The Economic Consequences of Nursing Home Admissions*

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Abstract

Long-term care expenditures are high and growing rapidly worldwide. In the United States, where social insurance for long-term care is limited, much of the risk may remain uninsured. This paper examines the economic consequences of nursing home admissions using stacked difference-in-differences and event study designs. We find that nursing home admissions significantly increase out-of-pocket medical expenditures and the likelihood of Medicaid participation. Additionally, we find evidence of increased labor force participation among a subgroup of individuals discharged from a nursing home, suggesting that substantial medical expenses may encourage work at older ages.

JEL classification: I10, D14, J21

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1 Introduction

Most people over the age of 65 are expected to need some form of long-term care in their remaining years.[1] Long-term care refers to a range of medical and non-medical services for individuals who require assistance over an extended period, which can be provided at home, in community settings, or in nursing homes. The cost of long-term care is substantial. In 2021, total long-term care spending in the United States reached $467.4 billion (Congressional Research Service, 2023), with Medicaid being the largest payer (44.3%), followed by Medicare (19.8%) and out-of-pocket spending (13.6%). Without a coherent system for providing long-term care, many Americans risk exhausting their savings and must rely on a fragmented system of care.[2] Yet, we know little about the economic consequences of nursing home admissions.

In this paper, we examine the magnitude of the economic risk associated with long-term care, with a particular focus on nursing home care—the most expensive form of care. Specifically, we use data from Health and Retirement Study (2020) from 1994 to 2018 to analyze the effects of a nursing home admission on a wide range of outcomes, including household finances, labor supply responses, and program participation rates. To identify the causal effect of a nursing home admission, we construct a stacked dataset of individuals aged 65 and older who experience their first nursing home admission with clean controls: those who never have a nursing home admission and those who are not-yet-treated (i.e., admitted many years later). We then estimate stacked difference-in-differences and event study models.

We find that a nursing home admission results in a large increase in out-of-pocket medical expenditures, which is driven by longer stays. For short-term stays of 20 days or fewer, we find no impact on out-of-pocket spending, consistent with Medicare typically providing full coverage for short-term skilled nursing care. For longer stays, however, a nursing home admission leads to a significant increase in out-of-pocket medical spending——an average rise of $2,650 over the following eight years for stays of 21 to 100 days, and $11,961 for stays exceeding 100 days.[3] The increase in out-of-pocket medical spending is immediate and remains elevated in subsequent years.

In contrast to the large increase in medical expenditures, we do not find any significant changes in household debt, assets, or income in the years following a nursing home admission.

[1] `https://acl.gov/ltc/basic-needs/how-much-care-will-you-need`, accessed on March 6, 2025.

[2] `https://www.nytimes.com/2023/11/14/health/long-term-care-facilities-costs.html`, accessed on March 6, 2025.

[3] Medicare typically provides partial coverage for nursing home stays that last between 21 and 100 days but does not provide any coverage for stays longer than 100 days.

Instead, we find evidence of increased labor supply in subsequent years among individuals with moderate-length stays (between 21 and 100 days). We do not observe a similar effect among those with short-term stays (20 days or fewer), who typically face no increase in out-of-pocket spending, or among those with longer stays (more than 100 days), who are likely too frail to return to work. This pattern suggests that large medical expenditures may prompt older adults to reenter the labor force—particularly those healthy enough to be discharged after an adverse medical event. We find no evidence of changes in spousal labor supply in response to a nursing home admission, regardless of the length of stay.

In addition, a nursing home admission increases Medicaid participation by 2.9 percentage points (or by 27%), suggesting that some patients enroll in Medicaid to cover nursing home costs. We find that the increase in labor supply is concentrated among those who do not gain Medicaid, highlighting two primary ways in which individuals respond to a nursing home shock: by increasing their labor supply or enrolling in Medicaid. The increase in Medicaid participation, as well as the first-stage impact on the length of nursing home stay, is greater for those who are not married, suggesting that the availability of informal care by family members may influence how long a patient stays in a nursing home and whether or not the patient ultimately relies on Medicaid.

Our results shed light on the extent and availability of both formal and informal insurance against the economic consequences of nursing home admissions. While our results suggest that Medicaid and increased labor supply help offset the financial burden, the overall welfare consequences remain unclear. We are unable to directly measure the disutility of work at old ages or the "costs" of Medicaid enrollment, such as depletion of wealth not captured in our data. Additionally, we find suggestive evidence of worsening mental health in the short term, highlighting non-monetary costs of nursing home admissions.

Our paper is closely related to the literature on financial consequences of adverse health shocks, such as hospitalization (Dobkin et al., 2018; Bonekamp and Wouterse, 2023), automobile accidents (Morrison et al., 2013), cancer diagnosis (Gupta et al., 2015; Gilligan et al., 2018), and aging (Venti and Wise, 2004; Poterba et al., 2017; Jones et al., 2020b). We add to this literature by studying another substantial financial shock from nursing home admissions.

Our finding of increased labor supply among a subset of individuals contrasts with prior research, which generally finds reductions in labor supply following adverse health shocks (Lenhart, 2019; Jones et al., 2020a). However, the absence of a spousal labor supply response aligns with previous studies showing limited impacts on family labor supply in the aftermath of health events (Coile, 2004; Dobkin et al., 2018; Fadlon and Nielsen, 2021; Jolly and Theodoropoulos, 2023; Arrieta and Li, 2023). Our paper contributes to this literature by

documenting important heterogeneity: a subset of patients who recover from a major health event may subsequently return to the labor force—potentially in response to the financial burden of large medical expenditures.

Finally, our paper is related to the literature on the role of social insurance and health shocks. For example, Social Security can provide protection against financial risk of health shocks later in life (Fadlon and Nielsen, 2021; Dobkin et al., 2018). We highlight the critical role of Medicaid in providing financial protection against the economic risks of long-term care, particularly for individuals without available family support. These findings are also consistent with the literature on life-cycle models with health uncertainty, which highlight the importance of Medicaid and informal care at older ages (De Nardi et al., 2016; Borella et al., 2025; Capatina et al., 2024).

The remainder of the paper proceeds as follows. Section 2 provides the background on long-term care and nursing home care. Section 3 discusses our data and how we construct our sample for the analysis. Section 4 describes the empirical strategy, the stacked difference-in-differences and event study designs. Section 5 presents the main results on the impact of nursing home admissions on households, patients, and their spouses. In this section, we also report the results of various heterogeneity analyses (Section 5.5) and robustness checks (Section 5.6). Section 6 concludes.

2 Background

Long-term care typically refers to a range of services and supports for people who require assistance with activities of daily living (such as bathing, dressing, and eating) for extended periods. Long-term care can be provided at home by informal or formal caregivers. It can also be provided in the community (e.g., an adult day care center) or in residential facilities (e.g., nursing homes).

In this paper, we focus on care provided in nursing homes. In 2024, about 1.2 million individuals resided in a nursing home,[4] and there were more than 16,000 certified nursing homes. Most nursing homes are also certified as skilled nursing facilities (SNFs), which provide services to assist with recovery following an acute event. Skilled nursing care is typically short-term, with the average stay of 28 days.[5]

[4] `https://www.kff.org/other/state-indicator/number-of-nursing-facility-residents/`, accessed on March 6, 2025.

[5] `https://data.cms.gov/provider-data/topics/nursing-homes`, accessed on March 6, 2025.

Short-term vs. long-term care provided in nursing homes. In identifying nursing home admissions, we treat any admission as a qualifying event and do not distinguish between skilled nursing care and long-term care, as we do not observe the type of care provided in nursing homes. However, we conduct a heterogeneous analysis by the length of stay to understand whether our results are driven by shorter- or longer-term stays.

The length of nursing home stays is also relevant when considering who pays for nursing home care. Nursing home stays are costly. For example, the median monthly cost of a private room in a nursing home was $9,733 in 2023 (Genworth, 2023). Medicare, the primary health insurance for individuals over age 65, typically covers the entire cost of nursing home care for the first 20 days.[6] For days 21 through 100, Medicare offers partial coverage, with patients responsible for a daily coinsurance. After 100 days, Medicare provides no coverage. Patients must then pay out of pocket (with or without private long-term care insurance) or rely on Medicaid, if they qualify.

Medicaid covers long-term care services for eligible beneficiaries, with eligibility criteria varying by state. In most states, individuals must meet both financial and functional requirements to qualify for Medicaid benefits. Specifically, individuals must meet income and asset limits, as well as demonstrate a need for nursing home care, such as assistance with daily living activities.

Nursing home care vs. other types of care. Not all individuals who need skilled nursing or long-term care are admitted to nursing homes. Many prefer to remain in the community or in their own homes. As a result, those who do enter a nursing home may represent a selected sample—either individuals who require professional care in a facility or those who lack alternative options for receiving care at home or in the community. This may be especially true for individuals without family members who can provide care. Accordingly, we examine how our results differ by marital status. Moreover, we assess the robustness of our results using an alternative specification based on propensity score matching to mitigate concerns about our primary comparison.

3 Data

We use 13 survey waves of the HRS (Health and Retirement Study, 2020) from 1994 through 2018.[7] The HRS is sponsored by the National Institute on Aging (grant number NIA

[6]Medicare provides full coverage for the first 20 days and partial coverage for days 21-100 for skilled nursing care if the patient has stayed in the hospital for at least three days (Jin et al., 2022).

[7]We do not include more recent waves due to the COVID-19's impact on nursing home care and outcomes.

U01AG009740) and is conducted by the University of Michigan. It is a biannual panel study of a nationally representative sample of older individuals born between 1924 and 1965, with most respondents entering at age 50 or older. For all analyses, we use the RAND HRS data products[8] compiled by the RAND Center for the Study of Aging. The data contain variables with consistent definitions across survey waves including demographics, financial resources, health care utilization, health insurance, as well as physical and mental health measures for all respondents and their spouses. Respondents in the HRS are grouped into "cohorts" based on their initial interview year.[9] To address potential differences in cohort-specific trends, we include cohort-by-wave dummies in our main specification, following Dobkin et al. (2018).

