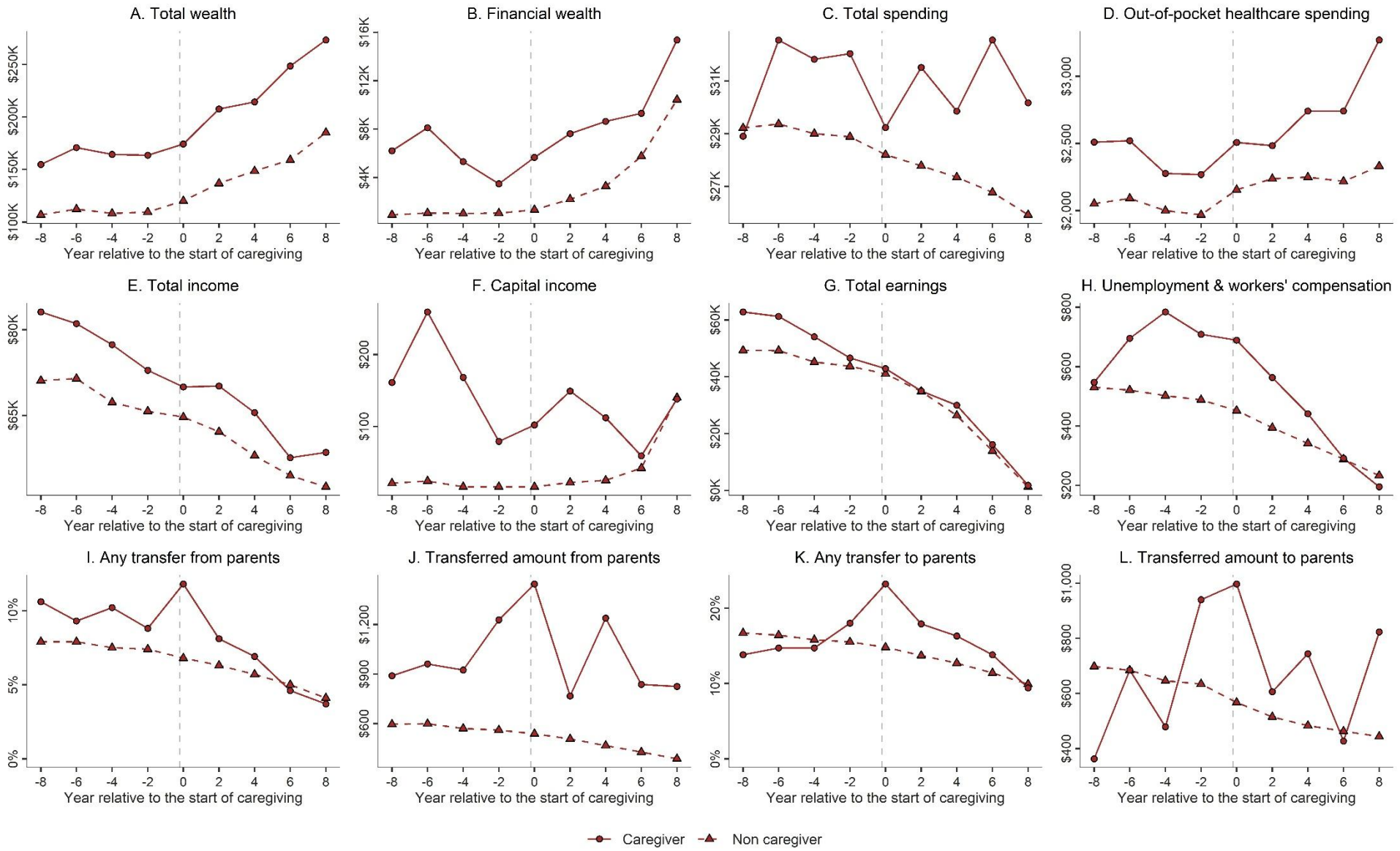


Figure 1. Trends in household financial variables among caregiving households and weighted controls

Note. At each year relative to the start of caregiving, values for non-caregiving households were reweighted to represent the distribution of covariates included for propensity score estimation. The included covariates are the minimum and maximum age of household members, household education level (no college degree, a single member with a college degree, both members with college degrees) and the number of household members. The mean value is employed for unemployment compensation, and transferred amount from/to parents, while the median value is used for other outcome variables. Financial variables are adjusted in 2018 dollars.

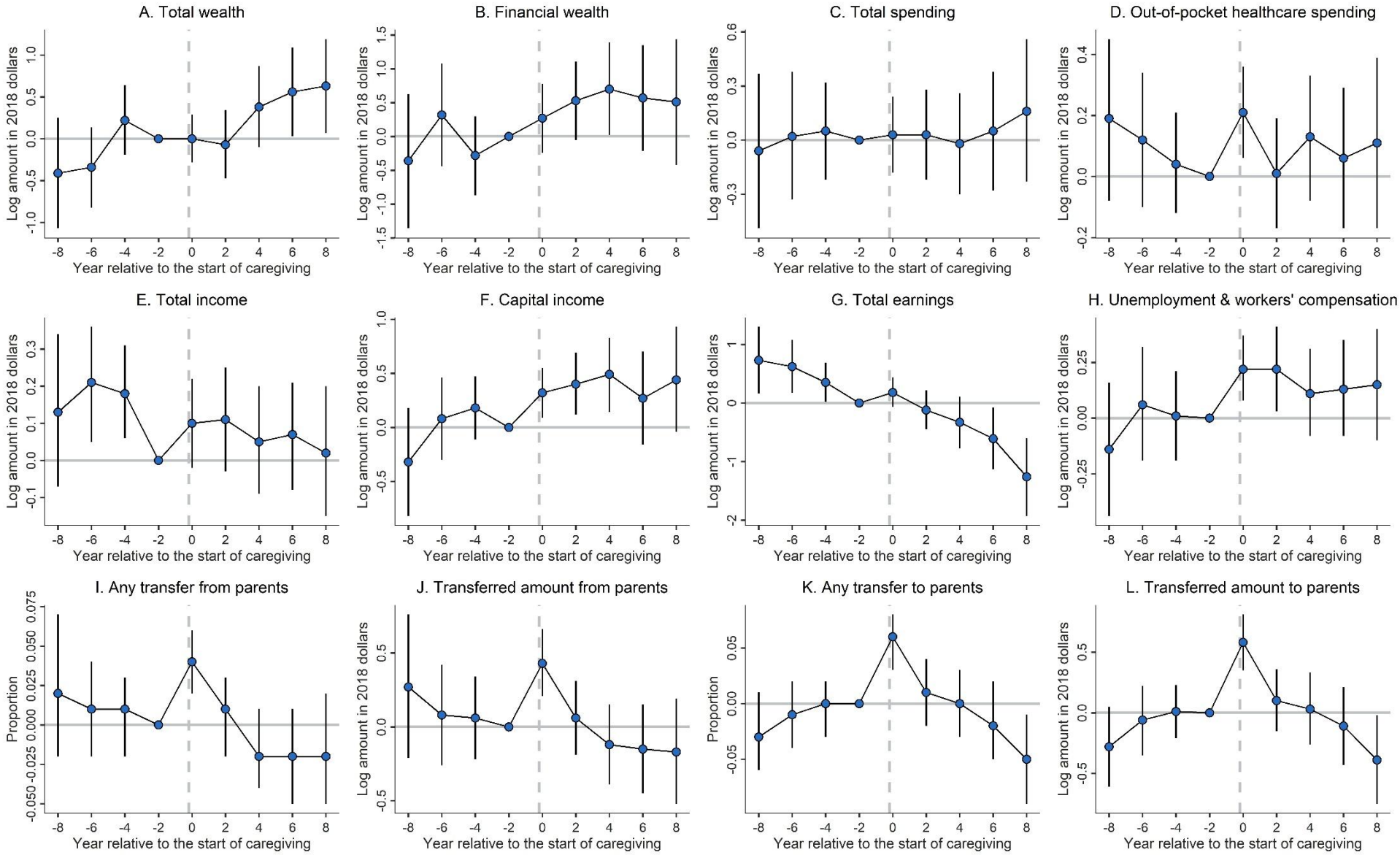


Figure 2. Event study results for caregiving households and non-caregiving households

Note. All event study regressions control for co-residence with minor child(ren), the number of household members, household fixed effects, and calendar year fixed effects. All expenditure outcome variables are transformed using an inverse hyperbolic sine function. Standard errors are clustered at the household level.

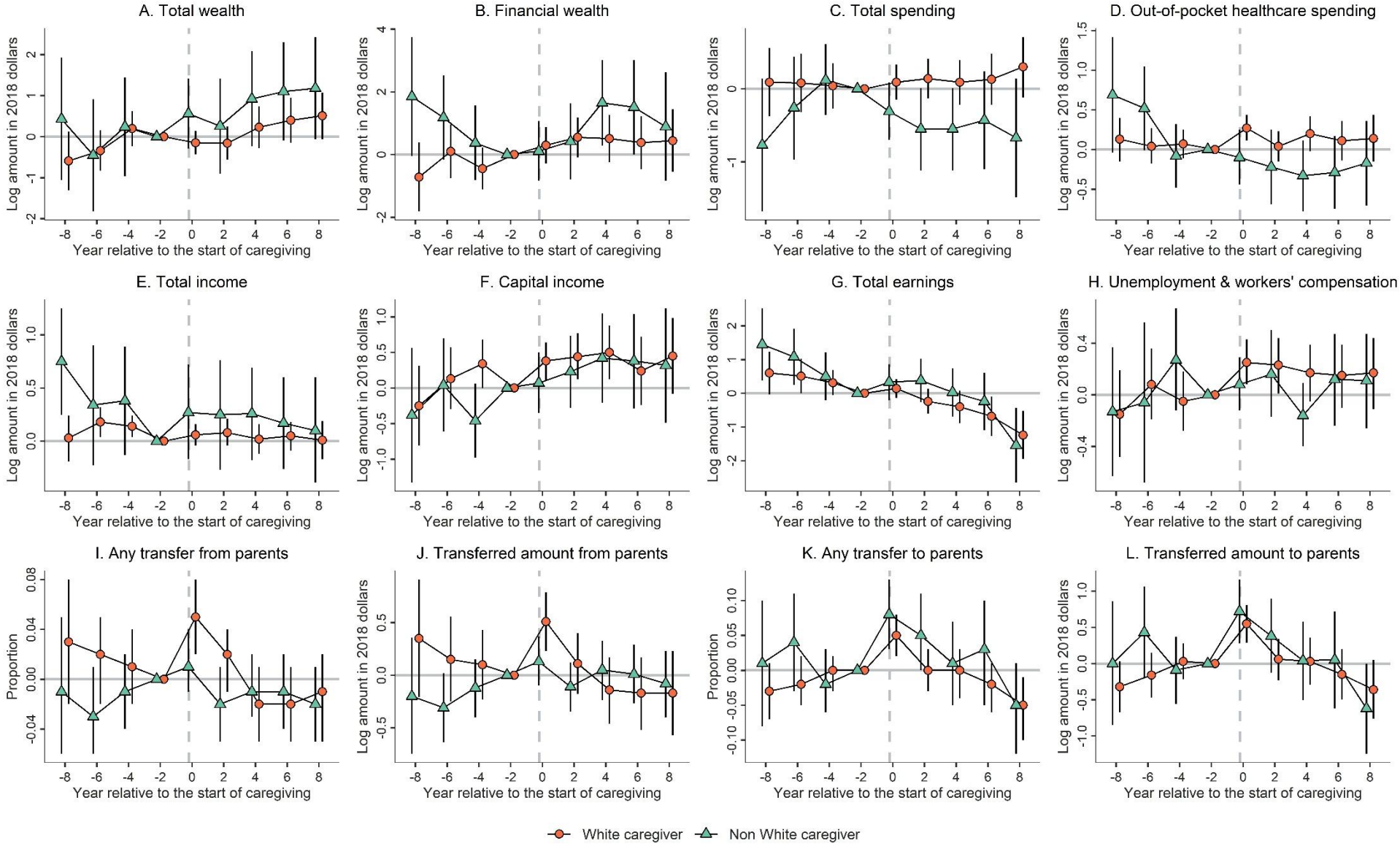


Figure 3. Heterogeneity in event study results for caregiving households with Whites/Non-Whites vs. non-caregiving households

