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Susann Rohwedder, Péter Hudomiet, and Michael Hurd

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Péter Hudomiet
RAND

Michael D. Hurd
RAND, NBER, NETSPAR

Susann Rohwedder
RAND, NETSPAR

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Michigan Retirement and Disability Research Center, University of Michigan, P.O. Box 1248. Ann Arbor, MI 48104, mrdrc.isr.umich.edu, (734) 615-0422

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The Lifetime Risk of Spousal Nursing Home Use and Its Economic Impact on the Community-Dwelling Spouse

Abstract

A single person in a nursing home is relatively well-protected financially from nursing home expenses because Medicaid covers these once assets are depleted. Couples, however, are less well protected, because the high cost of nursing homes rapidly depletes household assets, possibly impoverishing the spouse living in the community, despite Medicaid provisions that shield spousal assets up to some threshold. In this paper, we estimate the lifetime risk that one spouse will reside in the community while the other resides in a nursing home, and the distribution of the accumulated number of days spent in a nursing home and costs. We use data from the longitudinal Health and Retirement Study and follow individuals and their spouses from age 70 to death. We also examine how spousal nursing home use affects families' financial outcomes and to what extent Social Security income protects the community-residing spouse from the adverse effects of spousal nursing home use. We find that a 70- to 74-year-old married person who lives in the community faces a 34.3% chance that his or her spouse would move to a nursing home before death. When they do, spouses spend about nine months, on average, in nursing homes, and the average out-of-pocket cost is about $19,800 (2019 dollars). We find that spousal nursing home use significantly decreases households' assets and increases the risk of further impoverishment. While Social Security income has an overall positive impact on families' financial outcomes, it does not mitigate the financial effects of spousal nursing home use.

Citation

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Introduction

Successful financial planning for retirement requires gauging the financial risks the household will face in retirement. One of the largest risks is having to pay out-of-pocket (OOP) nursing home expenses. With an annual cost of about $90,000 and growing (Genworth 2019), a long nursing home stay would rapidly deplete most households' financial assets. Private long-term care insurance is available in the U.S. to help cover the cost of nursing home care, but only about 12% of households have purchased such insurance (Brown et al. 2012; Johnson 2016). The lifetime risk of spending at least one night in a nursing home is considerable, estimated to be 56% for 57- to 61-year-old persons (Hurd et al. 2017). Some stays are relatively short and covered by Medicare if following a hospital discharge. Medicare, however, does not cover long-term stays.

A single person in a nursing home is relatively well-protected financially, because Medicaid covers nursing home expenses once assets are depleted. Couples, however, are less well protected, because the high cost of nursing homes rapidly depletes household assets, possibly impoverishing the spouse living in the community, as has been discussed in prior literature.[1] Little is known about the lifetime risk of a long nursing home stay by one spouse while the other remains in the community, but for financial planning, families need to know the lifetime risk. Borella et al. (2018) show that even among couples with high retirement income a non-negligible fraction needs to use

[1] For the regulatory aspects of Medicaid eligibility rules regarding joint household assets see Ahmad 1999; Bobroff 2002; Dong et al. 2019; Farley 2001; Karl 2018; Kelly 1999; McEowen 2006; Miller 2015; Torch 1996.

Medicaid at advanced old-age, suggesting that the lifetime risk is considerably higher than simple cross-sectional estimates typically used in the literature.

This paper has two main objectives: 1) to estimate the lifetime risk that a married person will reside in the community while his/her spouse resides in a nursing home, and 2) find how such spousal nursing home use affects households' financial positions. For both types of analyses we use longitudinal data from the Health and Retirement Study (HRS). For the analysis of lifetime risk we take a sample of 70- to 74-year-old married individuals and follow the respondent and the spouse in the panel until one of them dies. Over this period, we document any spousal nursing home episodes, their duration, and related OOP expenditures. It is important to correct for right-censoring: For example, in households where both spouses survive to 2018, the last HRS wave used in this project, we do not observe the remaining lifetime risk of spousal nursing home use. These cases are modeled using a flexible nonparametric imputation model in which the missing end-of-life trajectories of households are filled-in from appropriately chosen donor households. Then we estimate the lifetime risk of any spousal nursing home use, the distribution of the length of these nursing home stays, and of the associated OOP expenses. An important question is how the longitudinal estimates, produced by our preferred methodology, differ from cross-sectional ones typically used in the literature. Our main finding is that the longitudinal estimates are substantially larger than the cross-sectional ones. We also find that the lifetime risk of spousal nursing home use is above average among female, non-Hispanic Whites and more educated older adults.

To investigate the impact of spousal nursing home use on households' financial position, we analyze changes in medical expenditures, assets, income, Medicaid

eligibility, and poverty rates that can be attributed to spousal nursing home episodes in the short- and medium-term. We first use cross-tabulations; then we visualize the distributions of the effects with histograms. Based on panel regression models, we find robust evidence that spousal nursing home use induces financial hardship, and these effects remain strong even when we control for many potential confounders.

Social Security benefits play an important role in protecting the economic position of the retired population. We investigate whether Social Security benefits offer additional protection to the community-dwelling spouse from poverty immediately following the spousal nursing home episode, but we do not find a consistent effect: Those with high levels of Social Security income have about the same probability of being in poverty following spousal nursing home use according to the medically needy definition of poverty.[2]

Data

The Health and Retirement Study is a longitudinal survey that is representative of the U.S. population older than 50. The first HRS wave was fielded in 1992, and follow-up waves have been collected every other year since then. In this project, we analyze public-use data from all 14 waves between 1992 and 2018, though we use various restrictions on the data as explained below.

[2] The medically needy definition of poverty subtracts out-of-pocket medical spending from income and compares the result to the income poverty line. Thus, households with high medical spending may be in medically needy poverty even though they are not in poverty as usually defined.

The HRS interviews about 20,000 individuals per wave. Every six years refresher cohorts of 51- to 56-year-old individuals and their spouses have been added to the sample (in 1998, 2004, 2010, and 2016) to maintain its age representation. The HRS uses a stratified random sample of U.S. households[3] in which at least one household member is age eligible.[4] The HRS recruits all age eligible persons and their spouses irrespective of the spouses' ages. Thus, the HRS sample is well suited for studying how nursing home use by one spouse affects the other spouse.

A critical feature of the HRS for this study is that the HRS follows individuals and spouses into nursing homes. Though the initial sampling is community-based, the HRS represents the entire nursing home population about three waves after cohorts enter the survey due to the high mortality rates in nursing homes (Hurd et al. 2014). Few other household surveys follow individuals into institutionalized settings, and the HRS stands out for the long follow-up period it covers.

The HRS collects a wide range of information about participants, including demographics, labor force status, income, wealth, health, medical expenditures, and others (Sonnega et al. 2014). It elicits respondents' OOP medical expenditures in several categories that allow constructing a measure of total OOP medical spending that compares closely to those of other specialized surveys, such as the Medical Expenditure Panel Survey or the Medicare Current Beneficiary Survey (Goldman et al. 2011). One of

[3] The technical details of sample selection are discussed in various documentations available at the HRS website at https://hrs.isr.umich.edu/documentation/survey-design.

[4] The HRS oversamples Blacks, Hispanics, and Floridians in order to increase the precision of estimates in these minority groups. Survey weights are available to adjust the composition of the sample to the general U.S. population.

the queried components is OOP spending on nursing homes.[5] The sum of total OOP medical expenditures of the two spouses constitutes total household OOP medical expenditures. We note that this measure only considers medical spending by the couple; it does not include spending by other potential household members. This reflects the overall focus adopted by the HRS on eliciting data on the decision unit of the older respondent and spouse (if applicable). The HRS applies this approach to almost all economic measures, including for the measurement of out-of-pocket medical spending, assets, and income. To simplify language, we use the term “household” for the respondent-spouse unit throughout this paper. While there may be some other household members in some cases, the vast majority — about 80% of couples older than 70 — live on their own.

The HRS core interview typically asks about medical spending since the previous HRS interview with two exceptions: 1) New sample members are asked about spending in the last two years; and 2) Drug spending is queried with reference to the last month. To approximate drug spending between survey waves, we multiplied drug spending in the last month (reported in the HRS) by the number of months since the respondent’s last HRS interview. Any missing medical expenditure values were imputed by RAND as discussed in RAND HRS (2021). The HRS also queries respondents and their spouses about any nursing home stays since the last interview, the total number of stays and their total duration.

[5] The nine categories are 1) hospital costs, (2) nursing home costs, (3) doctor visits costs, (4) dentist costs, (5) outpatient surgery costs, (6) average monthly prescription drug costs, (7) home health care costs, (8) special facilities costs, and (9) other medical expenditures.

The HRS collects exit interviews after the death of sample members, which include questions about end-of-life nursing home use and costs. This is important, because prior research found that medical expenditures are heavily concentrated in the last years of life (French et al. 2017; Kelley et al. 2013).