Our main sample of interest consists of individuals aged 65 and older who experience a nursing home visit, as well as their spouses. We do not impose any age restrictions on the spouses. To define our treatment measure, we identify the survey wave in which an individual reports having had a nursing home visit within the past two years, which is the reference period for each biennial survey. We then focus on the first nursing home admission that we observe. That is, if an individual reports nursing home visits in multiple waves, we consider only the first admission as the nursing home "treatment." Additionally, to ensure that these nursing home visits represent a new event, we require that the first visit is preceded by at least four waves (i.e., eight years) without a nursing home stay. We do not consider nursing home visits reported within the first four waves for each individual, as we cannot determine whether these visits were preceded by earlier, unobserved visits.

For our stacked difference-in-differences analysis, we focus on seven separate "experiments": individuals who were treated (as defined above) in 2000, 2002, 2004, 2006, 2008, 2010, or 2012. The construction of the stacked dataset proceeds as follows. First, we create separate datasets for each treatment cohort. For each cohort, we append the control group defined as individuals who either (i) never had a nursing home admission in all waves or (ii) had a nursing home admission at least four waves (i.e., eight years) after the treatment wave. Then, for each dataset, we restrict the sample to three waves before and after the treatment wave to capture surrounding patterns. This approach allows us to track individuals for up to 14 years in each experiment. We append these seven cohort-specific datasets to form a single stacked dataset.

Finally, we impose an additional sample restriction by limiting the sample to individuals

[8]The RAND HRS Longitudinal File is an easy-to-use dataset based on the HRS core data. This file was developed at RAND with funding from the National Institute on Aging and the Social Security Administration.

[9]The original HRS cohort began in 1992, followed by AHEAD (1993), CODA and WB (1998), EBB (2004), MBB (2010), and LBB (2016), all surveyed biennially. The AHEAD cohort initially followed a different timeline, with interviews in 1993, 1995, and 1998, before aligning with the standard biennial structure.

with a balanced panel. This is necessary because nursing home admission may influence the likelihood of appearing in follow-up surveys—a pattern we confirm empirically. Since we can only observe outcomes conditional on survey participation, this restriction is important to ensure that our results are not driven by differential attrition. For our main analysis, we therefore focus on individuals who are continuously observed from three waves before to three waves after the treatment wave, resulting in a balanced panel spanning seven waves. The final analysis sample includes 4,276 individual×wave observations in the treatment group and 202,271 individual×wave observations in the control group. Given that the control group is substantially larger than the treatment group, we also test the robustness of our results by using a random subset of the control group matched in size to the treatment group as well as a subset of control group matched on observable characteristics using propensity score matching in Section 5.6.

Table 1 presents summary statistics for the treated and control groups in our main analysis sample. We find that the treated group (i.e., those who experience a nursing home shock) are older, more likely to be females, and less likely to be married compared to those in the control group (i.e., those who do not experience a nursing home shock within our event window).

Conditional on nursing home admissions, treated individuals have on average 1.6 admissions during our seven-wave event window. The average length of stay is 223 days, conditional on admission. Note that the standard deviation is large (305.37 days), suggesting that some individuals may experience a short visit to receive skilled nursing care, while others may stay for an extended period to receive long-term care services.

Most individuals in both groups are covered by Medicare, which is not surprising given that the sample is restricted to those 65 and above. A higher share of the treated group is covered by Medicaid compared to the control group. (17% vs. 7%). The treated group is also slightly sicker than the control group, with 95% having a chronic condition compared to 89%.

4 Empirical strategy

We employ a stacked difference-in-differences (DD) framework inspired by previous literature (Deshpande and Li, 2019; Baker et al., 2022; Wing et al., 2024). In our setting, the treated group consists of individuals who experienced a nursing home "shock," defined as their first nursing home visit (with no prior visit in at least eight years). To ensure sufficiently long pre- and post-treatment periods, we focus on seven treatment cohorts: those who had a nursing home visit in 2000, 2002, 2004, 2006, 2008, 2010, and 2012. As the control

Table 1: Summary statistics by treated and control units

	Treated		Control		Mean Difference	
	Mean	SD	Mean	SD	C-T	t-stat
Panel A. Demographics						
Age	77.06	7.47	72.38	5.99	-4.68***	-40.68
Female	0.73	0.45	0.57	0.49	-0.15***	-22.20
Hispanic	0.06	0.24	0.09	0.28	0.03***	7.10
White	0.84	0.37	0.83	0.37	-0.01	-1.38
Married	0.39	0.49	0.64	0.48	0.26***	34.28
Panel B. Health care utilization and spending						
Any NH stay	0.30	0.46	0.00	0.00	-0.30***	-43.26
# of NH stays, conditional	1.60	5.44				
# of NH nights, conditional	223.22	305.37				
Out-of-pocket spending	6700.83	21702.24	3040.40	8531.22	-3660.43***	-11.01
Panel C. Labor market						
Earnings	2518.58	18511.04	6808.23	26364.02	4289.65***	14.84
Working for pay	0.04	0.20	0.12	0.33	0.08***	23.97
Retired	0.80	0.40	0.67	0.47	-0.12***	-19.88
Spouse working for pay	0.08	0.27	0.15	0.36	0.07***	10.59
Spouse retired	0.71	0.45	0.64	0.48	-0.08***	-6.88
Panel D. Health insurance						
Has Medicaid	0.17	0.38	0.07	0.26	-0.10***	-17.04
Has Medicare	0.97	0.18	0.96	0.19	-0.01**	-2.74
Has private insurance	0.50	0.50	0.54	0.50	0.05***	5.85
Has LTCI	0.15	0.36	0.16	0.36	0.00	0.24
Panel E. Health						
Any chronic conditions	0.95	0.22	0.89	0.32	-0.06***	-17.69
# of health conditions, conditional	2.99	1.43	2.35	1.20	-0.64***	-28.22
Observations	4276		202271		206547	

Notes: The final analysis sample consists of those aged 65 and above with a balanced panel of seven survey waves. Treated units refer to those who had a nursing home shock and control units refer to those who never had a nursing home visit or those who are not-yet-treated. Demographic variables are defined using the first response when individuals entered the survey. In panels B and E, a term "conditional" refers to the sample being conditional on having a nursing home stay and having any chronic conditions, respectively. Out-of-pocket spending and earnings are adjusted using 2021 US dollars. LTCI refers to long-term care insurance. Each observation is at the individual-wave level. Significance levels: *<0.10, **<0.05, ***<0.01

group, we consider never-treated and not-yet-treated individuals. That is, individuals who never visit nursing homes in our data or individuals who do visit nursing homes but eight or more years after the treatment year. We focus on a balanced panel consisting of three waves before and three waves after the treatment wave.

Appendix Table B.1 illustrates the design. We consider the group of treated and non-treated individuals for each treatment cohort as a separate "experiment" and stack the

seven experiments to create the analysis sample. We then fully saturate the conventional two-way fixed effects model with indicators for each experiment. Specifically, we estimate the following regression:

$$y_{ite} = \delta + \theta(Treated_{i,e} \times Post_{t,e}) + \kappa Post_{t,e} + \lambda_{t,e} + \mu_{i,e} + \phi_{c,t} + \nu_{ite} \tag{1}$$

where y_{ite} is an outcome (e.g. out-of-pocket medical spending or a dummy variable for whether the respondent is working) for individual/spouse/household i for experiment (or treatment cohort) e in survey wave t.

The $Treated_{i,e}$ variable is an indicator variable equal to 1 if individual i experienced a nursing home shock in experiment e. $Post_{t,e}$ is an indicator equal to 1 if survey wave t is after the nursing home shock in experiment e. The coefficient of interest is θ which represent the difference in treated and control units in outcome y, before and after the nursing home shock. The $\lambda_{t,e}$ are wave-by-experiment fixed effects and $\mu_{i,e}$ are individual-by-experiment fixed effects. Note that with individual-by-experiment fixed effects, we essentially control for all time-invariant characteristics, such as baseline health and demographic characteristics.

We also include $\phi_{c,t}$, cohort-by-wave fixed effects to address changes in sample composition over time due to the fact that different birth cohorts enter the survey at different times.[10] Also, cohort-by-wave fixed effects effectively control for cohort-specific time trends.[11] Standard errors are clustered at the individual level. We weight all regressions using survey weights.

We also estimate an event study version of this regression:

$$y_{ite} = \alpha + \sum_{\tau} \beta_{\tau}(Treated_{i,e} \times D^{\tau}_{t,e}) + \sum_{\tau} \gamma_{\tau} D^{\tau}_{t,e} + \lambda_{t,e} + \mu_{i,e} + \phi_{c,t} + \epsilon_{ite} \tag{2}$$

where $D^{\tau}_{t,e}$ is an indicator equal to 1 if survey wave t is τ waves away from the nursing home shock and 0 otherwise. In other words, τ indicates the time relative to the wave of the nursing home shock (positive if after the shock, negative if before the shock). Other notations are the same as before. Similarly, the coefficients of interest are the β_{τ}, which represent the difference in treated and control units, τ waves before and after the nursing home shock. While our main analysis includes both not-yet-treated and never-treated individuals in the control group, we also examine these groups separately to better understand the nature of

[10] We do not interact cohort-by-wave fixed effects with experiment fixed effect because of collinearity.

[11] The results are not sensitive to an alternative way of controlling for trends, using age fixed effects.

our comparisons.

Heterogeneity by length of stay. We additionally examine how the effects of nursing home admissions differ by the length of stay. For this analysis, we replace the treatment dummy with the indicators for three length-of-stay groups in equation 1:

$$y_{ite} = \alpha + \sum_{s} \theta^{s} \left(Length^{s}_{i,e} \times Post_{t,e} \right) + \omega Post_{t,e} + \lambda_{t,e} + \mu_{i,e} + \phi_{c,t} + \epsilon_{ite} \tag{3}$$

where s represents three types of length of stay in a nursing home: 1-20 days (type 1), 21-100 days (type 2), or more than 100 days (type 3).[12] The coefficients of interest are the θ^{s}'s which represent the difference in treated and control units, before and after the nursing home shock for each length of stay s.