Note. All event study regressions control for co-residence with minor child(ren), the number of household members, household fixed effects, and calendar year fixed effects. All expenditure outcome variables are transformed using an inverse hyperbolic sine function. Standard errors are clustered at the household level.

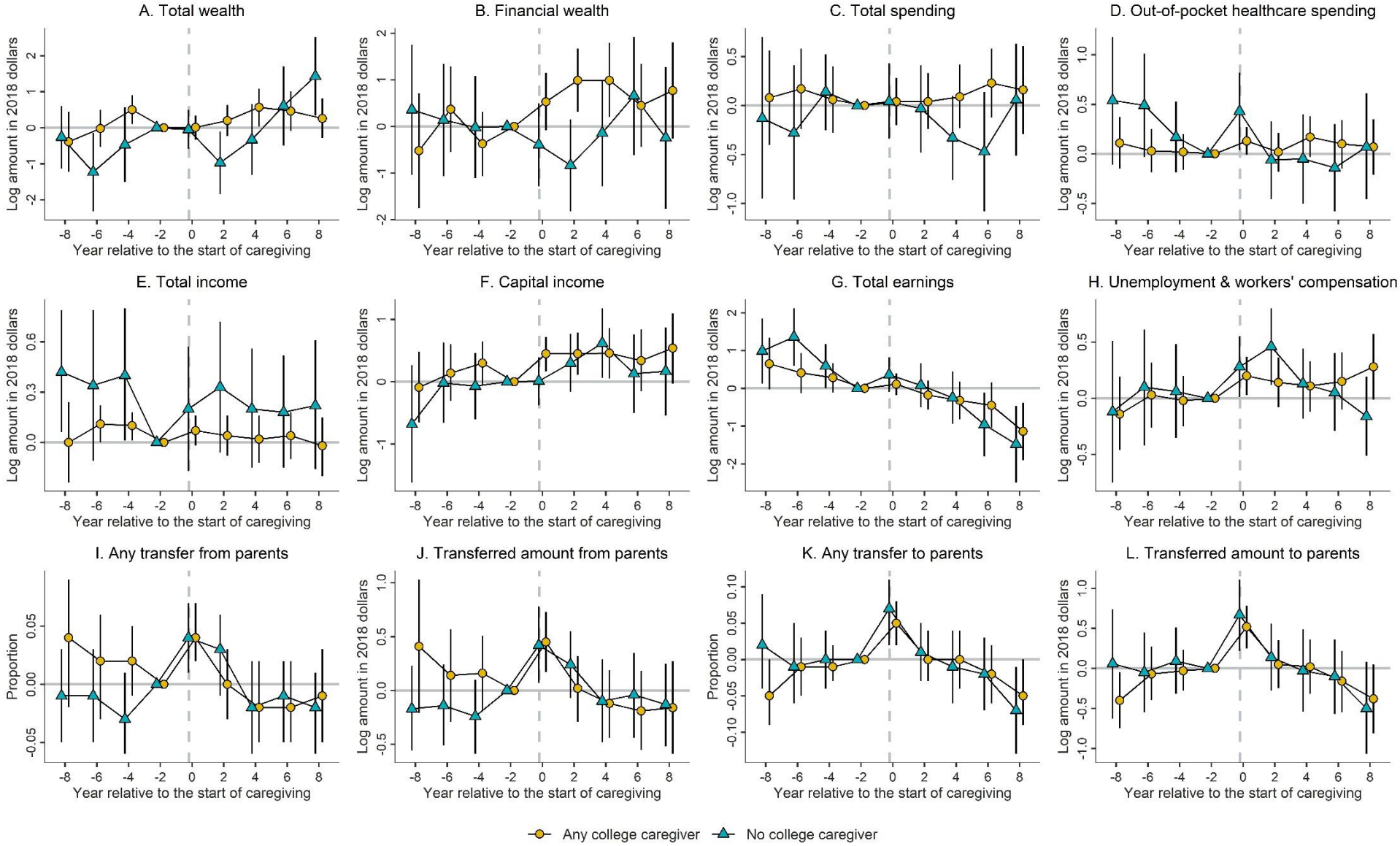


Figure 4. Heterogeneity in event study results for caregiving households with any college/no college education vs. non-caregiving households

Note. All event study regressions control for co-residence with minor child(ren), the number of household members, household fixed effects, and calendar year fixed effects. All expenditure outcome variables are transformed using an inverse hyperbolic sine function. Standard errors are clustered at the household level.

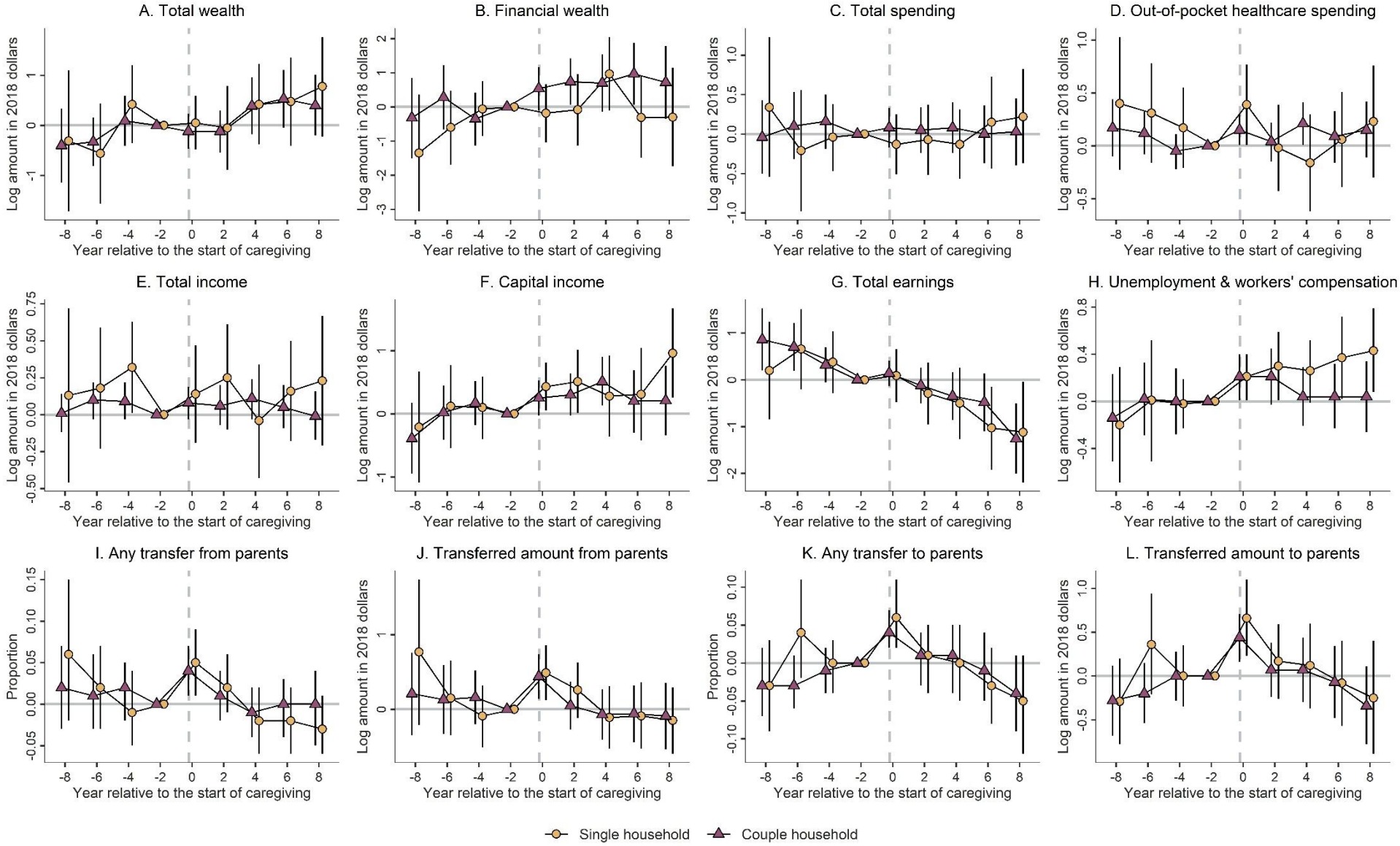


Figure 5. Heterogeneity in event study results for caregiving households with single member/couples vs. non-caregiving households

Note. All event study regressions control for co-residence with minor child(ren), household fixed effects, and calendar year fixed effects. All expenditure outcome variables are transformed using an inverse hyperbolic sine function. Standard errors are clustered at the household level.