If a study member is unable or unwilling to participate in a survey wave, HRS surveys a proxy respondent, typically the spouse or a child. Many nursing home residents with severe mental or physical disabilities participate in the survey through proxies. This feature of the HRS ensures good coverage of the nursing home population.

We use the RAND HRS Data file, an easy-to-use longitudinal data set based on the most commonly used HRS variables. It was developed at RAND with funding from the National Institute on Aging and the Social Security Administration (SSA). We use the RAND HRS variables whenever available,[6] including detailed demographics (age, gender, education, race and ethnicity), labor market status, detailed health variables (self-assessed health, Activities of Daily Living [ADL] and Instrumental Activities of Daily Living [IADL] limitations, various chronic conditions), total household assets, Social Security income, total household income, and out-of-pocket medical expenditures. We obtained the detailed components of the RAND Medical Expenditure Imputations from the RAND HRS Detailed Imputations File. All financial variables (assets, income, expenditures) are inflation adjusted (using CPI-U from Bureau of Labor Statistics) to 2019 dollars.

[6] These data files are publicly available after registration on the HRS website.

Results

We present our results in two steps. We first estimate the lifetime risk that one spouse will reside in the community while the other resides in a nursing home, and the associated total lifetime duration of nursing home stays and costs. To do so, we use the long panel information from the HRS following individuals and their spouses from about age 72 to death. Censored cases (those who survive to the latest HRS wave as well as those who attrit from the sample) are modeled using a nonparametric matching model that we call splicing. Second, we use regression models to estimate how spousal nursing home use by spouses affects families' financial outcomes, such as household medical expenditures, assets, income, and poverty rates. We also estimate whether and to what extent Social Security income protects the community-residing spouse from poverty following the spousal nursing home episode.

The lifetime risk of spousal nursing home use and costs

Methods

Our first goal is to find the lifetime probability that a community-dwelling married person will have a spouse residing in a nursing home, and the associated out-of-pocket expenditures. We selected a sample of 70- to 74-year-old married individuals living in the community from the 1998 wave of the HRS and followed these individuals and their spouses for up to 20 years until 2018. If both spouses met the age criterion of our analytic sample, their data contributed to the sample twice, once as a respondent and once as a spouse. In the analyses we quantify nursing home use by the spouse and investigate how it affects the respondent. Of course, the husband is both a respondent and a spouse, and the wife is both a respondent and a spouse.

Individuals and spouses report about any nursing home use and costs since their most recent HRS interview. Those who missed one or more survey waves, thus, report over a longer time horizon than the rest of the sample. In exit interviews, nursing home use and spending between the last HRS wave and the person's death are queried. By accumulating all the reports between 1998 and 2018, we obtain the total number of nursing home episodes, total nursing home nights, and total out-of-pocket expenditures on nursing homes of individuals between 1998 and 2018. Some households are right censored in that they either survive to the latest HRS wave or they attrit from the sample, resulting in incomplete observation spells of the risk of spousal nursing home use. These cases are modeled as described below.

Because out-of-pocket spending on nursing homes was not consistently asked in the early waves of the HRS (1992 to 1996), we did not use them in this analysis. The cohort we selected is 70 to 74 years old at the baseline 1998 wave. The selection of the age interval was motivated by the need for balancing two opposing effects. On the one hand, choosing a higher baseline age results in fewer right-censored cases, because fewer individuals would survive 20 additional years after the baseline wave. Even though we model right censoring, it would be better to have fewer cases that need such adjustments. On the other hand, a greater baseline age means missing more nursing home episodes that may occur before the baseline age, which is a left censoring problem. In this project we do not directly model left-censoring, but we show statistics about the extent of this issue, and we come back to it in the discussion section.

Table 1 shows survival and marital status patterns in the main cohort of study (70 to 74 year olds in 1998). There are 1,863 respondent-spouse pairs in this sample in total.

We distinguish eight different cases. The first three in the top panel correspond to "Complete cases" in which the entire relevant lifespan of the household is observed and there is no right censoring problem. Case 1 corresponds to households in which the respondent dies before the spouse, and the spouse provides an HRS interview right after the respondents' death (764 cases, 41.0% of all cases). Spousal nursing home use and costs are fully observed in these households until the respondents' deaths. Nursing home use reported by the spouse right after the death of the respondent was fully included in the lifetime measures. Some portion of these nursing home episodes likely occurred after the respondent's death, but the HRS data did not reveal the precise timing.

Case 2 corresponds to households in which the spouse dies before the respondent and an exit interview is available for the spouse (805 cases, 43.2%). Spousal nursing home use is also fully observed in these households. Should the surviving spouse remarry, that person would potentially be at risk of further (new) spousal nursing home use. We do not track any such events, however, and so our estimates should be interpreted as the lifetime risk of spousal nursing home use by the original members of the household. Remarriages, however, are very rare in this age range.

Divorces are also rare in this age range: Only 17 cases (0.9%) fall into Case 3, in which the spouses divorce and the spouse conducts an HRS interview right after the divorce. In this case, spousal nursing home use right after a divorce was not included in the lifetime measures.

Cases 4 to 6 correspond to right censored cases. Case 4 covers households in which both spouses survived to 2018 and they are still married to each other (161 cases, 8.6%). The end-of-life nursing home use in these households is missing. We use a

nonparametric matching algorithm we call “splicing” to fill in these missing values. Our algorithm closely relates to two algorithms we developed in earlier research (Hurd et al. 2017; Hudomiet et al., 2019). The idea of this algorithm is to find a donor household in earlier waves of the HRS with similar characteristics to the recipient household in 2018; and then “splice” this donor household’s end-of-life trajectories to the recipient household. The algorithm is successful if the donor and recipient households are sufficiently similar to one another. It is crucial to match the ages of the donor-recipient pairs, and it is important to match households with similar probabilities of entering nursing homes.

More precisely our algorithm for Case 4 was as follows. Our initial donor pool included all married individuals from the 1998 to 2004 HRS, who perfectly matched the recipient husbands’ and wives’ nursing home status, and did not drop out of the HRS sample (i.e. they either responded to the 2018 survey or died). Of this pool, we applied selection criteria sequentially. First, we selected the household in which the husbands’ age was closest to the recipient husband. If there were multiple potential donors with the same age difference, we minimized the absolute value of the difference in the wives’ ages. If there were still multiple potential donors, we matched the out-of-pocket medical expenditures of the donors and recipients. If there were still multiple potential donors, we randomly selected a donor.

Case 5 covers households in which the spouse dies, his or her date of death is observed in the HRS, but the spouse’s exit interview is not available (25 cases, 1.3%). We used a similar splicing logic for these cases to find an appropriate donor exit interview in earlier HRS waves. The matching logic, however, was slightly different. In this case, we also tried to match the number of days between the spouse’s death and the previous

HRS interview. We applied this criterion directly after matching husbands' and wives' ages.

Case 6 corresponds to households in which the respondent dies, and no spousal interview is available after his or her death (46 cases, 2.5%). The splicing logic was analogous to Case 5, but this time we used the death date of the respondent instead of the spouse.

Cases 7 and 8 correspond to cases with insufficient information about spousal nursing home use. Case 7 includes households in which the spouse did not provide any HRS interviews while the respondent was alive (30 cases, 1.6%). Case 8 corresponds to households in which the spouse died without providing an exit interview, and the date of death was not reported (15 cases, 0.8%). We decided to eliminate these cases from the sample because crucial information about these spouses is missing, making it impossible to identify appropriate donors for them.

Overall, 85.1% of the sample were complete (no censoring), 12.5% were right censored and entered our splicing model,[7] and 2.4% were discarded. The final size of our analytic dataset is 1,818.

Results

Table 2 compares cross-sectional and longitudinal estimates of spousal nursing home use. Both panels of the table are based on 1998 to 2018 data. The left side of the top panel (Panel A) shows the fraction of individuals by age who live in the community,

[7] Of the 232 recipient households 11 (4.7%) were matched to donor households who also survived to 2018. Because all of these households were very old, we did not try to impute their missing trajectories. Our methodology essentially assumes that these households died after their last HRS interview.

but have a spouse who lives in a nursing home: Only 0.2% of 55- to 59-year-old individuals are in this situation. The percentage grows with age, but even among those 85 and older it is only 1.6%. One might conclude from these statistics that the risk of spousal nursing home use is limited. These statistics, however, include single individuals, who could not have a spousal nursing home stay.

On the right side of Panel A we restrict the sample to married individuals who live in the community. The fraction of individuals whose spouse resides in a nursing home is substantially larger, especially at older ages, where more individuals are widow(er)s and the marriage restriction matters more. Spousal nursing home use is 0.4% at age 55 to 59, but it is close to 10% (8.2%) among those 85 and older. The unconditional mean nursing home nights since the last HRS interview (about two years) is 0.2 days among 55 to 59 year olds, and 7.8 days among those 85 and older. The associated (unconditional) out-of-pocket expenditures are $10 among 55 to 59 year olds, and $386 among those 85 and older. Thus, though the numbers on the right side of Panel A are higher, the risk of spousal nursing home use still appears limited.