Similar to equation 2, we estimate an event study version of the above regression:

$$y_{ite} = \alpha + \sum_{s} \sum_{\tau} \theta^{s}_{\tau,e} \left(Length^{s}_{i,e} \times D^{\tau}_{t,e} \right) + \sum_{s} \phi_{s} D^{\tau}_{t,e} + \lambda_{t,e} + \mu_{i,e} + \phi_{c,t} + \epsilon_{ite} \tag{4}$$

The coefficients of interest are the $\theta^{s}_{\tau,e}$'s which capture the event-study effects of a nursing home shock for each length-of-stay category s. All other notations follow equation 2 and 3.

5 Results

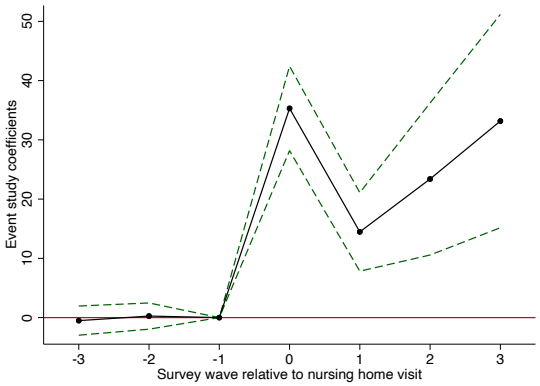
5.1 The first-stage impact of nursing home admissions

We begin by examining the "first-stage" impact of nursing home admissions on the length of nursing home stays. Figure 1(a) presents the event study estimates for this outcome, while Table 2 provides the corresponding DD estimate in column (1) of panel A. Our estimates indicate that a nursing home shock leads to an average increase of 27 additional days in a nursing home over the six years following the initial shock. The event study estimates show an immediate rise of approximately 35 days in the year patients report a visit. Although there is a decline in the following wave, the increase remains persistent at around 15–35 days per wave over the next three waves.

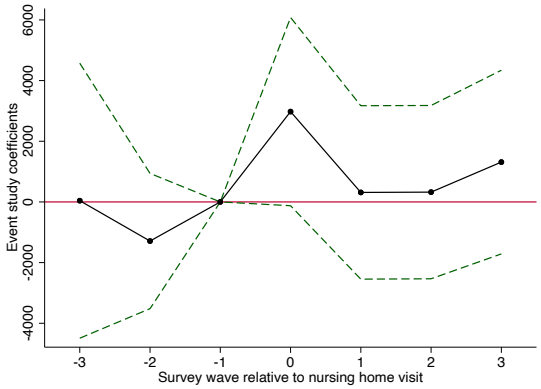
[12] Note that we are unable to stratify the analysis by length of stay since length of stay is only available for the treatment group and not for the control group.

Figure 1: Event study estimates for first stage outcomes

(a) Length of nursing home stays



(b) Out-of-pocket medical expenditures



Notes: Each dot in each figure represents the event study coefficients estimated from equations 2. The dashed line shows the 95 percent confidence intervals. Survey waves are biannual.

This pattern is also reflected in the increase in out-of-pocket medical expenditures. We observe a significant increase of approximately $3,000 in the wave of the nursing home visit, followed by a decline in the next wave. All dollar values are adjusted for inflation using the Consumer Price Index and are expressed in 2021 dollars. The DD estimate (column (2) of Table 2) shows that a nursing home admissions increased out-of-pocket spending by $1,645 on average over the post-treatment period.

This represents a substantial increase compared to the rise in out-of-pocket medical spending following hospitalizations documented in Dobkin et al. (2018). Their study finds that out-of-pocket expenses increase by $840 among elderly individuals over age 65 in the three years following hospitalizations.

Panel B of Table 2 shows that the financial impact is much larger for those with longer stays. For those who stayed in a nursing home for fewer than 20 days, we find no change in the out-of-pocket spending. This is likely because Medicare generally provides full coverage for the first 20 days in a nursing home. For longer stays, however, we see a much larger increase in out-of-pocket spending, by $2,650 for 21-100 days and $11,961 for more than 100 days in a nursing home.[13]

[13]This is substantial given that it is equivalent to approximately 8 percent and 35 percent, respectively, of the average total value of household savings. The mean value of household total checking, savings and other money market accounts for our analysis sample is $33,829.

Table 2: The effects of a nursing home admission on first stage outcomes

	(1) Length of stay	(2) Out-of-pocket expenditure
Panel A. Overall impact		
Treated × Post	26.529***	1645.485**
	(4.437)	(781.790)
Observations	205022	205043
Adjusted R^2	0.146	0.103
Pre period mean	0.000	4244.919
Panel B. By length of stay		
Treated (1-20 days) × Post	13.121***	226.158
	(2.907)	(930.613)
Treated (21-100 days) × Post	33.479***	2649.819**
	(9.768)	(1166.216)
Treated (>100 days) × Post	123.168***	11961.295**
	(31.758)	(5857.142)
Observations	204893	204898
Adjusted R^2	0.178	0.104
Pre period mean	0.000	4244.919

Notes: Panel A reports the DD estimates of equation 1 for each outcome. Panel B reports the DD estimates by each length of stay category as in equation 3. Pre-period mean is computed using the survey waves prior to the nursing home shock. Standard errors are clustered at the individual level (in parentheses). Observations are at the individual-wave level. Significance levels: *<0.10, **<0.05, ***<0.01

5.2 Impact on household finance

In this section, we analyze the impact of increased medical spending due to an unexpected nursing home visit on household finances, including household debt, assets, and income. Appendix Figure A.1 and Appendix Table B.2 provide a summary of these findings.

Unlike the substantial increase in out-of-pocket medical spending, we find no significant changes in household financial measures in the years following a nursing home visit. The point estimates indicate increases in household debt, decreases in the net value of assets such as real estate and vehicles (Venti and Wise, 2004), and decreases in household income. However, none of these estimates are statistically significant. One exception is that we do find a decrease in household checking and savings account balances by $5,091 (or 21.4%),

but the estimate is only marginally significant. Even for longer nursing home stays, we do not find significant impacts on these outcomes.

Overall, these estimates provide suggestive evidence that household finances may deteriorate following a nursing home admission. Nonetheless, the imprecise estimates imply that individuals might engage in behaviors that help offset the financial impact. In the following sections, we further examine individual outcomes such as labor supply and program participation to better understand the limited impact on household finances.

5.3 Impacts on the patient

In this section, we focus on the impacts of a nursing home visit on patients, such as labor market responses, program participation, and health outcomes. Figure 2 summarizes the event study estimates for these outcomes. The corresponding DD estimates are shown in Table 3.

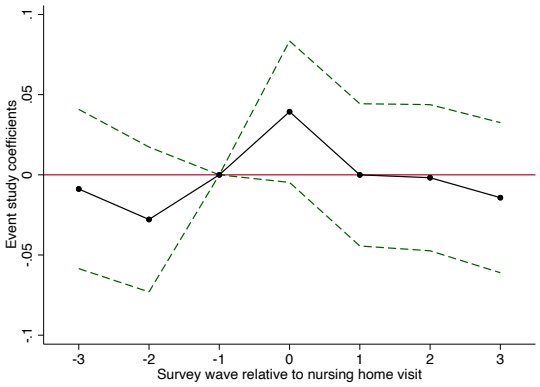
The DD estimates show no statistically significant change in the probability of retirement or employment. However, Figure 2 reveals a dynamic pattern in responses. The probability of retirement marginally increases (by approximately 5 percentage points) in the wave a nursing home admission is reported. In the years that follow, the probability of retirement declines, while the probability of working rises, suggesting a delayed response following discharge.

When we examine how these effects vary by length of stay, we find that there is a marginally significant increase in the retirement probability for individuals with short stays (fewer than 20 days). The corresponding event study figure is shown in Appendix Figure A.2(a). For those who stayed in a nursing home for 21–100 days, we observe a significant increase in the probability of working (Appendix Figure A.2(b)), with no similar effects found among those with shorter or longer stays. Since individuals with short-term stays do not experience an increase in out-of-pocket medical spending, and those with longer stays may either remain in nursing homes or be too impaired to work, this heterogeneous pattern suggests that large medical expenditures may encourage a subset of individuals who are healthy enough to be discharged after a moderate-length stay to delay increase labor supply to cover medical costs (Butrica and Karamcheva, 2018).