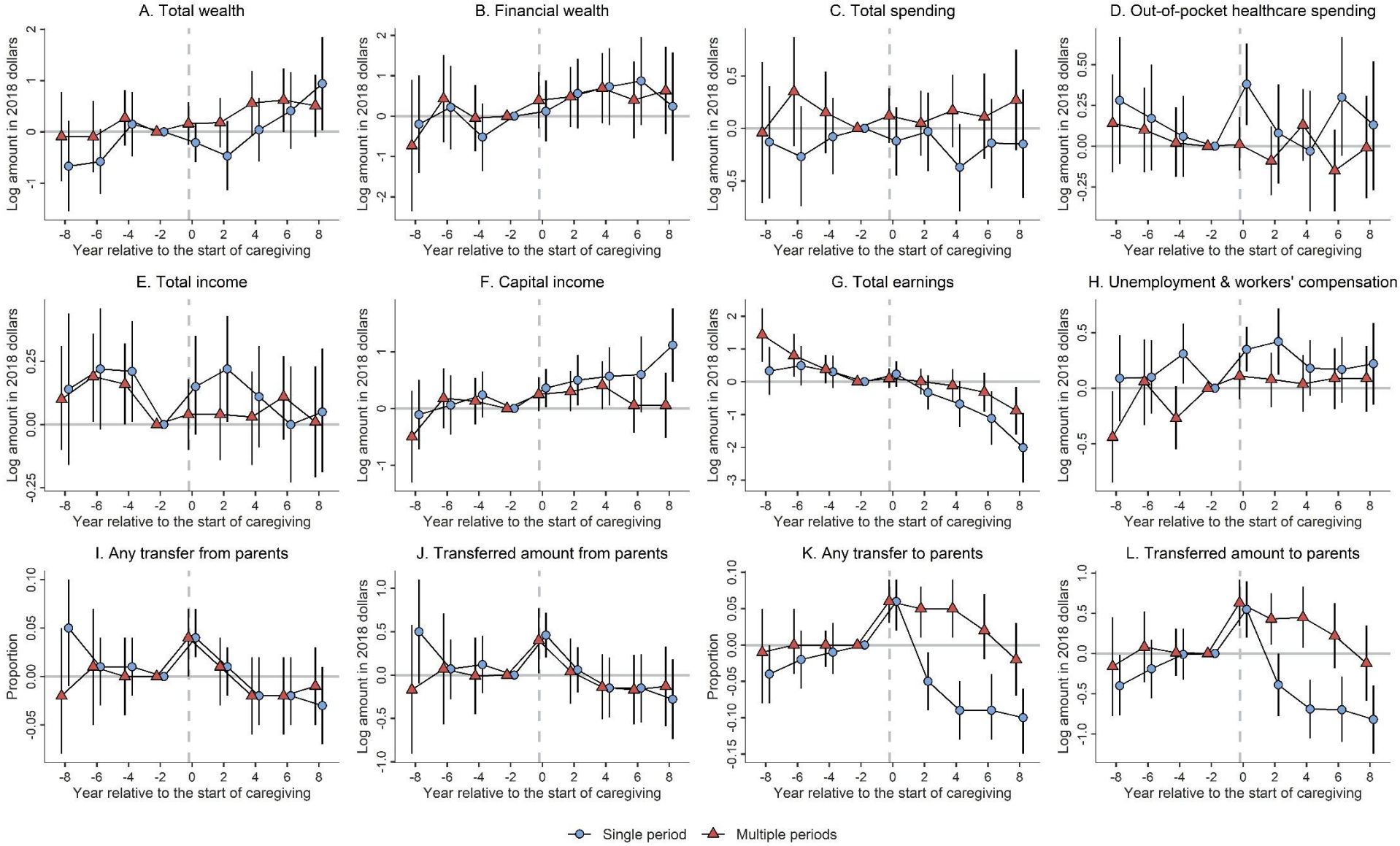


Figure 6. Heterogeneity in event study results for caregiving households with single period/multiple periods vs. non-caregiving households

Note. All event study regressions control for co-residence with minor child(ren), the number of household members, household fixed effects, and calendar year fixed effects. All expenditure outcome variables are transformed using an inverse hyperbolic sine function. Standard errors are clustered at the household level.

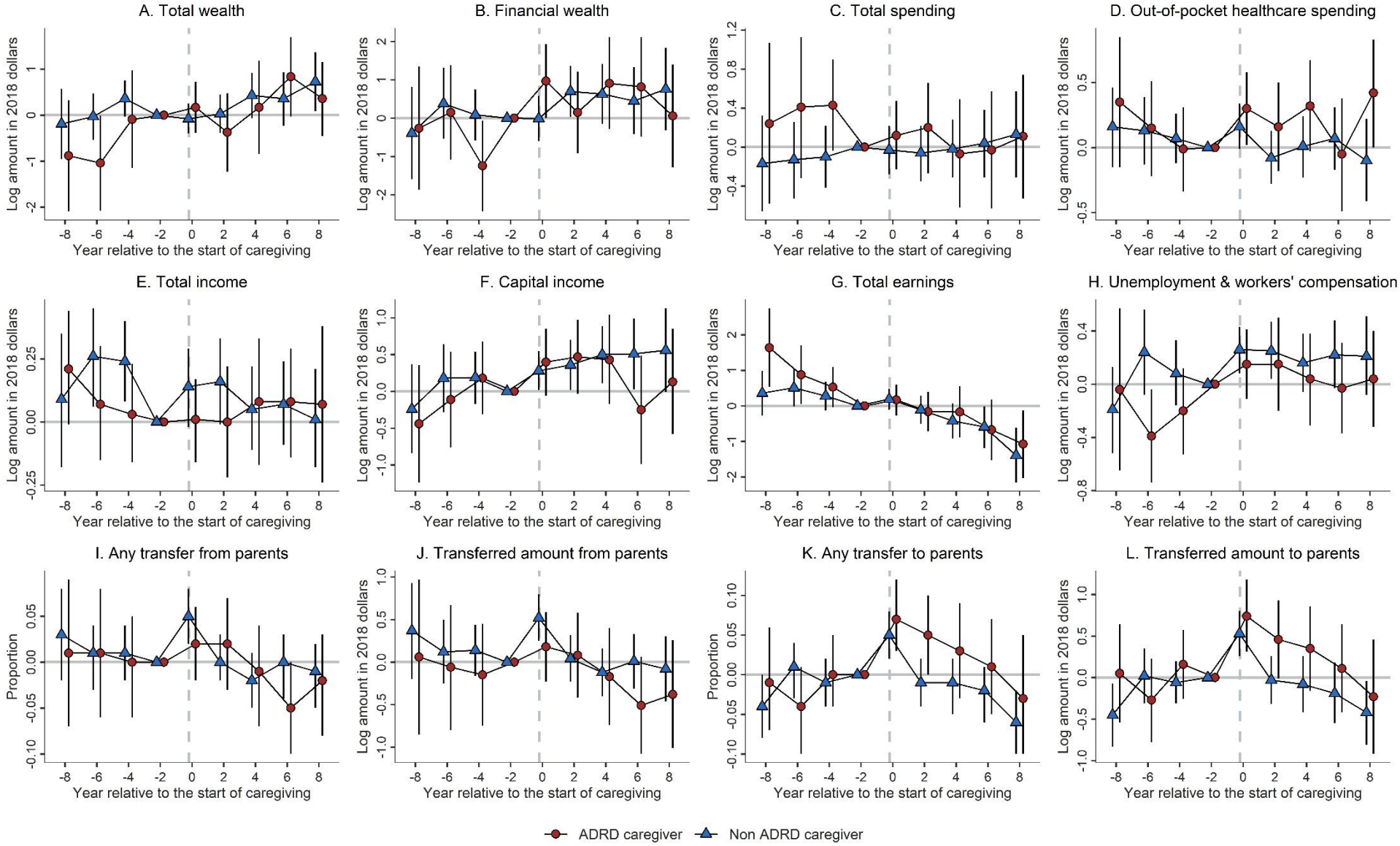


Figure 7. Heterogeneity in event study results for caregiving households with ADRD/Non ADRD parent(s) vs. non-caregiving households

Note. All event study regressions control for co-residence with minor child(ren), the number of household members, household fixed effects, and calendar year fixed effects. All expenditure outcome variables are transformed using an inverse hyperbolic sine function. Standard errors are clustered at the household level.

Table 1. Household-level summary statistics, caregiving household vs. non-caregiving household, HRS 1996-2018 (unit: %)

	(1) Caregiving household	(2) Non-caregiving household (weighted)	(3) Non-caregiving household (unweighted)
Panel A. Covariates used in propensity score estimation			
Age (SD)	55.6 (5.7)	55.6 (5.8)	53.7 (5.4)
Education			
No college	32.8	32.7	39.2
Any college (single member)	38.6	38.6	40.6
Any college (both)	28.7	28.6	20.2
Average household size	1.6 (0.5)	1.6 (0.5)	1.5 (0.5)
Panel B. Other covariates			
Non-White household	38.8	41.1	46.1
Employment			
Both unemployed	20.5	21	23
Female employed	22.5	21.2	23.6
Male employed	20.9	23	24.4
Both employed	36.1	34.8	29
Health – good and above			
None	14.7	17.7	21.9
Single member	41.5	41.8	45.7
Both members	43.8	40.5	32.3
Caregiving duration (Year, SD)	4.4 (3.2)	0	0
Single member household	35.6	35.7	45.5
Single period caregiving	53	0	0
ADRD caregiving	27.2	0	0
Panel C. Household financial variables (unit: $)			
Total wealth – mean	447,051	425,234	367,527
Total wealth – median	163,485	109,369	73,852
Financial wealth – mean	100,317	84,005	62,331
Financial wealth – median	3,476	1,041	50
Total earnings – mean	70,367	68,372	61,416
Total earnings – median	46,608	43,657	37,657
Mean transfer from parents	1,228	560	581
Mean transfer to parents	940	634	778
Median total income	72,879	65,753	57,535
Median capital income	79	16	5
Median total spending[a]	32,030	28,879	28,542
Median out-of-pocket medical spending	2,268	1,969	1,630
Observations	1,563	10,462	3,556

Note. Caregiving households were selected from two years prior to the onset of caregiving and weighted non-caregiving households included inverse probability weighted observations across all years. The weighted group was selected from all years' observations used for propensity score estimation at two years prior to the onset of caregiving. Unweighted non-caregiving households were from the start year of survey. Financial variables are adjusted in 2018 dollars. ADRD, Alzheimer's disease and related dementias. [a]The spending data was obtained from the Consumption and Activities Mail Survey, a supplement to the Health Retirement Survey.