The bottom panel shows the longitudinal estimates of the lifetime risk of spousal nursing home use, and paints a markedly different picture. According to our preferred estimate (first row of Panel B), a 70- to 74-year-old married individual who lives in the community faces a 34.3% chance that his or her spouse would enter a nursing home before one of them dies. The total unconditional nursing home nights are 96.6 days, and the lifetime costs are $6,780 (2019 dollars). These numbers are substantially larger than the cross-sectional estimates in Panel A. The main conclusions based on these

longitudinal estimates is that the lifetime risk of spousal nursing home use is high, and households need to be financially prepared for it.

Our preferred estimate was based on the splicing methodology in which the missing end-of-life trajectories of right censored cases were filled in by the nursing home use of appropriate donor households. In the last row of Panel B, we show numbers that do not use any donor values and simply accumulate spousal nursing home use until 2018 (i.e. ignoring right censoring). It is considerably easier to estimate these numbers, but they are based on incomplete data, and so it is interesting to compare these two methodologies. We found that ignoring right censoring results in 10% smaller values than our preferred ones. However, the estimates are qualitatively similar, likely because the majority of the sample members had complete data and did not need splicing.

The statistics shown in Table 2 are weighted by the HRS-provided survey weights in the baseline wave (1998). Appendix Table 1 shows unweighted statistics that are nearly identical to the weighted ones. One minor difference is that the unweighted statistics are based on slightly larger samples because some individuals have zero weights.

Table 3 shows weighted statistics of lifetime spousal nursing home use and costs by population subgroups based on gender, race and ethnicity, education, and household Social Security income at baseline (age 70 to 74 in 1998). Panel A (top) focuses on the distribution of lifetime nursing home nights by the spouse, and Panel B (bottom) focuses on out-of-pocket expenditures associated with those spousal nursing home stays. The first column of Panel A shows the respective sample size, the second the fraction of households who experience any spousal nursing home use before death, and the right

two columns show the means and the 90th percentile of the total number of nursing home nights by the spouse. Women are substantially more likely to have a spouse reside in a nursing home (40.8% among women versus 29.1% among men). This risk is also higher among non-Hispanic Whites (35.8%) compared to minorities (Hispanics 28.1% and non-Hispanic Blacks 22.2%), and among more educated individuals compared to those with less education (37.6% among college graduates versus 28.6% among high school dropouts). The gradient by Social Security income quartile is less pronounced, with the highest quartile facing a risk of lifetime spousal nursing home use of 36.8% compared to 31.6% in the lowest quartile. Overall, the lifetime risk of spousal nursing home use is substantial across all groups.

The right two columns of Panel A show the (unconditional) means and 90th percentiles of the distribution of lifetime nursing home nights. Similar to any nursing home use, we find that the means of the lifetime nursing home days are large in all groups, clustering around three months, but somewhat larger among women, non-Hispanic Whites, the highly educated, and among those who have more Social Security income. We also find that the distribution is highly skewed. Though the median is zero in all groups (not shown), the 90th percentile is around 276 days (about three-fourths of a year).

Panel B shows similar statistics on out-of-pocket expenditures for nursing homes. We expected these statistics to be similar to those in Panel A, although we expected a somewhat steeper gradient by socioeconomic status (SES), because relatively more low SES individuals are on Medicaid, which protects against out-of-pocket nursing home expenses. In contrast, high SES individuals are more likely to pay for nursing homes out-of-pocket, and they are more likely to stay in higher quality and more expensive homes.

The results in Panel B are broadly in line with these expectations. Mean lifetime expenditures among non-Hispanic Whites are $7,501 (in 2019 dollars), compared to $728 among non-Hispanic Blacks, $3,671 among non-Hispanics of other race, and $2,613 among Hispanics. These differences are partly due to those groups experiencing spousal nursing home use less often, but also because of greater qualification for Medicaid due to their having less wealth. We also found a strong gradient with respect to education. While college graduates paid on average $12,370 out of pocket, high school dropouts paid only $3,062. The gradient with respect to Social Security income was less strong, and not monotonic. Gender differences were also relatively muted.

Left censoring

So far we considered the lifetime risk of spousal nursing home use among 70- to 74-year-old married individuals. But some nursing home use occurs before age 70. We will not attempt to fill in spousal nursing home use prior to age 70 to 74. Instead, we quantify the risk of spousal nursing home use between age 60 and 72 at the population level to gauge how much is missed by assessing the lifetime risk from age 70-74. Though nursing home use is most prevalent at advanced ages (See Table 2), it is not negligible at ages below 70. We also investigate the stability of household composition, specifically the stability of marriages between age 60 to 61 and 72 to 73, because the lifetime risk of spousal nursing home use estimated from age 70 to 74 would not be informative for married individuals who lose their spouses earlier.

Table A2 in the appendix showed that about two-thirds of 60- to 61-year-old married individuals (in the 1992 to 1998 HRS) remained alive and married to each other until age 72 to 73, and nursing home use among them was fairly limited. Divorce is

uncommon in this age range. However, we found that about a third of these households experienced the death of either the respondent or the spouse. More precisely, in 12.9% of households only the spouse died, in 16.4% only the respondent died, and in 2.7% of households both spouses died.

In the full sample, we found that only 6.6% of 60- to 61-year-old individuals experienced a spousal nursing home event until age 72/73; the unconditional mean of nursing home days is 13.8 days, and the total out-of-pocket costs are $486 (in 2019 dollars). Nursing home use was much higher (23.7%) among those where the spouse died while the respondent was in his or her 60s.

Overall, we find that spousal nursing home episodes between age 60 and 72 are relatively rare, implying that left-censoring of our estimate is unlikely to be quantitatively very important. However, in the specific subsample in which spouses die at relatively young ages (12.9% of those married at age 60), nursing home use is non-negligible. In this paper, we do not adjust the estimates to left censoring, but it would be worthwhile in future research to investigate this in more detail to shed light on the distributional issues.

The financial impacts of spousal nursing home use

In this section, we investigate how spousal nursing home episodes affect households' financial positions in the short and medium term, and whether and to what extent Social Security income protects the community-residing spouse from poverty. We consider various economic outcomes, including medical expenditures, assets, income, Medicaid eligibility, and poverty status. Our analysis is based on longitudinal statistical models in which we analyze how a new spousal nursing home episode affects within-person *changes* in the outcome variables. In contrast to the lifetime analysis discussed in

the previous section, we now focus on short- and medium-term effects, that is, one to four years following a spousal nursing home episode.

Methods

We use the 1992 to 2018 waves for this analysis, restricting the sample to person-wave observations in the following way. Respondent *i* in wave *t* is part of the sample if all of the following conditions apply:

1. Respondent *i* in wave *t* is 60 or older.
2. The respondent is alive in waves *t* and *t+1* (typically two years after wave *t*).
3. The respondent participates in the HRS in waves *t* and *t+1*.
4. The respondent lives in the community (instead of a nursing home) in waves *t* and *t+1.*
5. The respondent is married in wave *t*.
6. The spouse of the respondent participates in the HRS in wave *t.*
7. The spouse either participates in the HRS at *t+1* or dies before *t+1.* That is, we exclude alive non-responders at *t+1.*

There are 79,005 person-year observations that satisfy all these restrictions. These restrictions ensure that 1) we can define wave-to-wave changes in the main outcomes variables, 2) the respondent lives in the community in both survey waves, and 3) the spouse may or may not live in a nursing home in either wave.

We track any spousal nursing home use between waves *t* and *t+1*, as well as the length of these spells and created a three-way variable:

1. The spouse did not spend any time in a nursing home between waves *t* and *t+1*.

2. The spouse spent some time in nursing homes between waves *t* and *t+1*, but none of the stays was longer than 100 days. We call this category "Short stays only."
3. The spouse had at least one nursing home episode between waves *t* and *t+1* that was longer than 100 days.

Shorter nursing home episodes are often associated with rehabilitation and more likely to be covered by Medicare; that is why we seek to distinguish individuals who had at least one longer (100+ days) nursing home episode. Individuals in the HRS report about the total number of days they spent in nursing homes between survey waves, as well as the entry and exit dates of up to three nursing home episodes. We used these data to identify any longer episodes, adopting the same approach as Hurd et al. (2017).

We document how the household's financial position changes between waves as a function of spousal nursing home use using cross-tabulations, histograms and regression-based methods. The regression models use a large number of control variables based on the characteristics of respondents and spouses that will be discussed when we present our results.

In some models we further restrict the sample based on spouses' survival status at *t+1* and by spouses' nursing home status at *t*.