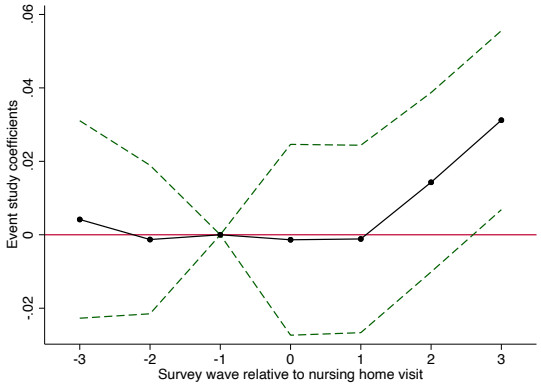
We examine other work-related outcomes to understand this increase in labor supply for those with a moderate-length stay. Appendix Table B.3 shows that earnings increase by \$1,873 (or by 44%) for those with 21-100 days of nursing home stays, consistent with the increased probability of work for this subgroup. We do not find any changes in hours of work or wages, suggesting that the increase in labor supply is likely driven by an extensive

Figure 2: Event study estimates for the impacts on patients

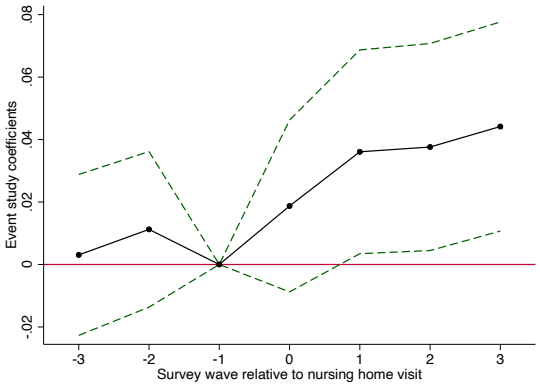
(a) Retired



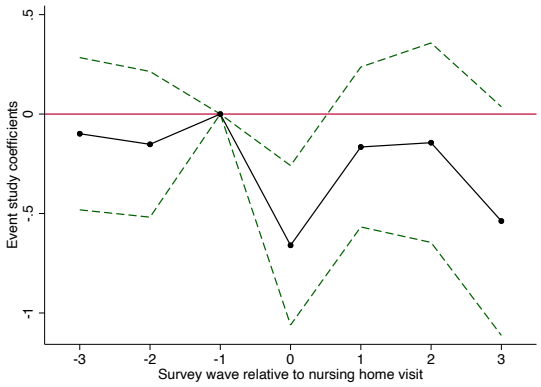
(b) Working for pay



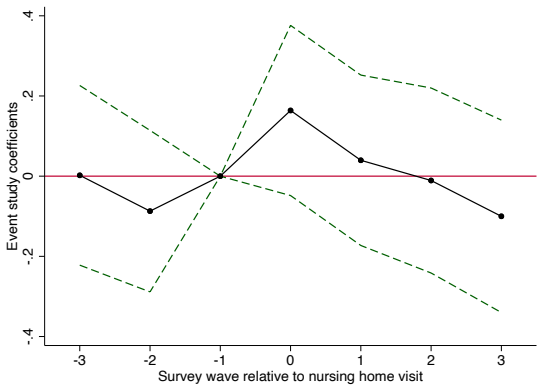
(c) Covered by Medicaid



(d) BMI



(e) CESD score



Notes: Each dot in each figure represents the event study coefficients estimated from equations 2. The dashed line shows the 95 percent confidence intervals. Survey waves are biannual.

margin response.[14]

[14]Interestingly, Dobkin et al. (2018) also found a similar work response for the elderly following a hospitalization shock, although their estimate is insignificant.

Table 3: The effects of a nursing home admission on patients

	(1) Retired	(2) Working for pay	(3) Medicaid	(4) BMI	(5) CESD
Panel A. Overall impact					
Treated × Post	0.018	0.010	0.029***	-0.297*	0.054
	(0.019)	(0.011)	(0.011)	(0.165)	(0.083)
Observations	205050	205050	203887	203153	197754
Adjusted R^2	0.590	0.602	0.603	0.890	0.549
Pre period mean	0.700	0.073	0.107	28.329	1.710
Panel B. By length of stay					
Treated (1-20 days) × Post	0.052*	-0.010	0.023*	-0.170	0.043
	(0.027)	(0.017)	(0.014)	(0.209)	(0.110)
Treated (21-100 days) × Post	-0.029	0.033**	0.021*	-0.484	0.065
	(0.027)	(0.015)	(0.012)	(0.301)	(0.141)
Treated (>100 days) × Post	-0.022	0.031	0.089	-0.020	-0.045
	(0.059)	(0.022)	(0.078)	(0.441)	(0.352)
Observations	204905	204905	203743	203010	197623
Adjusted R^2	0.590	0.602	0.603	0.891	0.549
Pre period mean	0.700	0.073	0.107	28.329	1.710

Notes: Panel A reports the DD estimates of equation 1 for each outcome. Panel B reports the DD estimates by each length of stay category as in equation 3. Pre-period mean is computed using the survey waves prior to the nursing home shock. Standard errors are clustered at the individual level (in parentheses). Observations are at the individual-wave level. Significance levels: *<0.10, **<0.05, ***<0.01

In addition to labor market responses, we examine whether an unexpected nursing home admission leads to an increase in participation in government programs. Specifically, we consider enrollment in Medicaid,[15] and find a significant increase in Medicaid participation by 2.9 percentage points (or by 27%), as shown in column (3) of Table 3. This suggests that some patients may end up relying on Medicaid to cover the cost of nursing home care. Overall, these results suggest that individuals may return to work or rely on Medicaid to cover the cost of nursing home stays. In Section 5.5, we further examine the relationship between the increase in employment and Medicaid participation.

Finally, we consider two measures of health: Body Mass Index (BMI) and the Center for Epidemiologic Studies Depression (CESD) score. We find a small but marginally significant decrease in BMI. Figure 2(d) shows a larger impact in the treatment wave, suggesting that a nursing home admission may be associated with short-term weight loss. We use the CESD score to evaluate mental health status, which is the sum of indicators reflecting negative

[15]We also examined whether the patient received Social Security Disability Insurance (SSDI) but found no effect.

sentiments (e.g., everything is an effort, sleep is restless, felt alone, felt sad, and could not get going). A higher score indicates greater negative emotions experienced by the patient in the past week. We find an insignificant increase in CESD scores following nursing home visits in the overall sample. However, Figure 2(e) provides suggestive evidence that mental health is worse in the treatment wave, suggesting that nursing home shock may have a transient but immediate impact on mental health. These findings are consistent with prior literature, which shows that nursing home visits are associated with weight loss and depression (Morley and Kraenzle, 1994).

In Appendix Table B.4, we further examine self-reported health as outcomes. Respondents choose one of five options for self-reported health ranging from '1' (excellent), '2' (very good), '3' (good), '4' (fair), to '5' (poor). Column (1) of Appendix Table B.4 shows that the self-reported health score increases following a nursing home admission, indicating a decline in perceived health. When examining each category separately, we find mixed patterns: the likelihood of reporting both excellent and poor health increases, while the likelihood of reporting good health decreases. Among individuals who stayed in nursing homes for 21–100 days, we find evidence that they report worsening health following their stay. This suggests that the increased labor supply observed in this group is not due to improved health as a result of receiving care in nursing homes.

5.4 Impacts on the spouse and the family

In this section, we examine how the spouse of a patient who experiences a nursing home visit responds to the event. Specifically, we first focus on spousal labor market responses to assess the availability and extent of informal insurance within households against a nursing home shock. Columns (1)-(2) of Table 4 summarize the DD estimates. The estimates show no change in either the probability of retirement or the probability of working following a spouse's nursing home stay, both overall and when examined by length of stay. The corresponding event study estimates (Appendix Figure A.3(a)-(b)) also show no changes in spousal labor supply following the patient's unexpected nursing home admission.

While there may be no direct impact on spousal labor supply, spouses may respond to the nursing home shock by providing informal caregiving. We examine whether the patient reports receiving any help from family or unpaid helpers.[16] Columns (3)-(4) of Table 4 show significant increases in informal caregiving following an unexpected nursing home visit.

[16]The HRS asks the respondent the total number of family/non-family, unpaid/paid helper who ever helped with ADLs (Activities of Daily Living) or with managing finance. For example, HRS asks "Does anyone ever help you eat?" or "Does anyone ever help you manage your money - such as paying bills or keeping track of expenses?".

Table 4: The effects of a nursing home admission on the spouse and the family

	(1) Spouse - Retired	(2) Spouse - Working	(3) Any family help	(4) Any unpaid help
Panel A. Overall impact				
Treated × Post	-0.007	-0.005	0.143***	0.140***
	(0.033)	(0.022)	(0.021)	(0.021)
Observations	133115	133115	205033	205033
Adjusted R^2	0.619	0.653	0.429	0.412
Pre period mean	0.681	0.106	0.146	0.148
Panel B. By length of stay				
Treated (1-20 days) × Post	0.027	0.008	0.104***	0.093***
	(0.046)	(0.027)	(0.027)	(0.027)
Treated (21-100 days) × Post	-0.072	-0.009	0.184***	0.199***
	(0.045)	(0.032)	(0.037)	(0.035)
Treated (>100 days) × Post	-0.068	-0.115	0.112	0.098
	(0.112)	(0.219)	(0.079)	(0.084)
Observations	133041	133041	204888	204888
Adjusted R^2	0.619	0.653	0.429	0.412
Pre period mean	0.681	0.106	0.146	0.148

Notes: Panel A reports the DD estimates of equation 1 for each outcome. Panel B reports the DD estimates by each length of stay category as in equation 3. Pre-period mean is computed using the survey waves prior to the nursing home shock. Standard errors are clustered at the individual level (in parentheses). Observations are at the individual-wave level. Significance levels: *<0.10, **<0.05, ***<0.01

These effects are concentrated among individuals who stayed in a nursing home for fewer than 100 days (i.e., those who were ultimately discharged) and therefore are likely in need of care outside the facility. We further examine how these effects differ by marital status in Section 5.5.

5.5 Heterogeneity analyses

By marital status. To examine the potential role of informal care availability, we examine how the results differ by the patient's marital status. For this analysis, we run equations (1) and (2) separately for subgroups of married and unmarried individuals.

Table 5 presents the DD estimates separately for unmarried and married patients. We find that the length of stay is longer for unmarried patients, suggesting that the availability of informal care from a spouse may reduce the duration of nursing home use. We also find that the increase in the probability of Medicaid participation is larger for unmarried

Table 5: Heterogeneous effects by marital status

	(1) Length of stay	(2) Out-of-pocket expenditure	(3) Retired	(4) Working	(5) Medicaid	(6) Any family help	(7) Any unpaid help
Panel A. Not Married							
Treated × Post	27.063***	1278.297	-0.015	0.016	0.042**	0.141***	0.140***
	(5.368)	(1170.371)	(0.026)	(0.016)	(0.018)	(0.030)	(0.029)
Observations	74187	74206	74206	74206	73585	74206	74206
Adjusted R^2	0.359	0.156	0.578	0.588	0.637	0.498	0.470
Pre period mean	0.000	4343.129	0.729	0.071	0.154	0.165	0.171
Panel B. Married							
Treated × Post	12.774***	622.517	0.051	0.006	0.022*	0.144***	0.142***
	(2.687)	(691.056)	(0.031)	(0.019)	(0.012)	(0.032)	(0.033)
Observations	130835	130837	130844	130844	130302	130827	130827
Adjusted R^2	0.066	0.086	0.606	0.615	0.519	0.403	0.391
Pre period mean	0.000	4133.034	0.666	0.075	0.055	0.125	0.121

Notes: Panel A and B reports the DD estimates of equation 1 for each outcome for those who are not married and those who are married, respectively. Married includes individuals who reported being married. Not Married individuals include all else – that is those who report being divorced, separated, partnered, widowed or never married. Pre-period mean is computed using the survey waves prior to the nursing home shock. Standard errors are clustered at the individual level (in parentheses). Observations are at the individual-wave level. Significance levels: *<0.10, **<0.05, ***<0.01

individuals.[17] These findings suggest that unmarried individuals are more likely to rely on Medicaid, likely because they are more dependent on formal long-term care services in the absence of spousal support.