Table 2. Results from the 2SLS model on the impact of intergenerational caregiving on household finances, HRS 1998-2018 (Full sample)

	Wealth		Spending		Income			Transfer from Parents		Transfer to Parents	
	(1) Total Wealth	(2) Financial Wealth	(3) Total Spending	(4) Healthcare Spending	(5) Total Income	(6) Capital Income	(7) Total Earnings	(8) Unemp Comp.	(9) Any Transfer	(10) Transferred Amount	(11) Any Transfer	(12) Transferred Amount
Panel A: Parental "ill-health"												
1(Caregiving)	0.01	0.44	0.42	0.2	-0.07	-0.47	2.07**	-0.04	-0.002	0.1	0.26***	2.38***
	(0.79)	(1.1)	(0.43)	(0.33)	(0.2)	(0.51)	(0.69)	(0.29)	(0.04)	(0.42)	(0.05)	(0.45)
Panel B: Death of alternative caregiver												
1(Caregiving)	1.05	0.62	-0.95	0.3	0.32	0.05	1.71*	-0.08	0.14*	1.33*	0.18**	1.52**
	(0.95)	(1.42)	(0.58)	(0.39)	(0.29)	(0.71)	(0.84)	(0.43)	(0.07)	(0.61)	(0.07)	(0.58)
No. observations	20245	20245	20245	20245	20245	20245	20245	20245	20245	20245	20245	20245
IHS transformed Y-mean	9.76	4.11	11.33	4.74	2.69	7.39	8.08	0.56	0.07	0.69	0.15	1.37
HH-level controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fixed effects	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year

Note. HH, household; IHS, inverse hyperbolic sine. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Table 3A. Results from the 2SLS model on the impact of intergenerational caregiving on household finances, HRS 1998-2018 (Subgroup analysis; parental "ill-health" as IV)

	Wealth		Spending		Income			Transfer from Parents		Transfer to Parents	
	(1) Total Wealth	(2) Financial Wealth	(3) Total Spending	(4) Healthcare Spending	(5) Total Income	(6) Capital Income	(7) Total Earnings	(8) Unemp Comp.	(9) Any Transfer	(10) Transferred Amount	(11) Any Transfer	(12) Transferred Amount
Panel A1: White												
1(Caregiving)	-0.4	-0.01	0.43	0.2	-0.08	-0.6	2.21**	0.03	0.003	0.19	0.23***	2.02***
	(0.84)	(1.2)	(0.48)	(0.32)	(0.16)	(0.57)	(0.77)	(0.33)	(0.05)	(0.49)	(0.05)	(0.48)
No. observations	12321	12321	12321	12321	12321	12321	12321	12321	12321	12321	12321	12321
IHS transformed Y-mean	11.41	6.25	11.83	5.98	2.93	8.06	8.79	0.54	0.09	0.91	0.1	0.89
Panel A2: Non-White												
1(Caregiving)	2.02	2.74	0.41	0.32	-0.03	0.03	1.16	-0.37	-0.03	-0.37	0.39**	4.1***
	(2.17)	(2.73)	(0.94)	(1.13)	(0.84)	(1.14)	(1.6)	(0.59)	(0.05)	(0.44)	(0.13)	(1.19)
No. observations	7924	7924	7924	7924	7924	7924	7924	7924	7924	7924	7924	7924
IHS transformed Y-mean	7.21	0.77	10.55	2.8	2.31	6.35	6.97	0.6	0.04	0.35	0.24	2.08
Panel B1: Any college												
1(Caregiving)	-0.23	-0.45	0.45	0.1	-0.04	-0.7	2.22**	-0.07	0.02	0.42	0.33***	2.95***
	(0.85)	(1.31)	(0.51)	(0.34)	(0.17)	(0.62)	(0.81)	(0.34)	(0.05)	(0.54)	(0.06)	(0.57)
No. observations	12928	12928	12928	12928	12928	12928	12928	12928	12928	12928	12928	12928
IHS transformed Y-mean	10.88	5.5	11.82	5.77	2.93	7.83	9.12	0.55	0.09	0.89	0.15	1.33
Panel B2: No college												
1(Caregiving)	1.08	2.62	0.57	0.25	-0.14	0.07	1.67	-0.17	-0.06	-0.75	0.04	0.61
	(1.96)	(2.21)	(0.86)	(0.89)	(0.58)	(0.96)	(1.47)	(0.64)	(0.06)	(0.59)	(0.08)	(0.75)
No. observations	7317	7317	7317	7317	7317	7317	7317	7317	7317	7317	7317	7317
IHS transformed Y-mean	7.79	1.65	10.45	2.92	2.26	6.6	6.23	0.58	0.04	0.33	0.16	1.44
Panel C1: Single member												
1(Caregiving)	1.86	2.12	1.97	-1.29	0.39	-0.93	2.78	-0.67	0.05	0.59	0.31**	2.79**
	(1.58)	(2.2)	(1.19)	(0.88)	(0.45)	(1.13)	(1.52)	(0.59)	(0.07)	(0.71)	(0.1)	(0.9)
No. observations	7717	7717	7717	7717	7717	7717	7717	7717	7717	7717	7717	7717
IHS transformed Y-mean	8.03	3.21	10.72	3.62	2.53	6.12	6.22	0.39	0.07	0.66	0.12	1.02
Panel C2: Dual members												
1(Caregiving)	-0.57	0.24	0.07	0.6	-0.25	0.09	1.73*	0.17	-0.02	-0.04	0.23***	2.11***
	(0.96)	(1.37)	(0.46)	(0.34)	(0.25)	(0.6)	(0.81)	(0.38)	(0.06)	(0.56)	(0.06)	(0.56)
No. observations	12528	12528	12528	12528	12528	12528	12528	12528	12528	12528	12528	12528
IHS transformed Y-mean	10.83	4.66	11.7	5.42	2.78	8.17	9.22	0.67	0.07	0.71	0.18	1.59
Panel D1: Single period												
1(Caregiving)	2.44	1.01	2.78	0.96	-0.11	-1.79	3.99	-0.36	-0.02	-0.01	0.56**	5.04**
	(3.05)	(3.71)	(1.66)	(1.3)	(0.75)	(1.81)	(2.34)	(1.08)	(0.14)	(1.42)	(0.18)	(1.62)
No. observations	14906	14906	14906	14906	14906	14906	14906	14906	14906	14906	14906	14906
IHS transformed Y-mean	9.25	3.47	11.2	4.41	2.56	7.15	8.02	0.56	0.07	0.63	0.15	1.33
Panel D2: Multiple periods												
1(Caregiving)	-0.68	0.51	0.35	0.19	-0.28	-0.49	1.85*	-0.11	-0.03	-0.13	0.21***	2.05***
	(0.91)	(1.3)	(0.5)	(0.37)	(0.22)	(0.57)	(0.79)	(0.33)	(0.05)	(0.49)	(0.06)	(0.51)
No. observations	15698	15698	15698	15698	15698	15698	15698	15698	15698	15698	15698	15698
IHS transformed Y-mean	9.72	4.04	11.33	4.74	2.65	7.36	8.28	0.57	0.08	0.71	0.16	1.4
HH-level controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fixed effects	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year

Note. HH, household; IHS, inverse hyperbolic sine. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Table 3B. Results from the 2SLS model on the impact of intergenerational caregiving on household finances, HRS 1998-2018 (Subgroup analysis; parental "ill-health" as IV)

	Wealth		Spending		Income			Transfer from Parents		Transfer to Parents	
	(1) Total Wealth	(2) Financial Wealth	(3) Total Spending	(4) Healthcare Spending	(5) Total Income	(6) Capital Income	(7) Total Earnings	(8) Unemp Comp.	(9) Any Transfer	(10) Transferred Amount	(11) Any Transfer	(12) Transferred Amount
Panel E1: ADRD												
1(Caregiving)	-0.5	-0.27	0.2	0.3	-0.3	-0.11	1.01	-0.29	0.0005	0.18	0.18***	1.79***
	(0.9)	(1.18)	(0.5)	(0.37)	(0.22)	(0.51)	(0.74)	(0.31)	(0.05)	(0.46)	(0.05)	(0.46)
No. observations	13277	13277	13277	13277	13277	13277	13277	13277	13277	13277	13277	13277
IHS transformed Y-mean	9.42	3.66	11.26	4.54	2.55	7.22	8.28	0.55	0.07	0.7	0.16	1.4
Panel E2: Non-ADRD												
1(Caregiving)	1.41	3.36	3.02	0.48	-0.08	-2.8	6.07*	0.16	-0.1	-1.02	0.58**	5.65**
	(2.8)	(3.84)	(1.55)	(1.18)	(0.7)	(1.89)	(2.39)	(1.03)	(0.14)	(1.47)	(0.19)	(1.82)
No. observations	17327	17327	17327	17327	17327	17327	17327	17327	17327	17327	17327	17327
IHS transformed Y-mean	9.54	3.84	11.27	4.6	2.64	7.29	8.05	0.58	0.07	0.65	0.15	1.34
HH-level controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fixed effects	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year

Note. HH, household; IHS, inverse hyperbolic sine. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Table 4A. Results from the 2SLS model on the impact of intergenerational caregiving on household finances, HRS 1998-2018 (Subgroup analysis; death of alternative caregiver as IV)