Descriptive patterns

Tables 4 and 5 show cross tabulations between the financial outcomes and spousal nursing home use. Table 4 restricts the sample to person-year observations in which the spouse is alive at *t+1*, and Table 5 limits the observations to those where the spouse died between waves *t* and *t+1*. Throughout we distinguish between households where the spouse did not have nursing home use between waves *t-1* and *t*, which we call

“no prior use,” (recognizing that there could have been use before wave *t-1*) and households were the spouse had nursing use between waves *t-1* and *t*, which we call “had prior use.” Panel A (on the left) restricts the sample to observations with no prior use and Panel B has observations with prior use. The columns of the tables correspond to different intensities of nursing home use by spouses between *t* and *t+1* (no use, short stays only, 100+ days), and the rows show the means of the outcome variables in waves *t* and *t+1*, and the mean change between these waves. By studying these dynamics we aim to uncover if more extensive spousal nursing home use led to more severe adverse financial outcomes. The tables present results on nine outcomes:

1. household out-of-pocket expenditure on nursing homes,
2. total household out-of-pocket medical expenditures,
3. total household assets,
4. nonexempt household assets to determine eligibility for Medicaid,
5. total household income,
6. nonexempt household income to determine eligibility for Medicaid,
7. Medicaid eligibility,
8. Medicaid coverage,
9. household income below the U.S. Census Bureau Poverty Threshold.

Medicaid eligibility and the nonexemption rules regarding household assets and income are state-specific, but we wanted to use a homogeneous set of rules that apply to all sample members irrespective of their state of residence. Thus, we selected the most prevalent set of rules across states and applied them to the entire sample. Nonexempt household income was defined as total household income (annualized based on income

last month) minus total household out-of-pocket medical expenditures (also annualized). Nonexempt assets were defined as total household assets minus the value of the primary residence (capped at $500,000 since 2006), minus the value of transportation vehicles (capped at $50,000), minus the Community Spouse Resource Allowance (year-specific rates set by the government ranging from $68,700 in 1992 to $126,420 in 2019). A household was then considered eligible for Medicaid if nonexempt household income was less than $24,000, and nonexempt household assets were less than $2,000.

The top rows in Table 4 show how the frequency of any out-of-pocket medical expenditures varies with nursing home use. Prior nursing home spending is zero by definition among those with no prior use as reflected by the 0 values in the appropriate cells. Starting from Panel A on the left, 27.2% of the households had a nursing home expense if all episodes between *t* and *t+1* were short (less than 100 days), and 57.1% had one if at least one episode was long (100+ day). This pattern makes sense: While Medicare or health insurance covers many short-term stays, longer stays are only covered by the means-tested Medicaid program or by long-term care insurance (which is uncommon in the U.S.). Turning to Panel B (spouse had prior nursing home use), the payment rates are similar to Panel A for both short and long stays. The main difference between A and B is that in Panel B households were already incurring nursing home expenses prior to wave *t*. In fact the wave-to-wave changes are close to zero when spouses had both recent use and use between *t* and *t+1*. However, among those households in which the spouse had prior use but none between *t* and *t+1,* 24.7% of had out-of-pocket spending for nursing home use between waves *t* - 1 and *t*. This is similar to the fraction of households with out-of-pocket spending for shorter stays at between *t* and

t+1 (25.2%), reflecting the temporary nature of the nursing home stays among these groups. Overall, spousal nursing home episodes are strongly related to nursing home payments.

Next, we investigated total household out-of-pocket medical expenditures. In Panel A we see that there was a 7.1% wave-to-wave increase in these payments when spouses did not spend any days in nursing homes (going up from $6,780 to $7,261). We think of this as the "normal" increase in spending on medical services associated with aging. The increase was considerably larger (49.1%) when the spouse had a short stay (up from $7,910 to $11,794), and even larger (100.4%) when the spouse had a long stay (from $14,485 to $29,023). Interestingly, the wave-to-wave changes are related to spousal nursing home use, and so are the baseline values in wave *t*: Households in which the spouse had prior nursing home use spent more prior to wave *t*, indicating worse health especially if the stay was a long one. We see similarly strong associations in Panel B. The wave-to-wave decline was 18.0% if the spouse had prior use and spent zero days in a nursing home between waves *t* and *t+1*; it was 9.7% if the spouse only had short stays, and it was 34.8% if the spouse had a long stay.

We also see a robust association between spousal nursing home use and household assets as well as nonexempt household assets. Household assets slightly increased if the spouse did not stay in nursing homes, but they decreased if the spouse did. In Panel A (no prior use) the decrease is noticeably stronger if the spouse had a long stay (-14.3% for total assets) versus a short stay (-2.1%).

We expected that spousal nursing home episodes would be more strongly related to household assets than to household income. Our findings were more-or-less in line

with these expectations. However, we found that longer nursing home episodes were associated with noticeable decreases in household income (19.8%) in Panel A. The patterns were similar when we considered nonexempt household income. We found only small changes when the spouse had no or only short nursing home stays, but large decreases after longer stays: 35.8% decrease in Panel A and 12.8% decrease in Panel B.

Given the strong results on assets and income, it is unsurprising that we also found a strong association between spousal nursing home use and Medicaid eligibility. There was no change in Medicaid eligibility if the spouse did not have any nursing home stays, a 2.9 percentage point (Panel A) and 4.9 percentage point (Panel B) increase after short stays and a 7.7 percentage point (Panel A) and 4.6 percentage point (Panel B) increase after long stays.

The fraction of households enrolled in Medicaid is considerably smaller than the eligibility rate, but we still found strong impacts on actual Medicaid enrollment. For example, the fraction on Medicaid increased by 23.3 percentage points after a long nursing home stay in Panel A and 9.9 percentage points in Panel B, noting that the latter group already had high Medicaid enrollment at *t*, given their prior nursing home usage.

Finally, we considered whether household income is below the U.S. Census Bureau poverty threshold.[8] Only a small fraction of households was classified as poor in wave *t*. We saw basically no change in poverty rates if the spouse had no or only short stays; and a noticeable increase when the spouse had a long stay: 3.3 percentage point

[8] The poverty threshold varies by family size and household composition. It is updated annually by the U.S. Census Bureau.

increase in panel A and 2.5 percentage point increase in Panel B. This is consistent with the fact that poverty assessment is based on income, which is little affected by incurring large out-of-pocket expenses for nursing home care, with the possible exception of reduced income from assets due to asset depletion. Overall, we found very strong associations between spousal nursing home use and household finances in Table 4.

Next, we turn to Table 5, which focuses on households in which the spouse died between waves *t* and *t+1*. We expected more complex associations in this sample, because the spouse's death has a direct effect on household size and household composition, which likely changes households' financial positions, including income. The patterns in "any nursing home spending" and total household medical expenditures are similar to those in Table 4. Spousal nursing home spending appears to substantially increase health care spending. The patterns in the other categories are quite different, however. For example, we found that household assets and income fall after the death of a spouse independently of spouse's predeath nursing home use, likely due to other types of medical and end-of-life expenses, and in some cases some bequests to others outside the household. Among some groups, household assets apparently increased. Although it is conceivable that house values appreciated for some, most likely these statistics are quite noisy, so we will refrain from attributing interpretations. Reporting error in income tends to be smaller. As expected, total household income declines following the death of a spouse, in most cases due to loss of the spouse's income from Social Security. Despite the reductions in household income the fraction of households eligible for Medicaid under the medically needy provision declines, and more so among households with greater spousal nursing home use. This is because, under the medically needy provision, total

household income net of out-of-pocket medical expenses is used for eligibility assessment. After the spouse's death nursing home expenses cease and are no longer deducted from total household income for this assessment. The same pattern is reflected in the changes in actual Medicaid enrollment. Poverty assessment, which does not take into account medical expenditures, increased among all subgroups in Table 5, irrespective of spousal nursing home use.

Overall, we found that spousal nursing home episodes strongly predicted households' financial positions both among those where the spouse was still alive and among those where the spouse recently passed away.

Distributions

Next, we investigate the distributions of the outcomes. Figure 1 and Figure 2 show the histograms of the wave-to-wave *changes* in the outcomes by spousal nursing home use and its intensity. Figure 1 shows total out-of-pocket medical expenditures, and Figure 2 shows total household assets. Both figures are restricted to observations in which the spouse survived to *t+1*. Each has two panels, based on spousal nursing home use between *t-1* and *t*. The appendix shows the histograms of other financial outcomes (spending on nursing homes and household income) and histograms using observations in which the spouse died by *t+1*. We are primarily interested in finding whether spousal nursing home episodes affect the tails of the distribution.