However, we find that the increases in the probability of receiving care from family and unpaid helpers are similar for both married patients and unmarried patients, suggesting that unmarried patients may receive help from other family members such as adult children. Overall, these findings highlight that family members play an important role in providing informal caregiving against an adverse health event.

By baseline wealth. To assess whether our results are in fact driven by financial motivations, we examine heterogeneity by baseline wealth. Specifically, we divide the sample into quartiles based on wealth measured at baseline and estimate the main DD model separately for each group. Appendix Table B.5 reports the results for our key outcomes: the probability

[17]The unmarried category includes individuals who are never married, divorced, separated, partnered or widowed. In our main analysis sample, conditional on unmarried individuals, approximately 7 percent are never married, 23 percent are divorced, 3 percent are separated, 6 percent are partnered, 60 percent are widowed (the remaining 1 percent reported either being married but spouse is absent or separated/divorced).

of retirement, labor force participation, and Medicaid enrollment.

We find that the increase in retirement following a nursing home admission is concentrated among individuals in the top wealth quartile. In contrast, the increase in the probability of working is larger for those in the second and third quartiles. We do not observe a significant increase in labor force participation for individuals in the bottom quartile—who may have had limited labor market attachment to begin with—or for those in the top quartile—who may have been less financially affected by the medical shock. We also find that the point estimates for increased Medicaid participation are larger among lower-wealth groups, although these estimates are not statistically significant. Overall, these patterns are consistent with the interpretation that increased labor force participation is driven by individuals who are both financially affected by the shock and sufficiently attached to the labor force to return to work.

Medicaid and work. Next, we examine whether the increase in employment and the increase in Medicaid participation we observed in Section 5.3 occur concurrently or separately. Specifically, we construct new outcome measures based on the interaction between Medicaid participation and labor force participation and find that the increase in employment is concentrated among those who do not participate in Medicaid (Appendix Figure A.4). These results highlight that individuals either return to work or enroll in Medicaid to cope with the financial impact of a nursing home admission.

By occupation and industry. Are the work effects driven by a particular occupation or industry sector? We examine whether the patient works in a specific occupation or industry using the full sample. Note, however, that due to small sample sizes and rare occurrences, we lack sufficient statistical power to precisely estimate all coefficients.

Appendix Figure A.5 summarizes the DD estimates for each occupation and industry category. While the estimates are generally noisy, we find the largest effect for managerial specialty occupations. We also observe some evidence of increased work in the construction and professional and related services industries. However, these results should be interpreted with caution, as some occupation and industry categories lack sufficient variation for precise estimation.

5.6 Robustness Checks

In this section, we examine the robustness of our main findings: the increase in the probability of employment and the increase in Medicaid participation rates.

Alternative control groups. We test whether our results are sensitive to the composition of our control group. For example, one may suspect that those who never end up going to a nursing home are unobservably healthier than those who do, which may confound the causal effects of a nursing home visit. To address this concern, we consider three alternative control groups: the never-treated only, the not-yet-treated only, and a random subset of the full control group to adjust for the sample size difference between the treated and control groups.

Table 6 summarizes the results for our two main outcomes: working for pay and Medicaid participation. We report the main estimates in column (1) for reference. Columns (2)-(4) show the results for each of the alternative control groups. Across all specifications for both outcomes, we find that the estimated effects remain fairly consistent both in terms of magnitude and statistical significance. These results suggest that our findings are generally robust to the choice of control group.

Matching Additionally, we use propensity score matching to select a subset of individuals in our control group that are observably similar to our treatment group. As summarized in Table 1, we find a number of differences between our treatment and control groups: the treated group is on average older, more likely to be female, less likely to be married, and less attached to the labor force. To account for these differences, we take advantage of the large pool of individuals in the control group and use propensity score matching. Specifically, for each experiment, we match each treated individual to up to four control individuals based on propensity scores estimated using marital status, gender, age, and labor force participation. We use a caliper of 0.1 and retain all matched treated and control observations. We then create a stacked dataset using this matched sample and estimate the same models that are used in our main analysis.

Column (5) of Table 6 reports these estimates. We find an even larger increase in the probability of working, and we consistently find an increase in Medicaid participation of a similar magnitude. These results suggest that our main results are not driven by differences in observable characteristics between treatment and control groups.

Alternative definition of treatment. While we define the treatment wave based on when a respondent reports a nursing home admission, such admission is frequently preceded by a hospital visit. As a result, our estimates might reflect the combined effect of a bundle of care, rather than the isolated impact of a nursing home stay. Indeed, we find that a substantial portion of treated individuals report a hospital visit during the same reference period. Out of 4,276 treated observations in the stacked dataset, 3,977 reported a hospital

Table 6: Robustness to different definitions of treatment and control

	(1) Main	(2) Never treated only as control group	(3) Not-yet-treated only as control group	(4) Random subset of control group	(5) Matched control	(6) Nursing home only
Panel A: Working for pay, overall impact						
Treated × Post	0.010	0.007	0.021	0.013	0.043***	-0.043
	(0.011)	(0.012)	(0.015)	(0.018)	(0.016)	(0.060)
Observations	205050	181057	27794	44176	11305	196710
Adjusted R^2	0.602	0.606	0.553	0.639	0.547	0.601
Pre period mean	0.073	0.139	0.120	0.131	0.073	0.081
Panel B: Working for pay, by length of stay						
Treated (1-20 days) × Post	-0.010	-0.014	0.003	-0.007	0.026	-0.143
	(0.017)	(0.018)	(0.019)	(0.025)	(0.020)	(0.137)
Treated (21-100 days) × Post	0.033**	0.031**	0.043**	0.035	0.063***	0.058***
	(0.015)	(0.015)	(0.018)	(0.023)	(0.019)	(0.019)
Treated (>100 days) × Post	0.031	0.028	0.046*	0.035	0.072***	-0.073
	(0.022)	(0.022)	(0.026)	(0.033)	(0.027)	(0.120)
Observations	204905	180912	27649	44031	11160	196661
Adjusted R^2	0.602	0.606	0.553	0.638	0.547	0.601
Pre period mean	0.073	0.139	0.120	0.131	0.073	0.081
Panel C: Medicaid participation, overall impact						
Treated × Post	0.029***	0.028**	0.034***	0.031*	0.029**	0.057
	(0.011)	(0.011)	(0.013)	(0.016)	(0.014)	(0.076)
Observations	203887	180050	27593	43891	11204	195625
Adjusted R^2	0.603	0.605	0.593	0.589	0.580	0.594
Pre period mean	0.107	0.066	0.058	0.070	0.107	0.180
Panel D: Medicaid participation, by length of stay						
Treated (1-20 days) × Post	0.023*	0.022	0.028*	0.026	0.024	0.060
	(0.014)	(0.014)	(0.015)	(0.021)	(0.017)	(0.075)
Treated (21-100 days) × Post	0.021*	0.019	0.025*	0.022	0.020	-0.030***
	(0.012)	(0.012)	(0.013)	(0.018)	(0.015)	(0.009)
Treated (>100 days) × Post	0.089	0.088	0.094	0.094	0.086	-0.011**
	(0.078)	(0.078)	(0.080)	(0.112)	(0.077)	(0.005)
Observations	203743	179906	27449	43747	11060	195576
Adjusted R^2	0.603	0.605	0.591	0.590	0.577	0.594
Pre period mean	0.107	0.066	0.058	0.070	0.107	0.180

Notes: Column (1) replicates the main results of our two main outcomes: working for pay and Medicaid participation using equation 1 in Panels A and C and equation 3 in Panels B and D. All columns reestimate the same specification however use different definitions of the control group. Column (2) uses only those who never had a nursing home shock (never treated only). Column (3) uses only those who had a nursing home shock but experienced it outside our event window as the control group (not-yet-treated only). Column (4) uses a random subset of our main control group. Column (5) reports the results using only the controls matched to the treated units based on propensity score matching. Column (6) defines the treated group as individuals who had a nursing home visit but not a hospital visit during the treatment wave, while the control group is restricted to those who had neither a nursing home shock nor a hospital visit in their assigned treatment wave. Significance levels: *<0.10, **<0.05, ***<0.01.

visit in the same survey wave, while the remaining 299 reported a nursing home visit only. To address the concern that most of our treated individuals experience hospital care as well, we assess the robustness of our results using a stricter definition of treatment that excludes individuals with concurrent hospital stays. Focusing on the 299 treated observations who reported only a nursing home visit, we construct a control group who reported neither a nursing home nor a hospital visit in the treatment wave (197,453 control observations).

Column (6) of Table 6 shows that even for this small subgroup of treated individuals, the probability of working increases following moderate-length stays. The corresponding event study is shown in Appendix Figure A.6(a). We find that the probability of Medicaid participation decreases for this group, but a further examination of event studies shows that this is driven by positive point estimates in the pre-period (Appendix Figure A.6(b)). Overall, these findings suggest that our results are generally robust to various alternative definitions of treatment and control.