	Wealth		Spending			Income			Transfer from Parents		Transfer to Parents	
	(1) Total Wealth	(2) Financial Wealth	(3) Total Spending	(4) Healthcare Spending	(5) Total Income	(6) Capital Income	(7) Total Earnings	(8) Unemp Comp.	(9) Any Transfer	(10) Transferred Amount	(11) Any Transfer	(12) Transferred Amount
Panel A1: White												
1(Caregiving)	1.26	0.86	-0.55	0.34	0.16	0.69	1.6	-0.07	0.145*	1.39*	0.14*	1.17
	(0.98)	(1.5)	(0.6)	(0.38)	(0.27)	(0.74)	(0.88)	(0.46)	(0.07)	(0.66)	(0.07)	(0.6)
No. observations	12321	12321	12321	12321	12321	12321	12321	12321	12321	12321	12321	12321
IHS transformed Y-mean	11.41	6.25	11.83	5.98	2.93	8.06	8.79	0.54	0.09	0.91	0.1	0.89
Panel A2: Non-White												
1(Caregiving)	-1.62	-1.49	-4.62*	-0.26	1.8	-5.69*	2.8	-0.41	0.09	0.64	0.57*	5.15
	(3.75)	(4.67)	(2.27)	(1.83)	(1.6)	(2.84)	(2.88)	(1.32)	(0.12)	(1.16)	(0.27)	(2.65)
No. observations	7924	7924	7924	7924	7924	7924	7924	7924	7924	7924	7924	7924
IHS transformed Y-mean	7.21	0.77	10.55	2.8	2.31	6.35	6.97	0.6	0.04	0.35	0.24	2.08
Panel B1: Any college												
1(Caregiving)	1.15	1.2	-0.65	0.17	0.31	0.01	0.96	-0.75	0.19*	1.8*	0.2*	1.75*
	(1.00)	(1.64)	(0.65)	(0.41)	(0.27)	(0.83)	(0.92)	(0.47)	(0.08)	(0.74)	(0.08)	(0.68)
No. observations	12928	12928	12928	12928	12928	12928	12928	12928	12928	12928	12928	12928
IHS transformed Y-mean	10.88	5.5	11.82	5.77	2.93	7.83	9.12	0.55	0.09	0.89	0.15	1.33
Panel B2: No college												
1(Caregiving)	1.29	-2.92	-2.32	0.4	0.47	1.41	4.19	2.33	0.03	0.17	0.12	0.5
	(2.95)	(3.34)	(1.6)	(1.2)	(1.03)	(1.72)	(2.33)	(1.23)	(0.13)	(1.23)	(0.15)	(1.31)
No. observations	7317	7317	7317	7317	7317	7317	7317	7317	7317	7317	7317	7317
IHS transformed Y-mean	7.79	1.65	10.45	2.92	2.26	6.6	6.23	0.58	0.04	0.33	0.16	1.44
Panel C1: Single member												
1(Caregiving)	6.7	6.62	-4.75	-2.89	3.25	9.24	2.69	-1.26	0.32	3.95	0.25	2.37
	(6.55)	(9.02)	(3.93)	(3.4)	(3.19)	(6.23)	(5.65)	(2.79)	(0.43)	(5.24)	(0.4)	(4.29)
No. observations	7717	7717	7717	7717	7717	7717	7717	7717	7717	7717	7717	7717
IHS transformed Y-mean	8.03	3.21	10.72	3.62	2.53	6.12	6.22	0.39	0.07	0.66	0.12	1.02
Panel C2: Dual members												
1(Caregiving)	-0.29	0.48	-0.88	0.18	-0.11	-0.82	1.59	-0.1	0.19*	1.82*	0.17*	1.27
	(1.14)	(1.76)	(0.69)	(0.39)	(0.31)	(0.85)	(0.98)	(0.54)	(0.09)	(0.79)	(0.08)	(0.72)
No. observations	12528	12528	12528	12528	12528	12528	12528	12528	12528	12528	12528	12528
IHS transformed Y-mean	10.83	4.66	11.7	5.42	2.78	8.17	9.22	0.67	0.07	0.71	0.18	1.59
Panel D1: Single period												
1(Caregiving)	3.65	2.87	-2.59	2.59	0.84	-1.52	5.93	-0.3	0.11	0.91	0.2	1.39
	(4.18)	(5.38)	(2.21)	(1.69)	(1.17)	(2.77)	(3.47)	(1.64)	(0.24)	(2.22)	(0.23)	(2.09)
No. observations	14906	14906	14906	14906	14906	14906	14906	14906	14906	14906	14906	14906
IHS transformed Y-mean	9.25	3.47	11.2	4.41	2.56	7.15	8.02	0.56	0.07	0.63	0.15	1.33
Panel D2: Multiple periods												
1(Caregiving)	0.84	-0.5	-0.97	-0.16	0.29	0.17	1.3	-0.09	0.17*	1.69*	0.18*	1.48*
	(1.1)	(1.59)	(0.67)	(0.42)	(0.32)	(0.74)	(0.9)	(0.48)	(0.07)	(0.68)	(0.07)	(0.62)
No. observations	15698	15698	15698	15698	15698	15698	15698	15698	15698	15698	15698	15698
IHS transformed Y-mean	9.72	4.04	11.33	4.74	2.65	7.36	8.28	0.57	0.08	0.71	0.16	1.4
HH-level controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fixed effects	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year

Note. HH, household; IHS, inverse hyperbolic sine. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Table 4B. Results from the 2SLS model on the impact of intergenerational caregiving on household finances, HRS 1998-2018 (Subgroup analysis; death of alternative caregiver as IV)

	Wealth		Spending			Income			Transfer from Parents		Transfer to Parents	
	(1) Total Wealth	(2) Financial Wealth	(3) Total Spending	(4) Healthcare Spending	(5) Total Income	(6) Capital Income	(7) Total Earnings	(8) Unemp Comp.	(9) Any Transfer	(10) Transferred Amount	(11) Any Transfer	(12) Transferred Amount
Panel E1: ADRD												
1(Caregiving)	1.93	-0.65	-1.74	0.03	0.37	1.23	2.15	-0.26	0.26	2.64*	0.23	1.71
	(2.2)	(3.07)	(1.25)	(0.81)	(0.64)	(1.47)	(1.73)	(0.84)	(0.14)	(1.28)	(0.13)	(1.12)
No. observations	13277	13277	13277	13277	13277	13277	13277	13277	13277	13277	13277	13277
IHS transformed Y-mean	9.42	3.66	11.26	4.54	2.55	7.22	8.28	0.55	0.07	0.7	0.16	1.4
Panel E2: Non-ADRD												
1(Caregiving)	1.01	0.63	-0.96	0.56	0.42	-0.96	2.23*	-0.09	0.1	0.9	0.15	1.26
	(1.39)	(1.88)	(0.78)	(0.55)	(0.39)	(0.94)	(1.13)	(0.61)	(0.09)	(0.8)	(0.09)	(0.76)
No. observations	17327	17327	17327	17327	17327	17327	17327	17327	17327	17327	17327	17327
IHS transformed Y-mean	9.54	3.84	11.27	4.6	2.64	7.29	8.05	0.58	0.07	0.65	0.15	1.34
HH-level controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Fixed effects	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year	HH/Year

Note. HH, household; IHS, inverse hyperbolic sine. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

APPENDIX

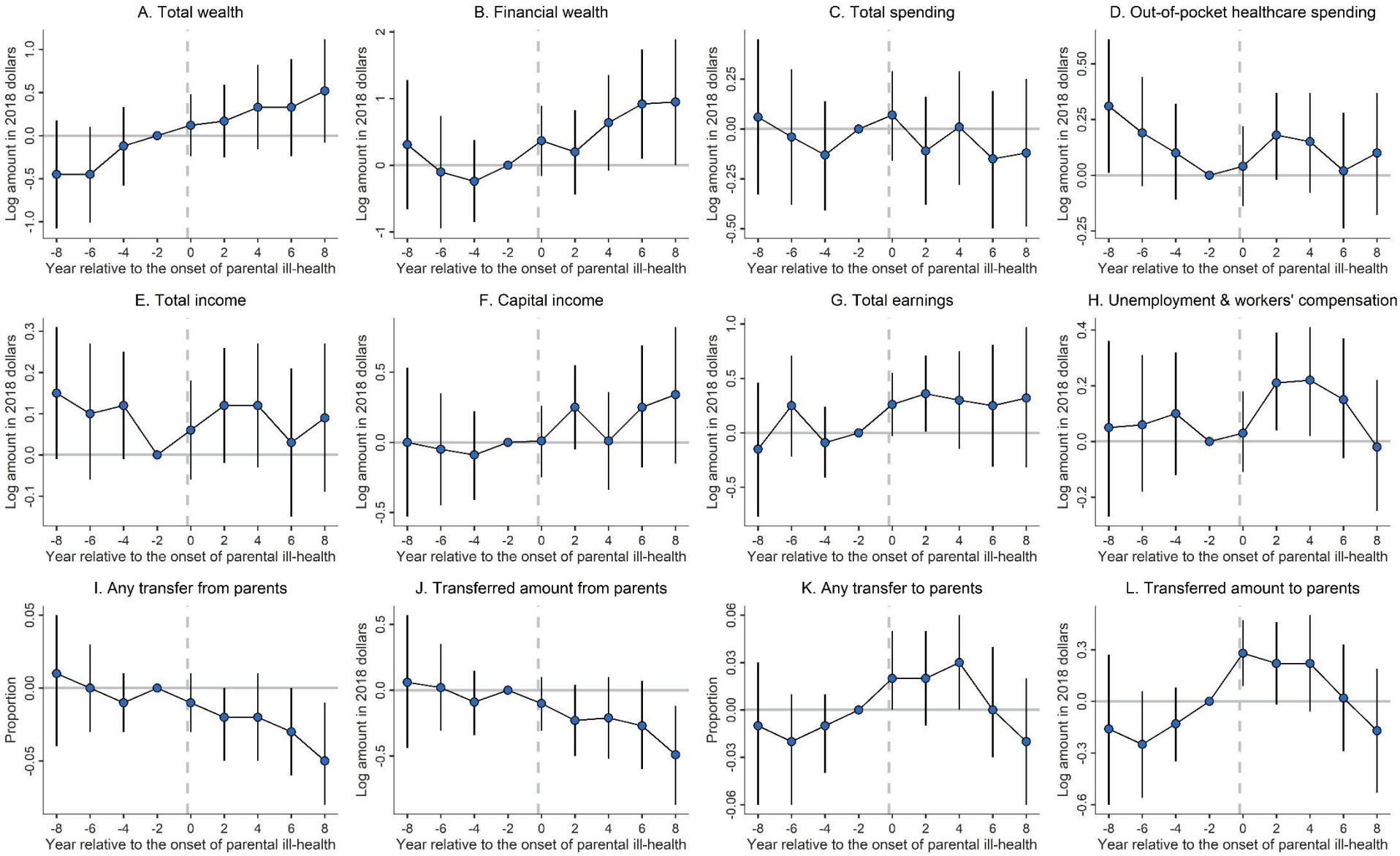


Figure A1. Pre-trend assumption check of the 1st instrumental variable (parental "ill-health")