Figure 1 (out-of-pocket expenditures) uses 17 bins: Eight for increases in spending, eight for decreases in spending, and one for no change. In Panel A (no prior spousal nursing home use) we see that the distribution is sharply peaked: Most wave-to-wave changes in OOP spending are small, typically not larger than $10,000 over two

years. This is particularly true when the spouse had no nursing home use between *t* and *t+1*. In this sample (blue bars), the central three bins contained 87% of the sample. When the spouse spent only short durations in nursing homes (orange bars), the distribution is also concentrated around zero, but there is a noticeable shift toward increases in spending. For example, the share of the bin “10-20k increase” substantially increased (from 4.5% to 7.6%) while the share of the bin “0-10k decrease” substantially decreased (from 39.7% to 32.4%). The share of the other bins corresponding to increases in spending also grew, although to a lesser extent. When the spouse had a longer stay in a nursing home (grey bars), the distribution substantially shifted upward toward more spending. In these households, even large increases are common. For example, the share of the bin “30-40k increase” was about 1% when the spouse had a short stay, but it increased to 7.8% with a long stay. Overall, long nursing home stays substantially increased the probabilities of very large increases in medical spending.

Panel B of Figure 1 shows the histograms in the sample where the spouse had prior nursing home use findings. Similar to Panel A, the histograms are concentrated around no change in spending, but long nursing home stays significantly increase the probabilities of large increases in spending.

Figure 2 is similar to Figure 1 but it shows changes in assets. Panel A shows changes when the spouse had no prior use. This figure uses 21 bins, each corresponding to $50,000-wide intervals (0-50k decrease, 50-100k decrease, etc.) The histogram of asset changes is much less concentrated around zero compared to the histogram of medical spending changes. The effect of spousal nursing home episodes is also less pronounced, but still detectable. When spouses experience a long nursing home stay, the

share of the bins corresponding to increases in assets shrinks, especially the category "50-100k increase" which is 4.9% compared to 9.8% when the spouse spent no time in a nursing home between *t* and *t+1*. Correspondingly, the share in the bins corresponding to reductions in assets increases. We see a particularly notable increase in the share of the bin "450k+ loss," which is 8% among those with long spousal nursing home stays compared to 6.2% when the spouse had no nursing home stay between *t* and *t+1*.

Overall, these graphs document that longer nursing home stays by the spouse increase the tail risks of very large out-of-pocket medical spending and very large decreases in household assets.

Regression analysis

The previous sections established that there is a strong association between spousal nursing home use and various household financial outcomes. These associations likely reflect a causal mechanism, but they are possibly affected by various forms of omitted variable bias and selection. For example, households in which the spouse moves to a nursing home may experience various other life events (job-loss, stress, health problems), which may directly affect the financial position of the household. In this section, we find whether the predictive effect of spousal nursing home use remains after we control for a large number of available variables in the HRS. We use the following set of control variables:

1. respondent's age (five-year bins);
2. respondent's gender;
3. respondent's race and ethnicity;
4. respondent's labor market status in wave *t;*

5. household asset quintiles in wave *t*;
6. survey wave dummies;
7. respondent's detailed health outcomes in wave *t* and *t+1* (self-assessed health, ADL and IADL limitations, high blood pressure, diabetes, cancer, lung disease, heart problems, stroke, psychiatric problems, arthritis);
8. spouse's detailed health outcomes in wave *t*.

Importantly we control for very detailed health outcomes of the respondents and the spouse. We include the health status of the respondent both in waves *t* and *t+1*, but we do not control for spouse's health status in wave *t+1*: Health change of the spouse is often the reason for nursing home use. We only included complete cases in the analysis, that is, observations with any missing values were ignored. However, very few variables had missing values. This is in part because the RAND HRS performs imputations for the main asset and income variables and for OOP medical expenditures. In the appendix, we also include regression models with fewer control variables.

Table 6 shows regression models of wave-to-wave changes in five outcomes (total OOP, nursing home OOP, total assets, nonexempt assets, nonexempt income) where waves are two years apart on average. The sample comprises married persons whose spouse did not spend any time in a nursing home between *t-1* and *t* and was still alive at *t+1*. Short nursing home stays increased total household out-of-pocket medical expenditures by $3,345 (2019 dollars), on average, while longer stays increased it by $13,746. The coefficient on long stays is statistically significant at 5% and the one for short stays is significant at any conventional levels. These values are almost the same as in Table 4 and in the appendix Table A6 where we show regression models with a very

limited set of control variables (wave dummies only). Thus, the detailed control variables do not affect the coefficients much. This patterns also holds in the other columns. The effects on household nursing home spending (Column 2) are similar, and these coefficients are more precisely measured as evidenced by their smaller standard errors. The third column shows a very large decrease in household assets: -$34,005 for a short stay, and -$73,383 for a long stay, reflecting changes over a two-year period. These coefficients are also statistically significant at the 5% and the 10% level respectively. Their standard errors are quite large, likely due to the nonlinearities arising from some households not having many or any assets and whose nursing home expenses would be covered by Medicaid. The effects on nonexempt household assets are similar in magnitude, but they are not statistically significant. Short nursing home stays lead to a statistically not significant increase (Column 5), while long stays lead to a statistically significant decrease in nonexempt household income. Because at advanced ages income is fairly stable for most households, Social Security being the most important component, the variation in nonexempt income is primarily due to netting out out-of-pocket medical expenditures. Hence, these estimates imply considerable out-of-pocket costs associated with extended nursing home stays financed out of income. Although the standard errors on most of these estimates are large, they all point to a sizeable financial burden arising from spousal nursing home stays.

Next, we investigate dynamics in Medicaid eligibility under the medically needy provision, that is, where household income net of out-of-pocket medical expenses is compared to the applicable poverty threshold, and where nonexempt household assets have to be below a certain threshold. Of particular interest is to what extent Social

Security income may protect households from living in poverty, especially the surviving spouse in the community when nursing home expenses have impacted household finances. We anticipated the following main effects of interest:

1. Households with high Social Security income are less likely to be medically needy.
2. Households who were not medically needy at time *t* and incurred large out-of-pocket medical expenses between *t* and *t+1* (especially due to spousal nursing home stays), are more likely to be medically needy at *t+1*.
3. Households who were medically needy at time *t* due to large medical expenditures (especially due to spousal nursing home stays), and whose large medical expenses stopped may be less likely to be medically needy at time *t+1*.

Table 7 shows estimations of the probability of being medically needy at *t+1* for the sample where the spouse survives to *t+1*. The first two columns restrict the sample to households in which the spouse had no prior nursing home use, and Columns 3 and 4 restrict the sample to those observations where the spouse did have prior use. These latter models have small sample sizes. Each column is a linear probability model of being Medicaid eligible under the medically needy provision in wave *t+1*, and we show separate models by Medicaid eligibility in wave *t*. The set of predictor variables is similar to Table 6, but we include household Social Security income (a dummy indicating that it is above median), and its interaction with spousal nursing home episodes. As predicted, households with more Social Security income are less likely to be eligible for Medicaid in all four samples, though the coefficients are only statistically significant in three out of four cases, likely due to small sample size in the fourth model. Spousal nursing home episodes increased the probability of Medicaid eligibility at *t+1* in the first and third

models, that is among those who were not yet medically needy in the prior period *t.* The coefficients are not statistically significant in Model 3 likely due to small sample size, so we will focus discussion on Model 1. Short nursing home stays increased the probability of Medicaid eligibility by 3.8 percentage points, while a long stay increased it by 14.3 percentage points. We found that the interaction terms between Social Security income and spousal nursing home episodes were not statistically significant (except in one case in the smallest sample likely due to random noise).

Table 8 shows similar regressions, but now the sample is restricted to person-year observations in which the spouse died between *t* and *t+1*. Further, to see longer term effects this table shows Medicaid eligibility at both *t+1* and *t+2*. The first two columns restrict the sample to observations in which the household was not eligible for Medicaid at *t* and in Columns 3 and 4 the sample is restricted to those who were eligible at *t*. According to our prediction (3) above, it is in Columns 3 and 4 where we might expect to find protective effects of Social Security income. Indeed, among those not medically needy at time *t* (Columns 1 and 2) there are no statistically significant coefficients, except the one in Column 1 indicating a reduced probability if Medicaid eligibility at *t+1* among those with high Social Security benefits. When the household was eligible at *t* (Columns 3 and 4), we found that Social Security income significantly decreased the chances of still being eligible at *t+1* and *t+2*, and these two coefficients were similar. The estimated effects of spousal nursing home episodes on eligibility suggest reduced probabilities of being medically needy if at *t+2*. This is the situation alluded to with Prediction 3 above: Large spousal nursing home expenses causing the household to be medically needy, but then these expenses stop as the spouse passes away.

We found statistically significant interaction terms between long spousal nursing home episodes and having high Social Security income. We have no good interpretation of this result because of the complexity introduced by selection and dynamics. As for selection, the sample had high Social Security income and was medically needy at *t,* yet had no spousal nursing home use between *t-1* and *t*. As for dynamics, between *t* and *t+1* the spouse had a long stay in a nursing home and then died resulting in out-of-pocket spending and a reduction in Social Security income. Furthermore, just 18 observations are in this cell, so the very small sample size precludes any detailed study.