6 Conclusion

This paper examines the effects of nursing home admissions on households, patients, and their spouses. We find that such admissions significantly increase out-of-pocket medical spending, particularly for stays lasting longer than 20 days. In response to these large medical expenditures, we observe a large increase in Medicaid participation by 2.9 percentage points (27%). In contrast, we find little impact on household finances, measured by household debt, assets, and household income. We find no changes in household finances even for individuals with stays exceeding 100 days—those facing the largest increases in out-of-pocket spending. This suggests that the current system may provide sufficient insurance for such medical shocks, consistent with prior work on the adequacy of Medicaid in protecting against health shocks at older ages (De Nardi et al., 2016).

While financial consequences may be limited in the overall sample, we find evidence of short-term declines in mental health following a nursing home admission, as well as suggestive evidence of deteriorating self-reported health, particularly for longer stays. We also document increased labor force participation among individuals with moderate-length stays, suggesting that some may re-enter the labor market at older ages in response to substantial financial shocks.

Our findings highlight two primary responses to a nursing home shock: increased labor supply and higher Medicaid enrollment. This suggests that Medicaid may function not only as a source of financial support but also as a mechanism to offset the disutility of work at older ages. An important direction for future research is to more directly examine Medicaid's

role in shaping labor force participation among older adults. For example, would greater Medicaid generosity reduce the need for labor supply responses and, in turn, the disutility of work?

Our findings also underscore the value of informal insurance provided by family members following an adverse health shock. While we do not observe changes in spousal labor supply, we do find significant increases in informal caregiving. Since the availability of informal care may reduce both the demand for and the cost of formal long-term care, understanding the interaction between subsidies for formal and informal care is another important avenue for future research.

References

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

Baker, Andrew C, David F Larcker, and Charles CY Wang, "How much should we trust staggered difference-in-differences estimates?," *Journal of Financial Economics*, 2022, *144* (2), 370–395.

Bonekamp, Johan and Bram Wouterse, "Do different shocks in health matter for wealth?," *Journal of Health Economics*, 2023, *87*, 102719.

Borella, Margherita, Mariacristina De Nardi, Fang Yang, and Johanna P Torres Chain, "Why Do Households Save and Work?," Technical Report, National Bureau of Economic Research 2025.

Butrica, Barbara A and Nadia S Karamcheva, "In debt and approaching retirement: Claim social security or work longer?," in "AEA Papers and Proceedings," Vol. 108 American Economic Association 2014 Broadway, Suite 305, Nashville, TN 37203 2018, pp. 401–406.

Capatina, Elena, Gary Hansen, and Minchung Hsu, "Long term care risk for couples and singles," Technical Report, National Bureau of Economic Research 2024.

Coile, Courtney, "Health shocks and couples' labor supply decisions," 2004.

Congressional Research Service, "Who Pays for Long-Term Services and Supports?," 2023.

Deshpande, Manasi and Yue Li, "Who is screened out? Application costs and the targeting of disability programs," *American Economic Journal: Economic Policy*, 2019, *11* (4), 213–248.

Dobkin, Carlos, Amy Finkelstein, Raymond Kluender, and Matthew J Notowidigdo, "The economic consequences of hospital admissions," *American Economic Review*, 2018, *108* (2), 308–352.

Fadlon, Itzik and Torben Heien Nielsen, "Family labor supply responses to severe health shocks: Evidence from Danish administrative records," *American Economic Journal: Applied Economics*, 2021, *13* (3), 1–30.

Genworth, "Cost of Care Survey," 2023.

Gilligan, Adrienne M, David S Alberts, Denise J Roe, and Grant H Skrepnek, "Death or debt? National estimates of financial toxicity in persons with newly-diagnosed cancer," *The American journal of medicine*, 2018, *131* (10), 1187–1199.

Gupta, Arpit, Edward R Morrison, Catherine Fedorenko, and Scott Ramsey, "Cancer diagnoses and household debt overhang," *Columbia Law and Economics Working Paper*, 2015, *514*.

Health and Retirement Study, "Health and Retirement Study, [RAND HRS Longitudinal File] public use dataset," Ann Arbor, MI 2020. Produced and distributed by the University of Michigan with funding from the National Institute on Aging (grant number NIA U01AG009740).

Jin, Ginger Zhe, Ajin Lee, and Susan Feng Lu, "Patient routing to skilled nursing facilities: The consequences of the medicare reimbursement rule," *Management Science*, 2022, *68* (12), 8722–8740.

Jolly, Nicholas A and Nikolaos Theodoropoulos, "Health shocks and spousal labor supply: an international perspective," *Journal of Population Economics*, 2023, *36* (2), 973–1004.

Jones, Andrew M, Nigel Rice, and Francesca Zantomio, "Acute health shocks and labour market outcomes: evidence from the post crash era," *Economics & Human Biology*, 2020, *36*, 100811.

Jones, John Bailey, Mariacristina De Nardi, Eric French, Rory McGee, and Rachel Rodgers, "Medical spending, bequests, and asset dynamics around the time of death," Technical Report, National Bureau of Economic Research 2020.

Lenhart, Otto, "The effects of health shocks on labor market outcomes: evidence from UK panel data," *The European Journal of Health Economics*, 2019, *20* (1), 83–98.

Morley, John E and Dale Kraenzle, "Causes of weight loss in a community nursing home," *Journal of the American Geriatrics Society*, 1994, *42* (6), 583–585.

Morrison, Edward R, Arpit Gupta, Lenora Olson, Lawrence Cook, and Heather Keenan, "Health and financial fragility: Evidence from car crashes and consumer bankruptcy," *University of Chicago Coase-Sandor Institute for Law & Economics Research Paper*, 2013, (655), 13–81.

Nardi, Mariacristina De, Eric French, and John Bailey Jones, "Medicaid insurance in old age," *American Economic Review*, 2016, *106* (11), 3480–3520.

Poterba, James M, Steven F Venti, and David A Wise, "The asset cost of poor health," *The Journal of the Economics of Ageing*, 2017, *9*, 172–184.

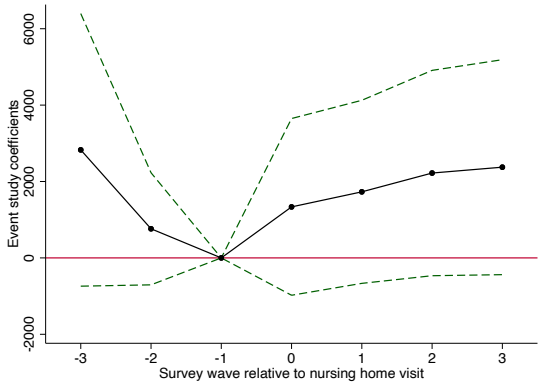
Venti, Steven F and David A Wise, "Aging and housing equity: Another look," in "Perspectives on the Economics of Aging," University of Chicago Press, 2004, pp. 127–180.

Wing, Coady, Seth M Freedman, and Alex Hollingsworth, "Stacked difference-in-differences," Technical Report, National Bureau of Economic Research 2024.