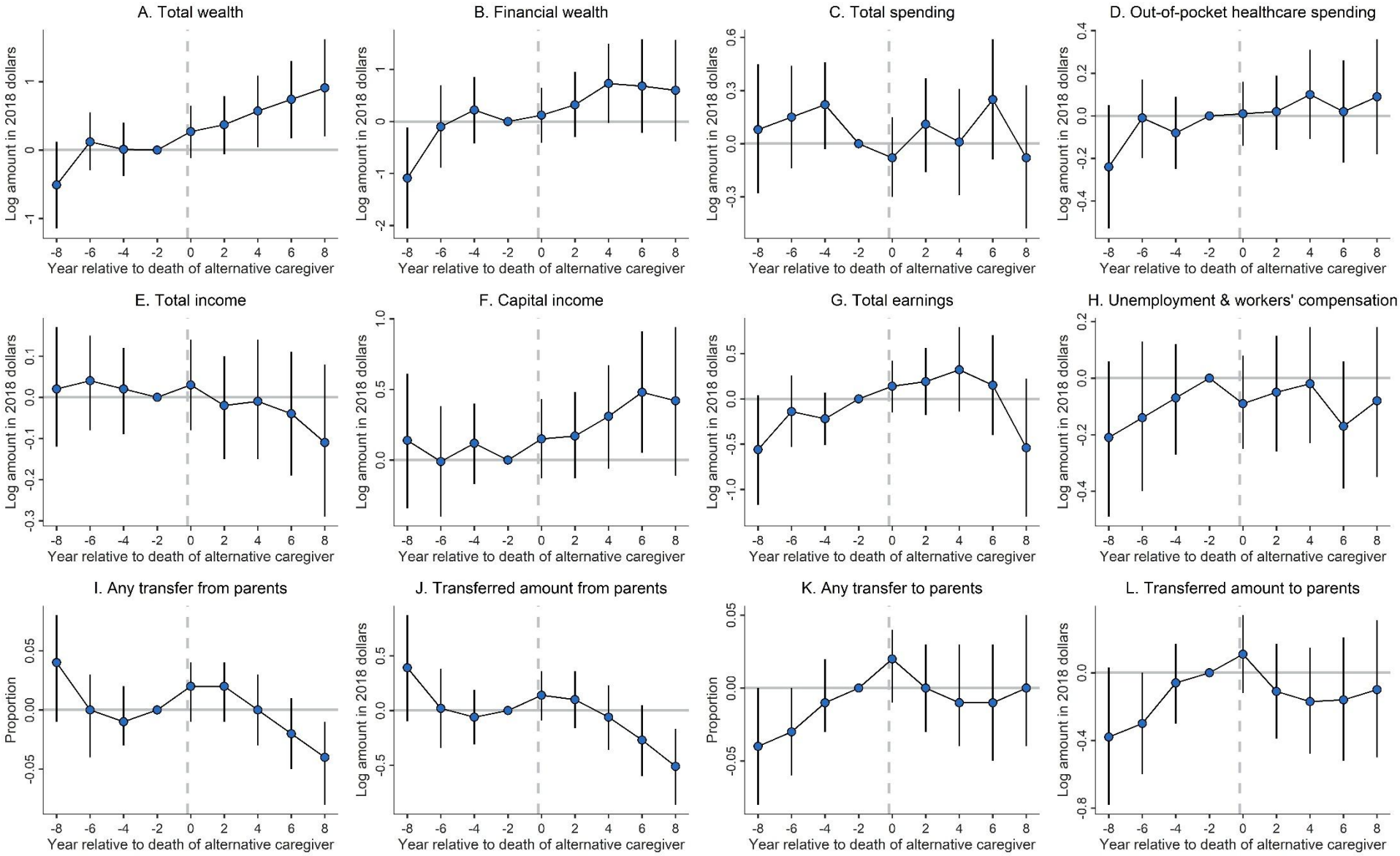


Figure A2. Pre-trend assumption check of the 2nd instrumental variable (death of alternative caregiver)

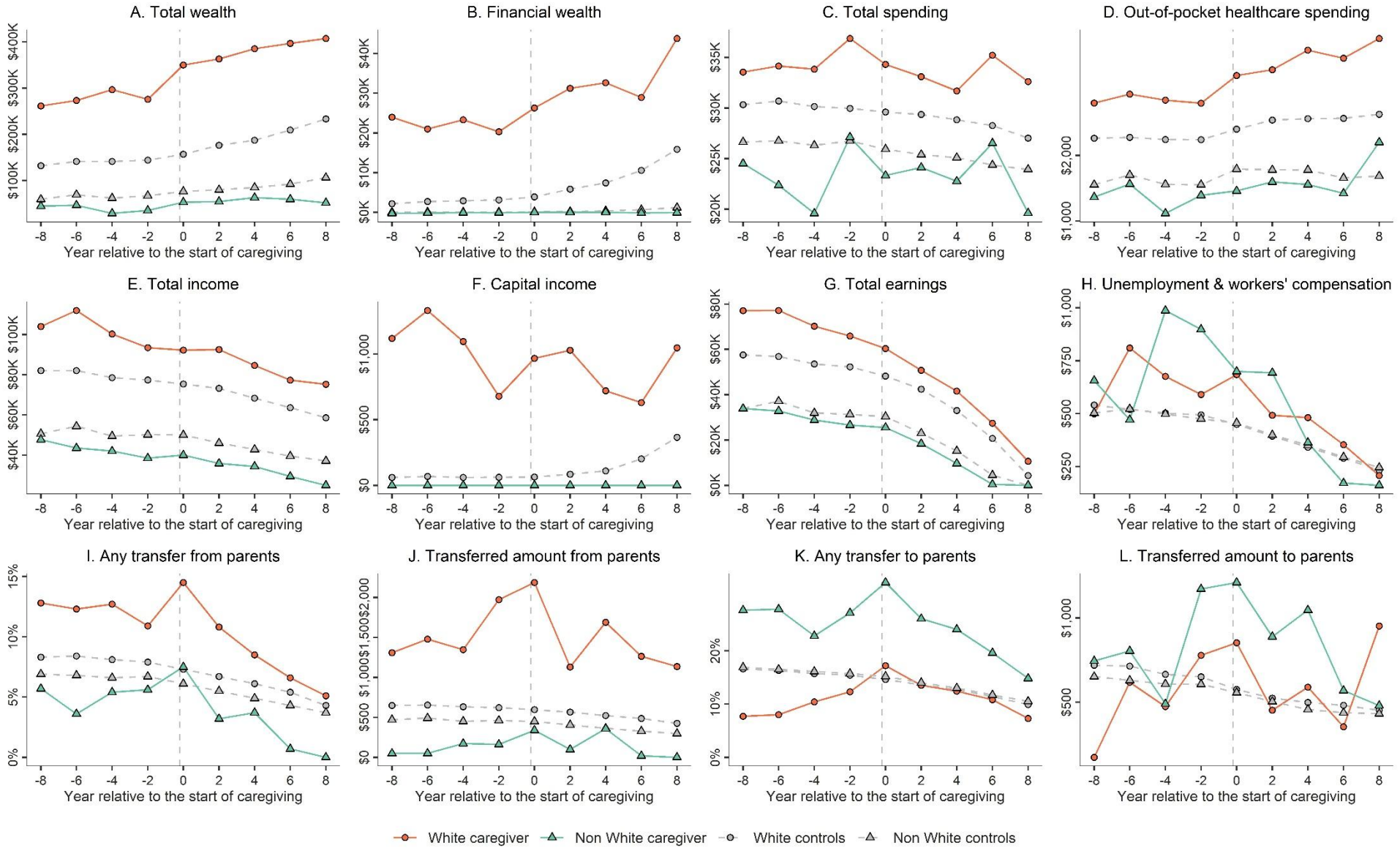


Figure A3. Heterogeneity in trends of household financial variables among caregiving households with Whites/Non-Whites and weighted controls

Note. At each year relative to the start of caregiving, values for non-caregiving households were reweighted to represent the distribution of covariates included for propensity score estimation. The included covariates are the minimum and maximum age of household members, household education level (no college degree, a single member with a college degree, both members with college degrees), and the number of household members. The mean value is employed for unemployment compensation, and transferred amount from/to parents, while the median value is used for other outcome variables. Financial variables are adjusted in 2018 dollars. We categorize a caregiving household as non-White if all the members do not identify as White.

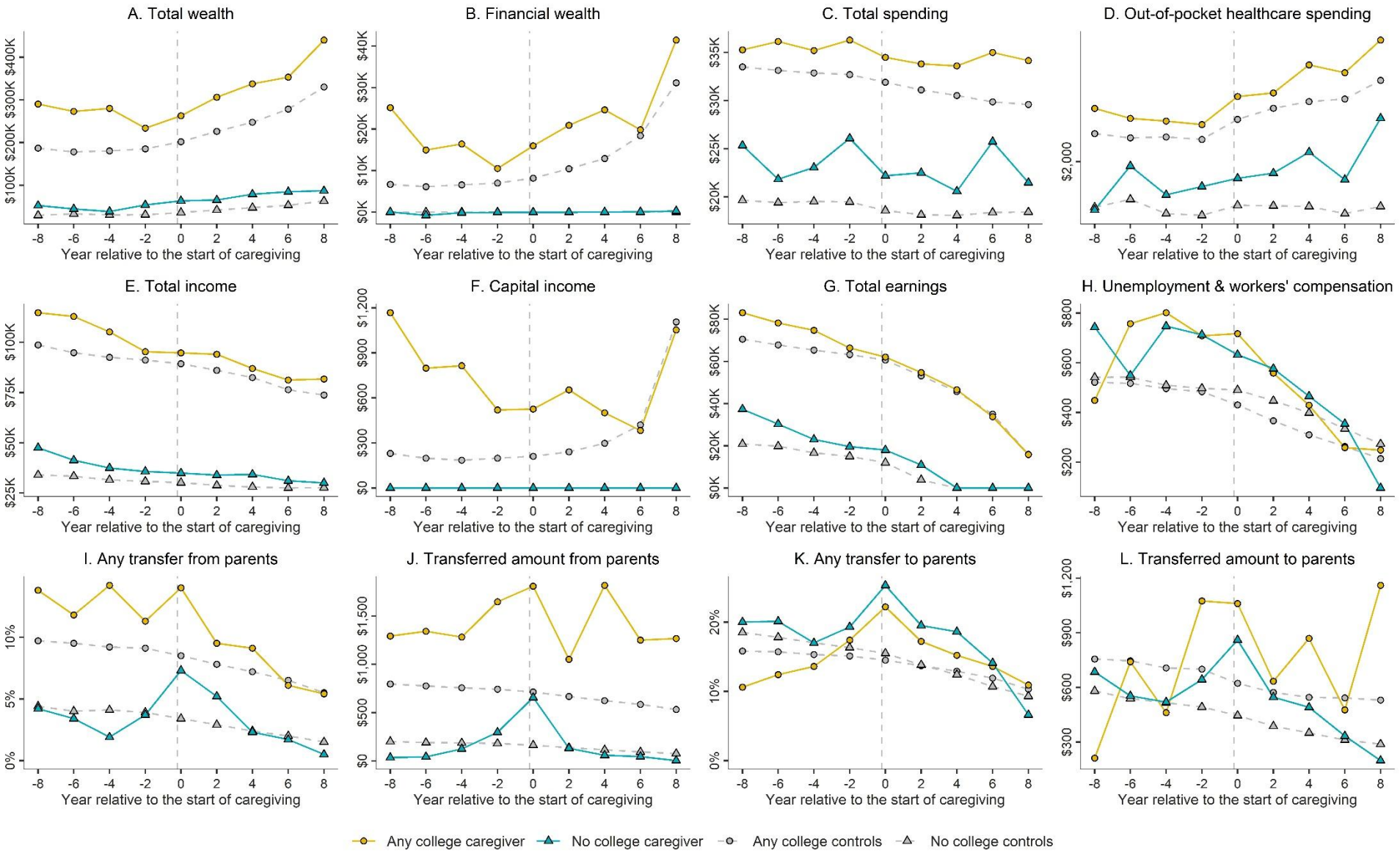


Figure A4. Heterogeneity in trends of household financial variables among caregiving households with any college/no college education and weighted controls

Note. At each year relative to the start of caregiving, values for non-caregiving households were reweighted to represent the distribution of covariates included for propensity score estimation. The included covariates are the minimum and maximum age of household members, household education level (no college degree, a single member with a college degree, both members with college degrees), and the number of household members. The mean value is employed for unemployment compensation, and transferred amount from/to parents, while the median value is used for other outcome variables. Financial variables are adjusted in 2018 dollars. We categorize a caregiving household as no college if all the members do not identify as college graduates.