In summary, we found that Social Security income reduces the likelihood that households become medically needy, and it increases the chances to recover from being medically needy. However, we did not find any consistent and interpretable interactions between the extent of spousal nursing home use and the level of Social Security income.

Discussion and conclusion

In this paper, we sought to answer two closely related research questions: 1) what is the lifetime risk that a married person will reside in the community while his or her spouse resides in a nursing home, and 2) how does spousal nursing home use affect a household's financial position?

To answer the first question we restricted the HRS sample to 70- to 74-year-old married individuals in the 1998 HRS survey wave who lived in the community at that time (N=1,818). We followed the respondent and spouse in the panel until the last available HRS wave (2018), and we documented any nursing home use by the spouse over these 20 years. The nursing home trajectories of 85.1% of these households were observed completely in the sense that either the respondent or the spouse died before 2018 or they

divorced; 12.5% were right censored (mostly cases where both spouses survived to the 2018 HRS wave), and 2.4% provided insufficient data and were discarded from the analysis. For the right censored cases we used a sophisticated matching-based imputation method we call “splicing,” in which we replaced the missing end-of-life nursing home trajectories of households from similar households in earlier birth cohorts.

We found that a 70- to 74-year-old married individual living in the community has a 34.3% lifetime risk that his or her spouse would move to a nursing home while the individual was living in the community. This estimate is substantially larger than risks based on cross-sectional data and statistical models. Estimating the lifetime risk is substantially more difficult than estimating cross-sectional means, but our paper demonstrates that it is important, because the qualitative and quantitative conclusions are very different from conclusions based on cross-sections. A household wanting to make contingency plans should be primarily interested in the lifetime risk of spousal nursing home use rather than the cross-sectional mean.

We analyzed the cumulative duration of spousal nursing home stays and the associated out-of-pocket expenditures. We found that spouses spend about three months, on average, in nursing homes overall (unconditional means[9]), and families spend about $6,800 (in 2019 dollars) on nursing homes out-of-pocket in total. Conditional on experiencing spousal nursing home episodes, the cumulative duration and associated out-of-pocket costs are about three times as high. We examined variation in these statistics across demographic groups, and found considerable variation, but the lifetime

[9] The “unconditional means” refer to means in the total sample, including households that did not spend any time in nursing homes.

risk was substantial in all groups. For example, we found that the risk was the highest among women (40.8%), and it was the smallest among non-Hispanic individuals of other race (e.g., Asian, Native American, multiracial individuals) at 18.7%.

In the second part of the paper, we investigated how spousal nursing home use affected households' financial position using various available measures in the HRS, including medical expenditures, total household assets, nonexempt assets for Medicaid, total household income, nonexempt income for Medicaid, Medicaid eligibility, Medicaid take-up, and poverty status. We found robust evidence that spousal nursing home use had substantial and statistically significant effects on many of these outcomes, even when we controlled for an extensive list of personal characteristics of respondents and spouses. For example, according to the estimates from multivariate regressions, short nursing home stays (episodes lasting 100 days or less) increased total household out-of-pocket nursing home expenditures by $2,000 (in 2019 dollars), while long stays (episodes lasting longer than 100 days) increased them by $18,000. We estimated separate models by spouses' prior nursing home use (between waves *t-1* and *t*) and spouse's survival status to the next wave (*t+1*). The results were strongest in the sample experiencing an onset of spousal nursing home episodes and where the spouse survived to the next wave. This is because some households with prior spousal nursing home have already substantially depleted their resources and become eligible for Medicaid; and households where the spouse died necessarily had shorter spousal nursing home use between waves.

By studying the entire distribution of the financial outcomes, we found that long nursing home stays substantially increased the chances of sizeable adverse financial outcomes such as very large medical spending or very large decreases in assets.

We finally tested whether Social Security benefits mitigated the adverse effects of spousal nursing home use on household finances. Above-median Social Security income reduced the risk of transitioning to medically needy poverty, but it did not have a consistent, interpretable influence on the transition when the spouse experienced a nursing home stay.

Our paper has some limitations. For example, to find the lifetime risk of spousal nursing home use in the first part of the paper, we restricted our sample to individuals who were 70 to 74 years old in 1998. It would be interesting in future research to estimate the lifetime risk from younger ages such as from age 60 or even younger. Though nursing home use is modest before age 70 in the population, it may be higher in some sub-groups, such as those where the risk of mortality before age 70 is greater. Another limitation of our approach is that the splicing methodology we used likely introduces some noise to the estimates. As the HRS panel adds more waves, fewer households will be right censored, reducing the need for imputation.

Overall, we found that the lifetime risk of spousal nursing home use is substantial and poses a significant financial risk for American households. In order to consider these risks in their financial planning the older population needs to be aware of these risks.

References

Ahmad, O. N. (1999). Medicaid Eligibility Rules for the Elderly Long-Term Care Applicant. *Journal of Legal Medicine*, 20 (2), 251–280. https://doi.org/10.1080/01947649909511089.

Bobroff, R. (2002). Judicial Deference to Federal Government Erodes Medicaid Protections for Elderly Spouses Impoverished by the High Costs of Nursing Home Care. *William Mitchell Law Review*. 29 (1), 159–184.

Borella, M., De Nardi, M., & French, E. (2018). Who Receives Medicaid in Old Age? Rules and Reality. *Fiscal studies*, 39 (1), 65–93. https://doi.org/10.1111/1475-5890.12145.

Brown, J. R., Goda, G. S., and McGarry, K. 2012. "Long-term care insurance demand limited by beliefs about needs, concerns about insurers, and care available from family." *Health Affairs*, 31 (6): 1294– 1302. https://doi.org/10.1377/hlthaff.2011.1307.

Dong, J., Pollack, H., and Konetzka, R. T. (2019). Effects of Long-Term Care Setting on Spousal Health Outcomes. *Health Services Research*, 54(1), 158–166. https://doi.org/10.1111/1475-6773.13053.

Farley, M. (2001). When Do Becomes Don't: Eliminating the Divorce Loophole to Medicaid Eligibility. *Elder Law Journal*, 9(1), 27–52.

French, E.B., McCauley, J., Aragon, M., Bakx, P., Chalkley, M., Chen, S.H., et al., 2017. End-of-life medical spending in last twelve months of life is lower than previously reported. *Health Affairs* 36 (7), 1211– 1217.

Genworth, 2019. "Genworth Cost of Care Survey 2019." Genworth Financial, Inc. Available at https://pro.genworth.com/riiproweb/productinfo/pdf/282102.pdf. Assessed April 5, 2020.

Goldman, D. P., Zissimopoulos, J. Lu, Y. 2011. Medical Expenditure Measures in the Health and Retirement Study. *Forum Health Economic Policy*, 14(3):4. doi: 10.2202/1558-9544.1267.

Hudomiet, P., Hurd, M. D., and Rohwedder, S. 2019, "The Relationship Between Lifetime Out-of-pocket Medical Expenditures, Dementia, and Socioeconomic Status in the U.S.," *Journal of the Economics of Ageing*. PMC6874215. https://www.sciencedirect.com/science/article/pii/S2212828X18300690#ak005.

Hurd, M. D., Michaud, P.-C., and Rohwedder, S. 2014. "The Lifetime Risk of Nursing Home Use," in D. Wise (ed.) *Discoveries in the Economics of Aging*, Chicago: University of Chicago Press, 81-109.

Hurd, M. D., Michaud, P. C., and Rohwedder, S. 2017, "Distribution of Lifetime Nursing Home Use and of Out-of-pocket Spending," Proceedings of the National Academy of Sciences, 114(37), 9838– 9842. PMC5603996. https://doi:10.1073/pnas.1700618114.

Johnson, R. W. (2016). Who Is Covered by Private Long-Term Care Insurance? Research Brief, Urban Institute. Available at https://www.urban.org/research/publication/who-covered-private-long-term-care-insurance. Accessed on September 20, 2021.

Karl, P. (2018). Twenty Questions about Planning for Medicaid and Nursing Home Care. *The CPA Journal*, 2018 October.

Kelly, K. C. (1999). Protecting Assets for the Community Spouse When Long-Term Care is Needed. *Probate and Property*, 13(2), 62–2.

Kelley, A., McGarry, K., Fahle, S., Marshall, S., Du, Q., Skinner, J., 2013. "Out-of-pocket spending in the last five years of life." *Journal of General Internal Medicine*. 28 (2), 304–309. Doi: 10.1007/s11606-012-2199-x.

McEowen, R. A. (2006). New Medicaid Rules Will Impact Estate Planning for Long-Term Health Care. *Agricultural Law Digest*, 17(7), 49–51.

Miller, J. A. (2015). Medicaid Spend Down, Estate Recovery and Divorce: Doctrine, Planning and Policy. *Elder Law Journal*, 23(1), 41–82.