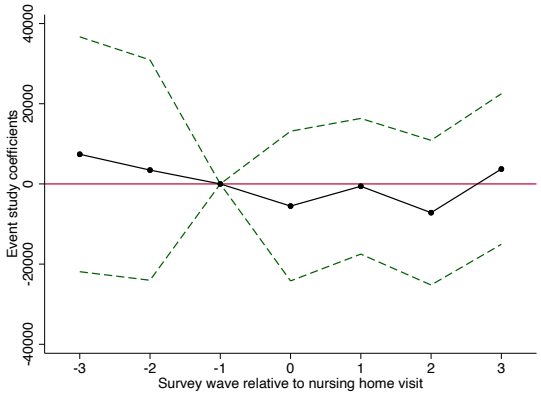
Appendix A. Appendix Figures

Figure A.1: Event study estimates for household finance measures

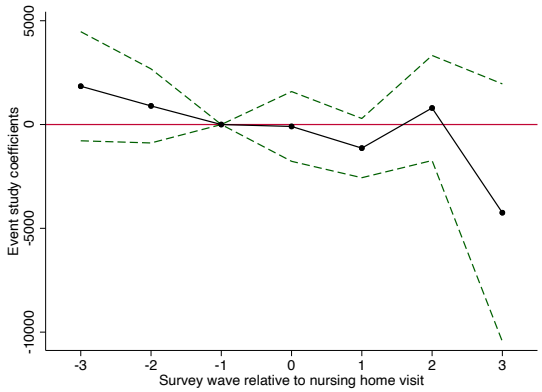
(a) Household Debt



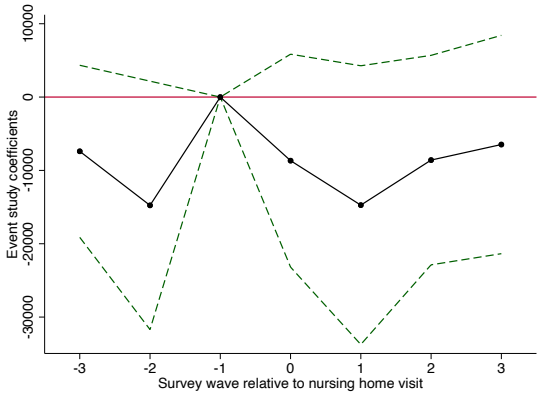
(b) Net Value of Real Estate



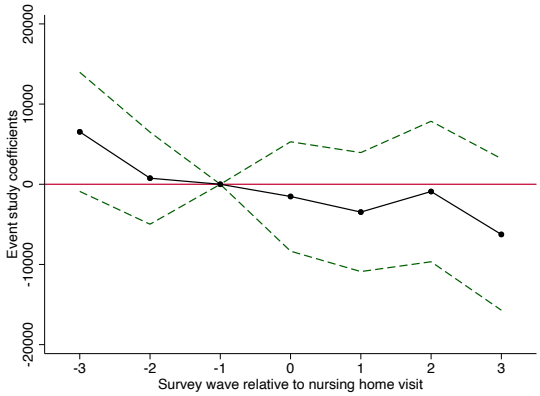
(c) Net Value of Vehicles



(d) Household Income



(e) Household Checking/Savings Accounts

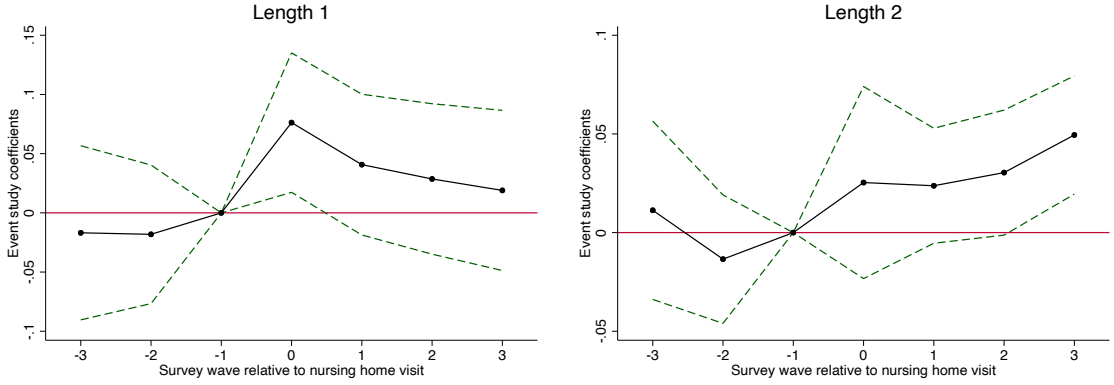


Notes: Each dot in each figure represents the event study coefficients estimated from equations 2. All variables are adjusted to 2021 US dollars. The dashed line shows the 95 percent confidence intervals. Survey waves are biannual.

Figure A.2: Event study estimates for labor supply responses for LOS subgroups

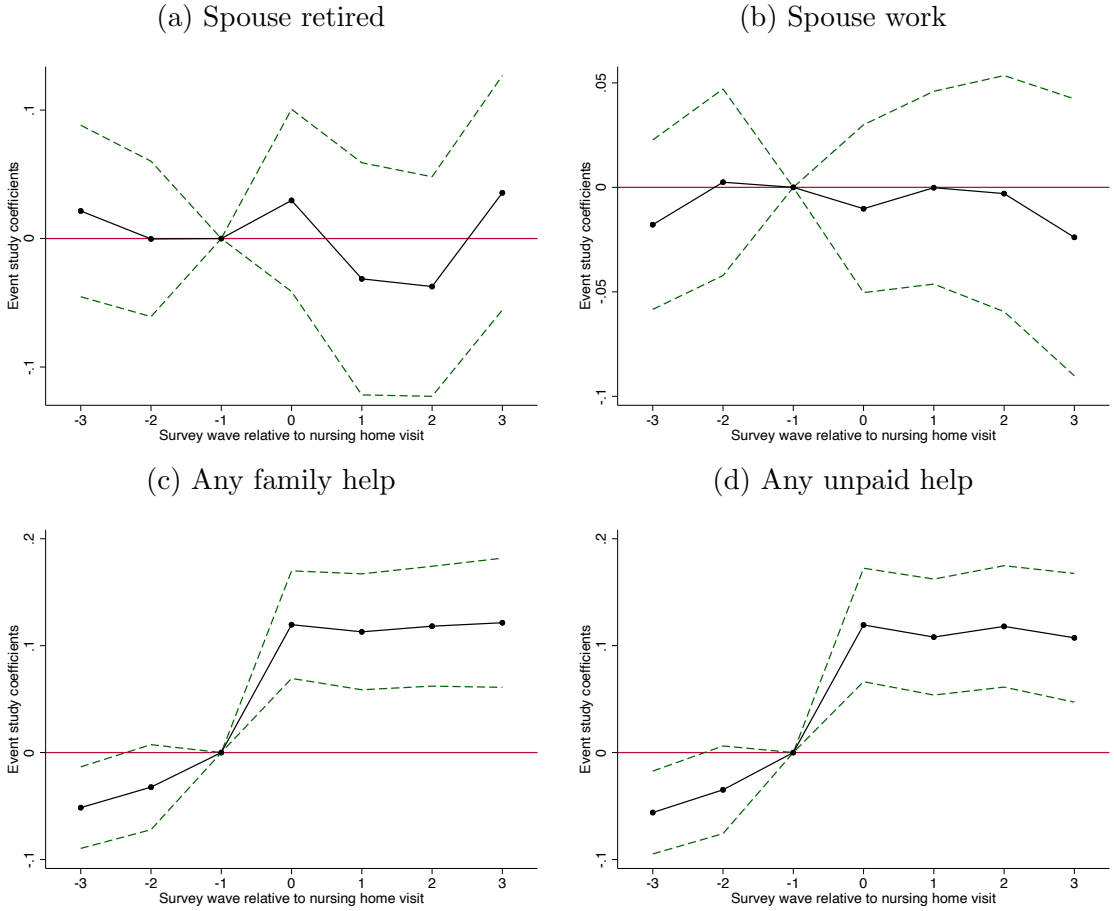
(a) Retired, 1-20 days

(b) Working for pay, 21-100 days



Notes: Each dot in each figure represents the event study coefficients estimated from equations 4. The dashed line shows the 95 percent confidence intervals. Survey waves are biannual.

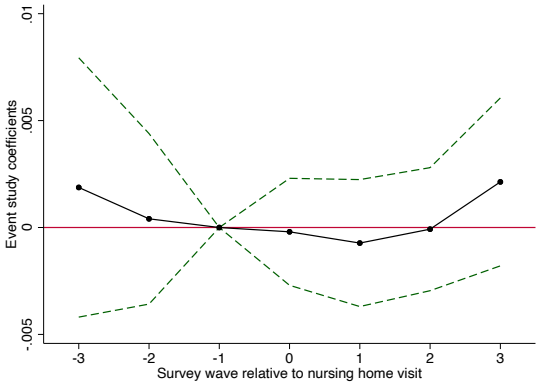
Figure A.3: Event study estimates for labor supply responses of the spouses



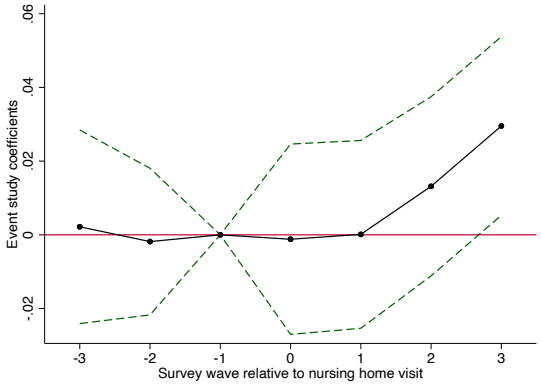
Notes: Each dot in each figure represents the event study coefficients estimated from equations 2. The dashed line shows the 95 percent confidence intervals. Survey waves are biannual.

Figure A.4: Event study estimates for interaction between Medicaid and Work

(a) Medicaid & Work



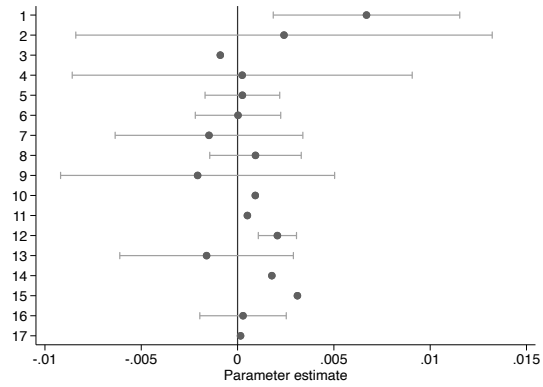
(b) No Medicaid & Work



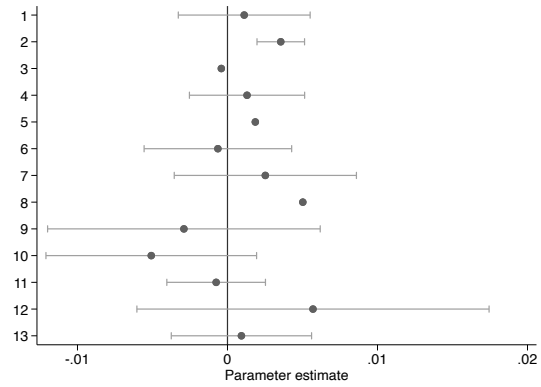
Notes: Medicaid & Work equals 1 if the respondent was working for pay and was covered by Medicaid. No Medicaid & Work equals 1 if the respondent was working for pay and not covered by Medicaid. Each dot in each figure represents the event study coefficients estimated from equations 2. The dashed line shows the 95 percent confidence intervals. Survey waves are biannual.