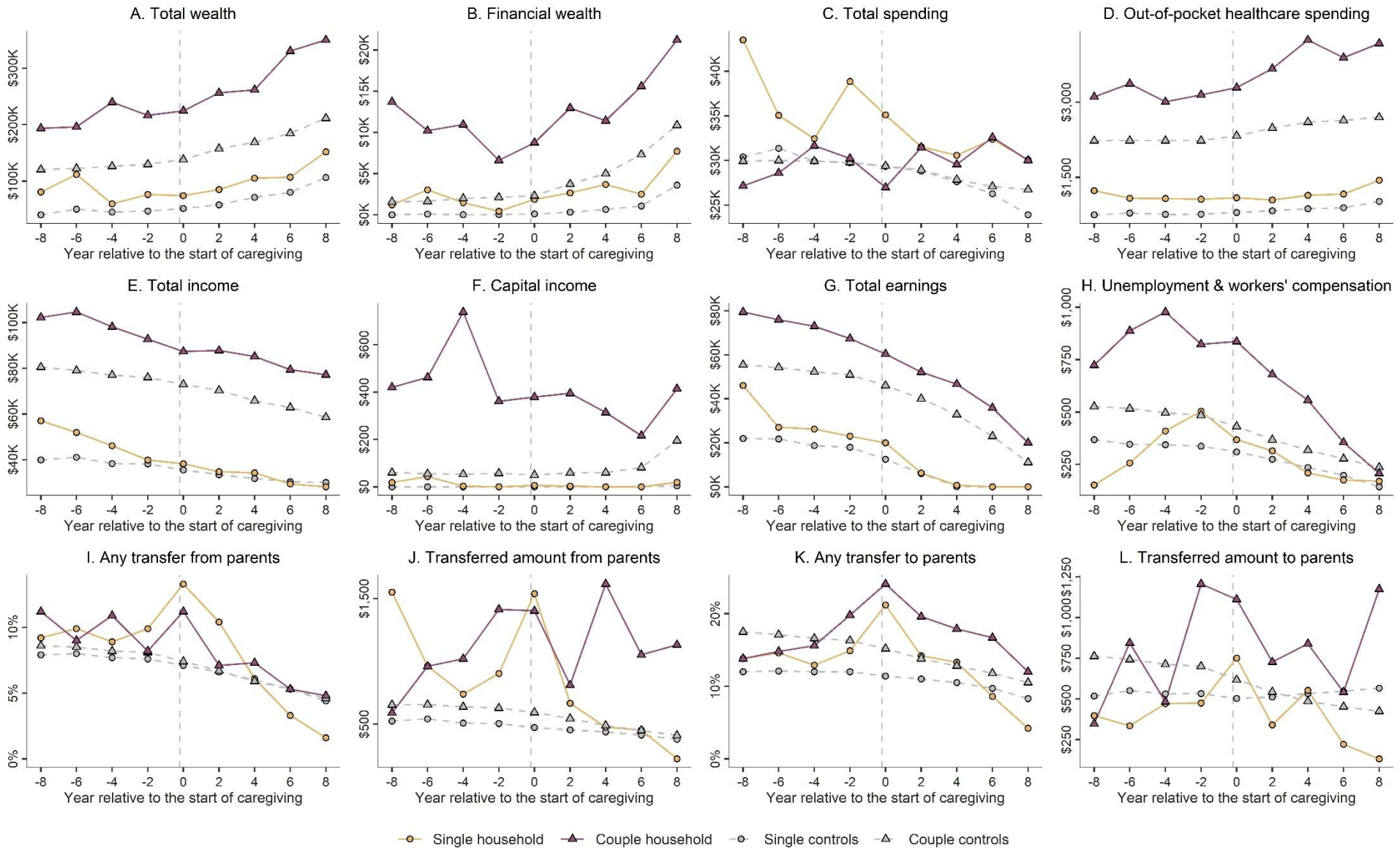


Figure A5. Heterogeneity in trends of household financial variables among caregiving households with single member/couples and weighted controls

Note. At each year relative to the start of caregiving, values for non-caregiving households were reweighted to represent the distribution of covariates included for propensity score estimation. The included covariates are the minimum and maximum age of household members, household education level (no college degree, a single member with a college degree, both members with college degrees), and the number of household members. The mean value is employed for unemployment compensation, and transferred amount from/to parents, while the median value is used for other outcome variables. Financial variables are adjusted in 2018 dollars. We categorize a caregiving household as single if no partner lives together within the household.

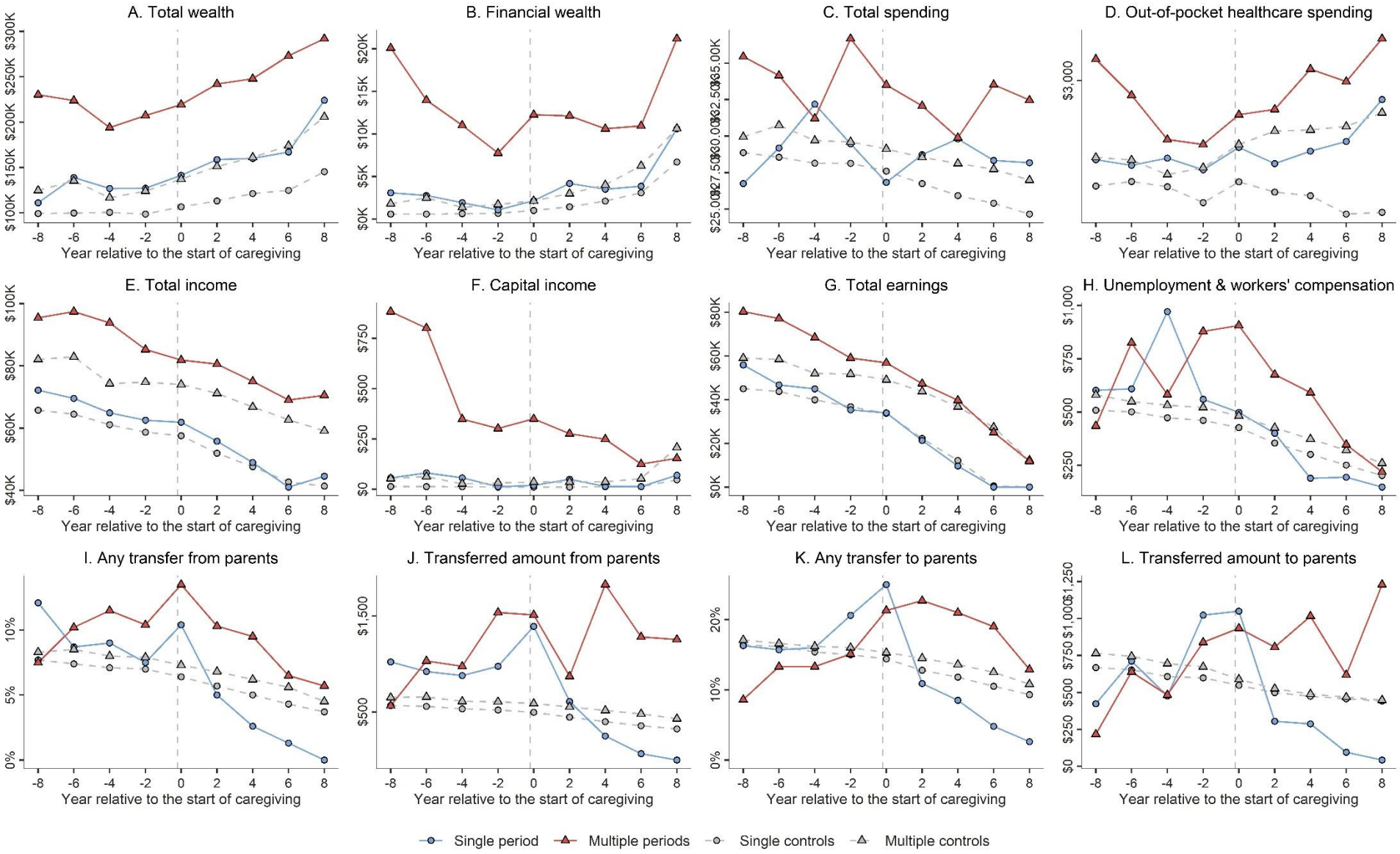


Figure A6. Heterogeneity in trends of household financial variables among caregiving households with single period/multiple periods and weighted controls

Note. At each year relative to the start of caregiving, values for non-caregiving households were reweighted to represent the distribution of covariates included for propensity score estimation. The included covariates are the minimum and maximum age of household members, household education level (no college degree, a single member with a college degree, both members with college degrees), and the number of household members. The mean value is employed for unemployment compensation, and transferred amount from/to parents, while the median value is used for other outcome variables. Financial variables are adjusted in 2018 dollars. We categorize a caregiving household as single if no partner lives together within the household.