RAND HRS Longitudinal File, V1 (2021). 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.

Sonnega, A., Faul, J.D., Ofstedal, M.B., Langa, K.M., Phillips, J.W., Weir, D.R., 2014. Cohort profile: the Health and Retirement Study (HRS*). International Journal of Epidemiology* 43 (2), 576– 585.

Torch, L. D. (1996). Spousal Impoverishment or Enrichment an Assessment of Asset and Income Transfers by Medicaid Applicants. *Elder Law Journal*, 4(2), 459–492.

Tables and figures

Table 1: Longitudinal marital status and survival patterns between 1998 and 2018

#	Longitudinal marriage and survival patterns	N	%
	Complete cases		
1	Respondent died first; spouse responded after death	764	41.0%
2	Spouse died first, exit interview available	805	43.2%
3	Respondent divorced spouse; spouse responded after divorce	17	0.9%
	Right-censored cases (apply splicing)		
4	Respondent and spouse alive and married in last wave	161	8.6%
5	Spouse died first; death date available; exit interview missing	25	1.3%
6	Respondent died first; spouse did not respond after death	46	2.5%
	Incomplete cases (drop)		
7	Spouse never interviewed while respondent was alive	30	1.6%
8	Spouse died without exit interview or death date; or respondent died and spouse left sample	15	0.8%
	Initial sample size	1863	100.0%
	Final sample size (after exclusions)	1818	97.6%

* The sample includes 70-to 74-year-old married individuals in the 1998 wave of the HRS who lived in the community in 1998. These individuals and their spouses are followed in the panel until 2018 or until one of them dies or the marriage ends.

Table 2: Comparison of cross-sectional and lifetime cumulative spousal nursing home use and costs

	Total sample		Married, R lives in the community			
	N	**Any spousal NH use**	**N**	**Any spousal NH use**	**Spousal NH nights**	**Spousal NH costs**
Panel A: Cross-sectional statistics						
Age 55-59	33,774	0.2%	20,959	0.4%	0.2	10
Age 60-64	33,559	0.5%	21,264	0.8%	0.5	17
Age 65-69	31,547	0.7%	19,926	1.1%	0.7	40
Age 70-74	28,601	1.1%	17,153	1.9%	1.1	30
Age 75-79	25,475	1.5%	13,202	3.0%	1.9	153
Age 80-84	19,233	1.8%	7,519	4.8%	3.4	320
Age 85+	20,440	1.6%	3,920	8.2%	7.8	386
Panel B: Longitudinal statistics						
Lifetime (using splicing)			1,814	34.3%	96.6	6,780
Cumulative (no splicing)			1,814	30.2%	82.9	5,853

* HRS, 1998 to 2018. The “Total sample” in Panel A includes all observations in the given age ranges irrespective of marital status or living arrangements. The longitudinal statistics in Panel B are based on 70- to 74-year-old married individuals in the 1998 wave, who lived in the community in 1998. The “Cumulative” model followed these individuals until 2018 or until death or divorce. The “Lifetime” models are similar, but they apply the splicing model to fill-in the missing waves of right censored observations. “NH costs” refer to out-of-pocket medical expenditures on nursing homes expressed in 2019 dollars. Weighted statistics.

Table 3: The distribution of lifetime spousal nursing home nights and costs by personal characteristics

Panel A	N	Duration of Spousal NH Stay (days)		
		% any	mean	p90
Total	1,814	34.3%	96.6	276.0
Men	1,012	29.1%	92.1	261.0
Women	802	40.8%	102.2	304.0
non-Hispanic White	1,528	35.8%	102.5	316.0
non-Hispanic Black	146	22.2%	40.1	145.0
non-Hispanic other	30	18.7%	74.7	15.0
Hispanic	110	28.1%	70.8	100.0
Less than high school	535	28.6%	77.6	213.0
High school	627	37.3%	100.4	330.0
Some college	330	34.1%	99.6	304.0
College	322	37.6%	115.2	350.0
Lowest Soc. Sec. income quartile	458	31.6%	91.3	254.0
2nd quartile	456	34.9%	95.5	300.0
3rd quartile	453	34.1%	94.5	310.0
Highest Soc. Sec. income quartile	447	36.8%	105.3	304.0

Panel B	N	Spousal out-of-pocket NH spending, $		
		% any	mean	p90
Total	1,814	17.8%	6,780	10,022
Men	1,012	16.1%	7,350	8,091
Women	802	19.8%	6,073	10,664
Non-Hispanic White	1,528	19.2%	7,501	12,681
Non-Hispanic Black	146	6.3%	728	0
Non-Hispanic other	30	9.3%	3,671	0
Hispanic	110	8.7%	2,613	0
Less than high school	535	11.6%	3,062	614
High school	627	20.3%	6,642	10,827
Some college	330	17.5%	7,050	12,681
College	322	22.6%	12,370	39,780
Lowest Soc. Sec. income quartile	458	18.4%	5,439	10,552
2nd quartile	456	15.8%	5,492	6,545
3rd quartile	453	17.5%	9,315	12,516
Highest Soc. Sec. income quartile	447	19.5%	6,850	10,827

Table 4: Households' financial position as a function of spousal nursing home use at waves t and t+1, spouse alive at t+1

	Panel A: Spouse had no prior NH use			Panel B: Spouse had prior NH use		
	Spouse NH days from *t* to *t+1*			Spouse NH days from *t* to *t+1*		
	Zero NH days	Short NH stay only	100+ day NH stay	Zero NH days	Short NH stay only	100+ day NH stay
Any household nursing home spending						
Between *t-1* and *t*	0.0%	0.0%	0.0%	24.7%	25.2%	51.2%
Between *t* and *t+1*	0.0%	27.2%	57.1%	0.0%	29.1%	48.8%
Difference	0.0 pp.	27.2 pp.	57.1 pp.	-24.7 pp.	3.9 pp.	-2.3 pp.
Total household out-of-pocket medical expenditures						
Between *t-1* and *t*	6,780	7,910	14,485	10,271	11,984	20,891
Between *t* and *t+1*	7,261	11,794	29,023	8,424	13,143	28,172
Difference (%)	7.1%	49.1%	100.4%	-18.0%	9.7%	34.8%
Total household assets						
At t	689,737	556,117	548,433	612,345	520,651	422,757
At t+1	718,617	544,465	469,975	657,133	474,593	389,538
Difference (%)	4.2%	-2.1%	-14.3%	7.3%	-8.8%	-7.9%
Nonexempt household assets for Medicaid						
At t	409,886	303,539	337,706	355,531	264,556	246,337
At t+1	437,252	300,654	288,598	410,030	237,584	219,872
Difference (%)	6.7%	-1.0%	-14.5%	15.3%	-10.2%	-10.7%
Total household income						
At t	83,073	61,466	62,642	62,424	59,761	49,381
At t+1	80,165	65,469	50,253	62,897	58,106	46,550
Difference (%)	-3.5%	6.5%	-19.8%	0.8%	-2.8%	-5.7%
Nonexempt household income for Medicaid						
At t	80,345	57,733	59,111	57,647	54,118	40,529
At t+1	76,938	60,000	37,977	59,049	52,119	35,331
Difference (%)	-4.2%	3.9%	-35.8%	2.4%	-3.7%	-12.8%
Household eligible for Medicaid (medically needy)						
At t	19.4%	23.7%	32.3%	24.8%	18.0%	41.9%
At t+1	19.6%	26.6%	40.0%	25.4%	22.8%	46.5%
Difference	0.2 pp.	2.9 pp.	7.7 pp.	0.6 pp.	4.9 pp.	4.6 pp.
Household on Medicaid						
At t	5.6%	6.0%	8.8%	8.8%	8.9%	41.8%
At t+1	6.4%	9.0%	32.1%	10.6%	7.9%	51.6%
Difference	0.8 pp.	3.0 pp.	23.3 pp.	1.8 pp.	-1.0 pp.	9.9 pp.

Household income below poverty threshold						
At t	4.0%	3.0%	4.9%	4.2%	4.6%	4.9%
At t+1	3.9%	3.0%	8.2%	4.8%	2.9%	7.4%
Difference	-0.1 pp.	0.0 pp.	3.3 pp.	0.6 pp.	-1.7 pp.	2.5 pp.