Figure A.5: DD estimates by occupation and industry

(a) By occupation

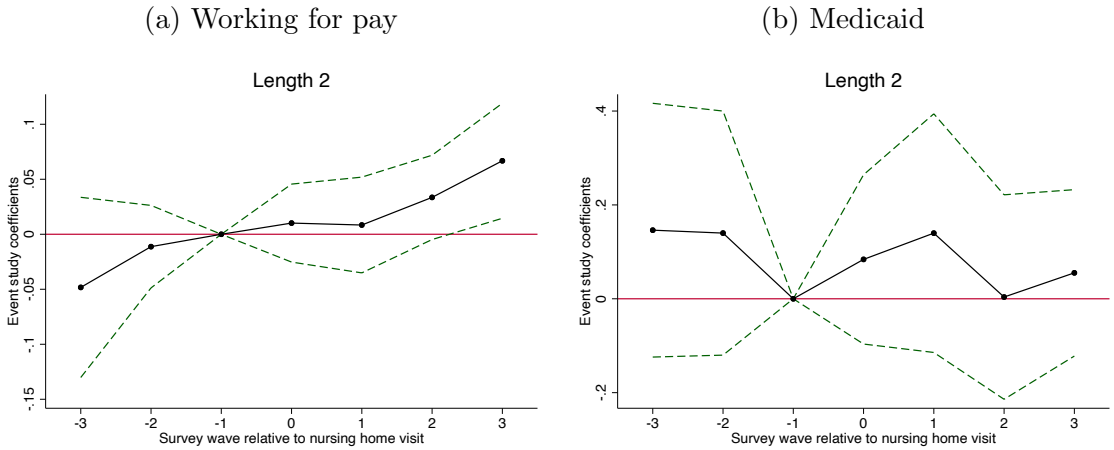


(b) By industry



Note: This table plots the DD estimates for whether the patient is working in the given occupation or industry using equation (1). Each dot is a coefficient with a 95% confidence interval. **Occupation categories** include (1) Managerial specialty, (2) Professional specialty or technical, (3) Sales, (4) Clerical/admin support, (5) Private household/cleaning/building services, (6) Protective services, (7) Food preparation services, (8) Health services, (9) Personal services, (10) Farming/forestry/fishing, (11) Mechanics/repair, (12) Construction trades/extractors, (13) Precision production, (14) Machine operators, (15) Transport operators, (16) Handlers and laborers, (17) Armed Forces. **Industry categories** include (1) Agriculture/forestry/fishing, (2) Mining and construction, (3) Manufacturing (non-durable), (4) Manufacturing (durable), (5) Transportation, (6) Wholesale, (7) Retail, (8) Finance/insurance/real estate, (9) Business and repair services, (10) Personal services, (11) Entertainment and recreation, (12) Professional and related services, (13) Public administration.

Figure A.6: Event study estimates using nursing home only specification for moderate-length stays



Notes: This figure shows the moderate-length stay (21-100 days) event study coefficients from equation 4 using only those who had a nursing home shock and no hospital visit as the treated units, and only those who had neither a nursing home shock nor a hospital visit as the control group. The dashed line shows the 95 percent confidence intervals. Survey waves are biannual.

Appendix B. Appendix Tables

Table B.1: Stacked DiD illustration

Exp #	Treated cohort	Window	Pre-period						Post-period							Control cohorts
			1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018	
1	2000	1994-2006				Exp 1										Never, 2008-2018
2	2002	1996-2008					Exp 2									Never, 2010-2018
3	2004	1998-2010						Exp 3								Never, 2012-2018
4	2006	2000-2012							Exp 4							Never, 2014-2018
5	2008	2002-2014								Exp 5						Never, 2016-2018
6	2010	2004-2016									Exp 6					Never, 2018
7	2012	2006-2018										Exp 7				Never

Notes: This tables illustrates how we construct our analysis sample using a stacked DiD approach. Each row represents a treatment cohort using a balanced panel of three survey waves (equivalent to six years) before and after an unexpected nursing home visit (the treatment). We call each treatment cohort a separate "experiment". "Pre-period" (green) includes three waves before the treatment cohort's treatment year. "Post-period" (blue) includes three waves after. The yellow cell indicates the wave in which the cohort receives treatment. We require individuals to show up through all seven survey waves (three waves before, three waves after and the treatment wave). For each treatment cohort we include those who never had a nursing home visit during the event window (three waves before and after the treatment wave) and those who had a nursing home visit at least three waves after the treatment. We restrict to treated and control units only within the event window.

Table B.2: The effect of a nursing home admission on household finance

	(1) Household debt	(2) Net Value of Real Estate	(3) Net Value of Vehicles	(4) Household Income	(5) Household Checking/Savings Accounts
Panel A: Overall impact					
Treated × Post	865.145	-5650.098	-1954.410	-2713.202	-5091.170*
	(922.234)	(8113.101)	(1227.700)	(4514.463)	(2979.624)
Observations	205050	205050	205050	205050	205050
Adjusted R^2	0.402	0.552	0.056	0.101	0.461
Pre period mean	1825.096	38593.649	12474.191	49302.448	23695.600
Panel B: By length of stay					
Treated (1-20 days) × Post	1643.934	-9449.368	-3184.902**	-8297.566	-6683.354
	(1392.882)	(12141.140)	(1470.417)	(7533.014)	(4249.040)
Treated (21-100 days) × Post	-418.926	-2297.212	-473.667	3305.768	-2151.184
	(1182.240)	(9524.310)	(1547.914)	(3315.941)	(3707.329)
Treated (>100 days) × Post	898.247	4362.517	1311.298	5102.180	-3337.302
	(696.535)	(18492.654)	(2302.170)	(5324.890)	(13572.338)
Observations	204905	204905	204905	204905	204905
Adjusted R^2	0.402	0.552	0.056	0.101	0.461
Pre period mean	1825.096	38593.649	12474.191	49302.448	23695.600

Notes: Panel A reports the DD estimates of equation 1 for each outcome. Panel B reports the DD estimates by each length of stay category as in equation 3. All variables are adjusted to 2021 US dollars. Pre-period mean is computed using the survey waves prior to the nursing home shock. Standard errors are clustered at the individual level (in parentheses). Observations are at the individual-wave level. Significance levels: *<0.10, **<0.05, ***<0.01

Table B.3: The effects of a nursing home admission on other labor market outcomes

	(1) Earnings	(2) Hours of work	(3) Wages
Panel A. Overall impact			
Treated × Post	201.643	-0.681	-23.536
	(990.394)	(2.420)	(20.515)
Observations	205050	48357	41803
Adjusted R^2	0.552	0.674	0.008
Pre period mean	4240.734	24.387	31.928
Panel B. By length of stay			
Treated (1-20 days) × Post	-1219.780	-1.565	-10.255
	(1663.079)	(2.450)	(27.550)
Treated (21-100 days) × Post	1873.015***	1.302	-67.699
	(604.985)	(6.579)	(56.188)
Treated (>100 days) × Post	1536.460**	1.890	-12.988
	(712.866)	(1.163)	(39.467)
Observations	204905	48354	41800
Adjusted R^2	0.552	0.674	0.008
Pre period mean	4240.734	24.387	31.928

Notes: Earnings is the income of the respondent's wage/salary. Hours of work is the usual number of hours per week worked at the main job. Wages is the hourly wage rate. Panel A reports the DD estimates of equation 1 for each outcome. Panel B reports the DD estimates by each length of stay category as in equation 3. Pre-period mean is computed using the survey waves prior to the nursing home shock. Standard errors are clustered at the individual level (in parentheses). Observations are at the individual-wave level. Significance levels: *<0.10, **<0.05, ***<0.01

Table B.4: The effect of a nursing home admission on self-reported health categories

	(1) Score	(2) Excellent	(3) Very good	(4) Good	(5) Fair	(6) Poor
Panel A: Overall impact						
Treated × Post	0.083**	0.023**	-0.026	-0.054**	0.011	0.046***
	(0.035)	(0.009)	(0.017)	(0.021)	(0.019)	(0.013)
Observations	204938	204938	204938	204938	204938	204938
Adjusted R^2	0.638	0.452	0.367	0.312	0.389	0.384
Pre period mean	3.060	0.061	0.251	0.349	0.243	0.095
Panel B: By length of stay						
Treated (1-20 days) × Post	0.052	0.024**	-0.033	-0.038	0.026	0.021
	(0.045)	(0.012)	(0.023)	(0.029)	(0.024)	(0.017)
Treated (21-100 days) × Post	0.115*	0.024	-0.015	-0.075**	-0.013	0.080***
	(0.059)	(0.015)	(0.029)	(0.035)	(0.032)	(0.024)
Treated (>100 days) × Post	0.338**	-0.009	-0.077	-0.081	0.089	0.078
	(0.163)	(0.027)	(0.072)	(0.094)	(0.075)	(0.052)
Observations	204793	204793	204793	204793	204793	204793
Adjusted R^2	0.637	0.452	0.367	0.312	0.389	0.383
Pre period mean	3.060	0.061	0.251	0.349	0.243	0.095

Notes: Respondents choose one of five options for self-reported health ranging from '1' (excellent), '2' (very good), '3' (good), '4' (fair), to '5' (poor). Column (1) uses this score as an outcome. Columns (2)-(6) examine each category separately. Panel A reports the DD estimates of equation 1 for each outcome. Panel B reports the DD estimates by each length of stay category as in equation 3. Pre-period mean is computed using the survey waves prior to the nursing home shock. Standard errors are clustered at the individual level (in parentheses). Observations are at the individual-wave level. Significance levels: *<0.10, **<0.05, ***<0.01

Table B.5: Heterogeneity by baseline wealth

	(1) Q1	(2) Q2	(3) Q3	(4) Q4
Panel A: Retired				
Treated × Post	0.000	0.008	-0.005	0.051*
	(0.048)	(0.035)	(0.038)	(0.031)
Observations	33009	50568	57559	63914
Adjusted R^2	0.557	0.570	0.592	0.622
Pre period mean	0.705	0.677	0.723	0.693
Panel B: Working for pay				
Treated × Post	-0.003	0.028	0.029*	-0.018
	(0.031)	(0.024)	(0.017)	(0.022)
Observations	33009	50568	57559	63914
Adjusted R^2	0.600	0.568	0.587	0.641
Pre period mean	0.071	0.095	0.054	0.073
Panel C: Medicaid participation				
Treated × Post	0.061	0.040	0.022	0.014
	(0.042)	(0.028)	(0.015)	(0.010)
Observations	32608	50227	57318	63734
Adjusted R^2	0.652	0.468	0.353	0.289
Pre period mean	0.374	0.081	0.030	0.007

Notes: This table shows the main results using equation 1 by the quartile of the respondent's baseline wealth (lowest to highest). Baseline wealth is the net value of all assets (that is, the sum of all wealth components except for the value of IRAs and debt) when the respondent first entered the survey. Panels A, B and C report the results for each outcome: retirement, working for pay or not and Medicaid participation, respectively. Pre-period mean is computed using the survey waves prior to the nursing home shock. Standard errors are clustered at the individual level (in parentheses). Observations are at the individual-wave level. Significance levels: *<0.10, **<0.05, ***<0.01