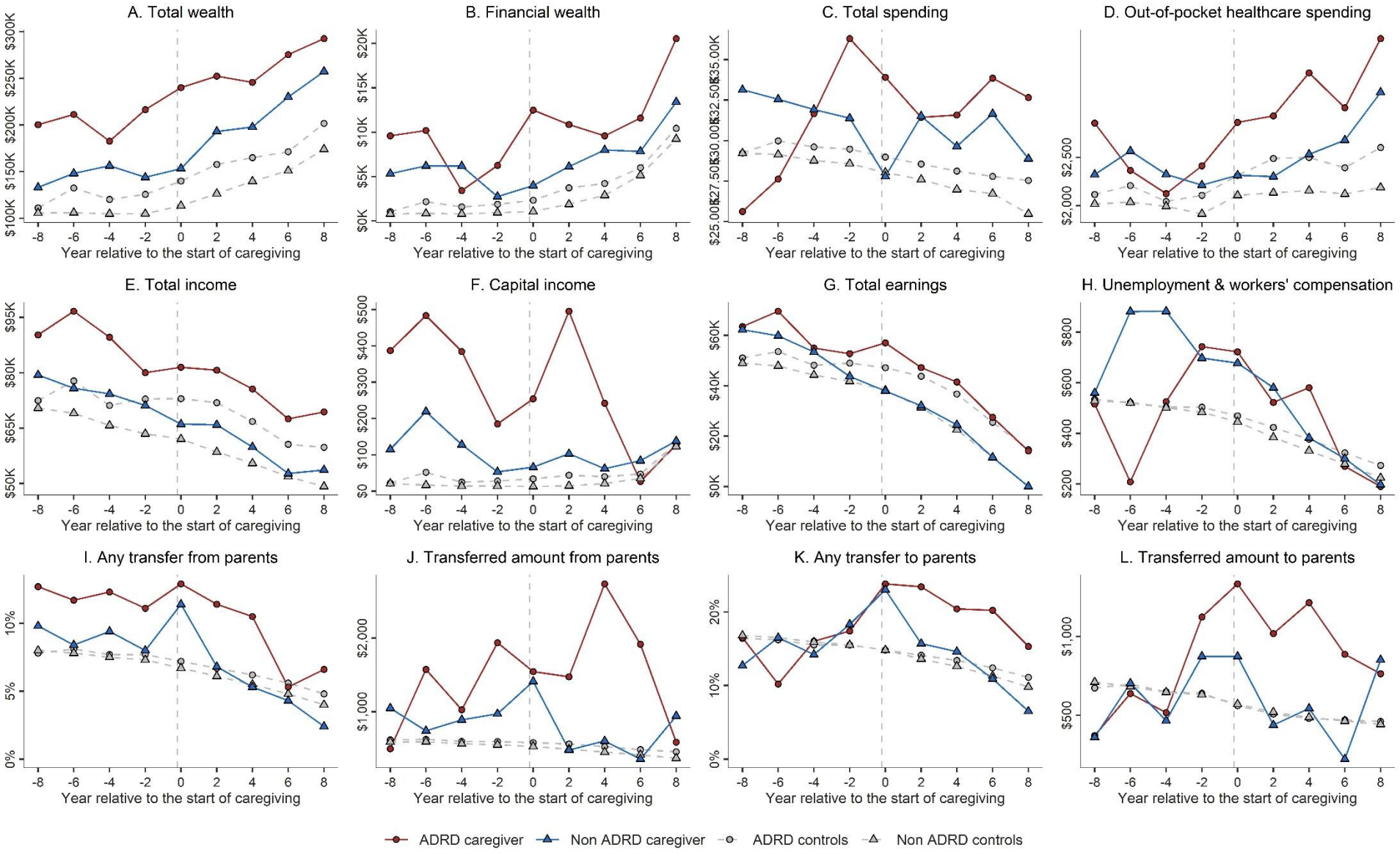


Figure A7. Heterogeneity in trends of household financial variables among caregiving households with ADRD/Non ADRD parent(s) and weighted controls

Note. At each year relative to the start of caregiving, values for non-caregiving households were reweighted to represent the distribution of covariates included for propensity score estimation. The included covariates are the minimum and maximum age of household members, household education level (no college degree, a single member with a college degree, both members with college degrees), and the number of household members. The mean value is employed for unemployment compensation, and transferred amount from/to parents, while the median value is used for other outcome variables. Financial variables are adjusted in 2018 dollars. ADRD, Alzheimer's disease and related dementias.

Table A1. Distribution of caregiving hours (unit: %)

Caregiving hours (CH)	Household-level
$100 \leq CH < 300$	17.7
$300 \leq CH < 500$	19.4
$500 \leq CH < 700$	11.5
$700 \leq CH < 1000$	14.6
$1000 \leq CH < 1500$	9.7
$1500 \leq CH < 2000$	6.2
$2000 \geq CH$	20.9
Observations	1563

Note. We categorized households as caregiving households if any member provided care or errands to respondent's or spouse's parents. The unit of observation in the table represents a unique household. The data on caregiving hours was obtained from observations collected at the start of caregiving.

Table A2. First stage results from the regression model of parental "ill-health" or death of alternative caregiver on caregiving status

	(1) 1(Caregiving)	(2) 1(Caregiving)	(3) 1(Caregiving)	(4) 1(Caregiving)
Parental "ill-health"	0.165***	0.159***	-	-
	(0.01)	(0.01)	-	-
Death of alternative caregiver	-	-	0.124***	0.145***
	-	-	(0.012)	(0.012)
No. observations	20,245	20,245	20,245	20,245
F-statistics	249	233	110	145
Household-level controls		Y		Y
Fixed effects	Household/Year	Household/Year	Household/Year	Household/Year

Note. Household-level controls include the status of co-residence with minor child(ren), the number of household members, household fixed effects, and calendar year fixed effects. Standard errors are clustered at the household level. *** $p < 0.001$.

Table A3. Balance of household characteristics by the endogenous caregiving and IV status

	(1) Endogenous variable 0(Caregiving)	(2) Endogenous variable 1(Caregiving)	(3) 1st instrumental variable 0(Ill-health)	(4) 1st instrumental variable 1(Ill-health)	(5) 2nd instrumental variable 0(Death of alternative caregiver)	(6) 2nd instrumental variable 1(Death of alternative caregiver)
Panel A. Covariates used in propensity score estimation						
Age (SD)	57.5 (7.3)	59.2 (5.6)	57.8 (7.3)	57.7 (6.2)	57.8 (7.2)	57.2 (5.3)
Education						
No college	37.7	28.9	35.3	38.4	36.5	32.7
Any college (single member)	38.3	35.6	39	34.7	37.7	38.7
Any college (both)	24	35.5	25.7	26.9	25.8	28.6
Average household size	1.6 (0.5)	1.7 (0.4)	1.6 (0.5)	1.7 (0.5)	1.6 (0.5)	1.6 (0.5)
Panel B. Other covariates						
Non-White household	40.6	32.5	37.8	42.7	39.5	35.6
Employment						
Both unemployed	40.6	32.5	37.8	42.7	39.5	35.6
Female employed	26.8	23.8	26.5	25.8	26.7	22
Male employed	21.9	20.9	22.3	20.1	21.6	22.5
Both employed	22	20.5	21.5	22.3	21.5	23.6
Health – good and above						
None	29.4	34.8	29.8	31.7	30.2	31.9
Single member	18.6	11.9	16.6	19.4	17.7	14.8
Both members	44.5	36.9	44.2	40.3	43	44.2
Single member household	37	51.2	39.2	40.3	39.3	41
Panel C. Household financial variables (unit: $)						
Total wealth – mean	322,436	459,424	349,523	338,762	341,718	392,926
Total wealth – median	116,188	244,733	139,487	125,523	130,260	175,000
Financial wealth – mean	54,236	81,071	60,464	54,994	58,205	66,214
Financial wealth – median	1,422	10,000	2,793	1,151	2,188	4,184
Total earnings – mean	52,880	59,301	54,143	53,664	53,638	57,579
Total earnings – median	33,898	40,816	35,011	33,624	34,522	38,293
Mean transfer from parents	484	1,078	568	652	577	714
Mean transfer to parents	412	743	387	700	458	601
Median income	59,316	75,292	63,139	60,000	61,297	70,284
Median capital income	16	198	33	16	25	60
Median total spending[a]	29,187	32,038	30,264	28,324	29,383	33,117
Median out-of-pocket medical spending	2,014	2,800	2,100	2,301	2,139	2,200
Observations	16,678	3,567	14,694	5,551	18,326	1,919

Note. The IV of parental 'ill-health' was constructed by identifying any of the following conditions: the need for help with personal care, the presence of a memory disease, and the inability to be left alone.

Table A4. The number of households across the relative years to caregiving onset among cases

Relative year	-8	-6	-4	-2	0	2	4	6	8	Total
Total (n)	290	503	840	1563	1563	1217	1046	848	565	8435
Caregiving (n)					1563	721	517	326	190	
Percentage (%)					100	59.2	49.4	38.4	33.6	

Note. Both caregiving and non-caregiving households were required to have at least two consecutive waves. For caregiving households, specifically, at least one preceding "clean" wave prior to the onset of caregiving is necessary.

Table A5. The frequency of transfer variables among ADRD caregivers by relative years to caregiving onset

	Transfer from parents					Transfer to parents				
Event	Zero	Positive	Bracketed	Missing	Sum	Zero	Positive	Bracketed	Missing	Sum
-8	56	9	1	13	79	53	9	4	13	79
-6	97	15	1	24	137	99	13	1	24	137
-4	153	21	6	39	219	145	31	4	39	219
-2	309	43	4	69	425	282	71	3	69	425
Index	324	50	5	46	425	278	88	13	46	425
2	302	36	4	9	351	260	69	13	9	351
4	280	32	1	0	313	249	53	11	0	313
6	249	13	1	0	263	210	44	9	0	263
8	171	12	0	0	183	155	19	9	0	183

Table A6. The frequency of transfer variables among non ADRD caregivers by relative years to caregiving onset

	Transfer from parents					Transfer to parents				
Event	Zero	Positive	Bracketed	Missing	Sum	Zero	Positive	Bracketed	Missing	Sum
-8	145	18	2	39	204	139	21	5	39	204
-6	280	30	0	48	358	251	48	11	48	358
-4	438	51	3	85	577	410	74	8	85	577
-2	883	77	14	164	1138	766	180	28	164	1138
Index	900	120	10	108	1138	768	233	29	108	1138
2	772	51	8	35	866	695	111	25	35	866
4	694	37	2	0	733	626	88	19	0	733
6	560	23	2	0	585	521	53	11	0	585
8	373	8	1	0	382	357	21	4	0	382

Table A7. The frequency of transfer variables among non caregiving households

Transfer from parents					Transfer to parents				
Zero	Positive	Bracketed	Missing	Sum	Zero	Positive	Bracketed	Missing	Sum
80424	6039	504	7191	94158	72558	12537	1872	7191	94158

Definitions of the outcome variables

1. Total wealth: the net value of total assets: 1) – 2)

1) The sum of value of primary residence, net value of secondary residence, net value of real estate (not primary residence), net value of vehicles, net value of businesses, net value of IRA, Keogh accounts, net value of stocks, mutual funds, and investment trusts, value of checking, savings, or money market accounts, value of CD, government savings bonds, and T-bills, net value of bonds and bond funds, and net value of all other savings
2) The sum of value of all mortgages/land contracts (primary residence), value of other home loans (primary residence), and value of other debt

2. Financial wealth: the net value of non-housing financial wealth: 1) – 2)

1) The sum of net value of stocks, mutual funds, and investment trusts, value of checking, savings, or money market accounts, value of CD, government savings bonds, and T-bills, net value of bonds and bond funds, and net value of all other savings
2) value of other debt

3. Total income: the total income for the last year: 1)

1) The sum of respondent and spouse earnings, pensions and annuities, Social Security Income and Social Security Disability, Social Security retirement, unemployment and workers compensation, other government transfers, household capital income, and other income

4. Capital income: the total capital income over the last year: 1)

1) The sum of business or farm income, self-employment earnings, gross rent, dividend and interest income, trust funds or royalties, and other asset income.

5. Earnings: the total earnings received over the last year: 1)

1) The sum of wage/salary income, bonuses/overtime pay/commissions/tips, 2nd job or military reserve earnings, and professional practice or trade income

6. Unemployment and worker's compensation: the total income from unemployment and worker's compensation received over the last year: 1)

1) The sum of income from unemployment and worker's compensation

7. Spending: the total spending during the second year of the wave: 1)

1) The sum of the household spendings on durables, nondurables, transportation and housing

8. Out-of-pocket healthcare spending: the total out-of-pocket medical expenditures since the previous wave: 1)

1) The sum of out-of-pocket medical spending, such as hospital and nursing home costs, doctor, dentist and outpatient surgery costs, average monthly prescription drug costs, and home health care and special facilities or services costs