*** Sample:** HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at *t* and at *t+1*, and the spouse is alive at *t+1*. “Prior NH use” stands for nursing home use between waves *t-1* and *t.*

Table 5: Households' financial position by spousal prior nursing home use, spouse dead at t+1

	Panel A: Spouse had no prior NH use			Panel B: Spouse had prior NH use		
	Spouse NH days from *t* to *t+1*			Spouse NH days from *t* to *t+1*		
	Zero NH days	Short NH stay only	100+ day NH stay	Zero NH days	Short NH stay only	100+ day NH stay
Any household nursing home spending						
At t	0.0%	0.0%	0.0%	23.7%	39.1%	50.5%
At t+1	0.0%	31.9%	53.0%	0.0%	37.1%	56.8%
Difference	0.0 pp.	31.9 pp.	53.0 pp.	-23.7 pp.	-2.0 pp.	6.2 pp.
Total household out-of-pocket medical expenditures						
At t	7,743	7,677	8,232	14,308	19,808	23,795
At t+1	8,490	12,311	19,256	7,666	17,914	26,917
Difference (%)	9.6%	60.4%	133.9%	-46.4%	-9.6%	13.1%
Total household assets						
At t	510,735	513,780	506,989	532,558	453,158	381,652
At t+1	439,906	494,382	435,881	565,525	443,361	429,574
Difference (%)	-13.9%	-3.8%	-14.0%	6.2%	-2.2%	12.6%
Nonexempt household assets for Medicaid						
At t	304,057	291,372	305,951	297,876	248,847	218,728
At t+1	290,736	346,038	308,591	415,942	296,274	320,396
Difference (%)	-4.4%	18.8%	0.9%	39.6%	19.1%	46.5%
Total household income						
At t	56,879	53,822	61,572	56,991	64,490	42,638
At t+1	49,654	48,977	61,160	47,761	45,993	42,262
Difference (%)	-12.7%	-9.0%	-0.7%	-16.2%	-28.7%	-0.9%
Nonexempt household income for Medicaid						
At t	53,481	50,097	57,560	50,607	56,068	32,105
At t+1	48,317	47,459	59,563	45,774	44,425	40,769
Difference (%)	-9.7%	-5.3%	3.5%	-9.6%	-20.8%	27.0%
Household eligible for Medicaid (medically needy)						
At t	33.5%	29.6%	32.5%	27.1%	39.1%	46.4%
At t+1	25.8%	20.6%	20.5%	20.3%	20.5%	32.3%
Difference	-7.7 pp.	-9.0 pp.	-12.0 pp.	-6.8 pp.	-18.5 pp.	-14.1 pp.
Household on Medicaid						
At t	9.4%	8.4%	11.0%	10.4%	14.8%	40.0%
At t+1	7.5%	5.4%	6.1%	3.5%	4.0%	12.1%
Difference	-1.9 pp.	-3.0 pp.	-4.9 pp.	-7.0 pp.	-10.7 pp.	-27.9 pp.

Household income below poverty threshold						
At t	5.5%	2.9%	3.3%	1.1%	3.4%	4.2%
At t+1	10.7%	9.3%	7.8%	9.7%	6.9%	16.1%
Difference	5.3 pp.	6.4 pp.	4.4 pp.	8.6 pp.	3.4 pp.	11.9 pp.

*** Sample:** HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at *t* and at *t+1*, and the spouse dies between waves *t* and *t+1*. “Prior NH use” stands for nursing home use between waves *t-1* and *t.*

Table 6: Linear regression models of wave-to-wave changes in households' financial position on spousal nursing home use and detailed control variables, spouse alive at t+1

	OOP [1]	NH OOP [2]	Assets [3]	Non-exempt assets [4]	Non-exempt income [5]
Spouse spent 0 days in NH	ref.	ref.	ref.	ref.	ref.
Short NH stay only	3,345***	2,000***	-34,005**	-33,314*	3,809
	(758.8)	(308.7)	(14,343)	(17,379)	(7,189)
100+ day NH stay	13,746**	18,078***	-73,383*	-72,656	-20,521**
	(6,937)	(2,061)	(42,017)	(49,246)	(9,216)
Constant	4,828***	-98.95*	143,978***	133,166***	-3,315
	(392.6)	(53.98)	(23,540)	(29,992)	(3,481)
Observations	67,728	70,150	70,150	70,150	70,150
R-squared	0.012	0.175	0.004	0.003	0.004

* Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at *t* and at *t+1*, the spouse did not have prior nursing home use between *t* and *t-1* and he/she is alive at *t+1*. The regression models include the following set of control variables: interview wave, gender, age, race, education, assets, labor market, detailed health outcomes of respondents and spouses. The full outputs of the models are available in the appendix. "OOP" stands for "Out-of-pocket medical expenditures," and "NH" stands for "Nursing home." Nonexempt assets and income refer to the part of household assets and income used to determine Medicaid eligibility.

Table 7: Linear regression models of being medically needy at t+1 on spousal nursing home use and detailed control variables, the spouse is alive at t+1

	No nursing home use between *t-1* and *t*		With nursing home use between *t-1* and *t*	
	[1] Not medically needy at t	**[2] Medically needy at t**	**[3] Not medically needy at t**	**[4] Medically needy at t**
High Soc. Sec. income at t+1	-0.0462***	-0.209***	-0.0599**	-0.0623
	(0.00274)	(0.0108)	(0.0284)	(0.0858)
Spouse spent 0 days in NH	ref.	ref.	ref.	ref.
Short NH stay only	0.0381*	0.0319	0.109	-0.00419
	(0.0216)	(0.0283)	(0.0689)	(0.102)
100+ day NH stay	0.143***	-0.0213	0.114	-0.00923
	(0.0508)	(0.0441)	(0.0706)	(0.0721)
Interactions of high Soc. Sec income with …	ref.	ref.	ref.	ref.
… short NH stay only	-0.0235	-0.0227	-0.107	-0.421**
	(0.0244)	(0.0623)	(0.0744)	(0.188)
… 100+ day NH stay	-0.0657	0.0863	-0.0721	-0.0162
	(0.0611)	(0.0984)	(0.0754)	(0.134)
Constant	0.152***	0.495***	0.133	0.530
	(0.00830)	(0.0340)	(0.105)	(0.330)
Observations	56,777	13,353	775	280
R-squared	0.100	0.183	0.252	0.383

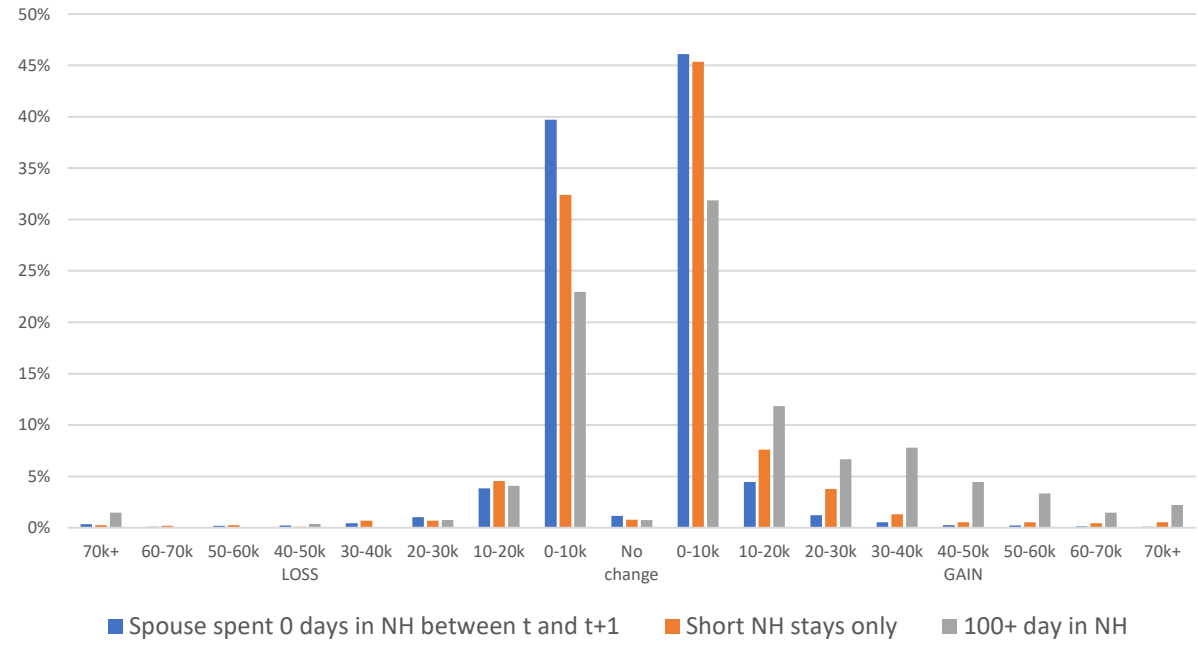
* Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at *t* and at *t+1*, and the spouse is alive at *t+1*. The regression models include the following set of control variables: interview wave, gender, age, race, education, assets, labor market, detailed health outcomes of respondents and spouses. The full outputs of the models are available in the appendix. “Medically needy” refers to authors’ Medicaid eligibility estimates applying most commonly used Medicaid eligibility rules to household income and assets information observed in the HRS.

Table 8: Linear regression models of being medically needy at t+1 on spousal nursing home use and detailed control variables, the spouse dies before t+1

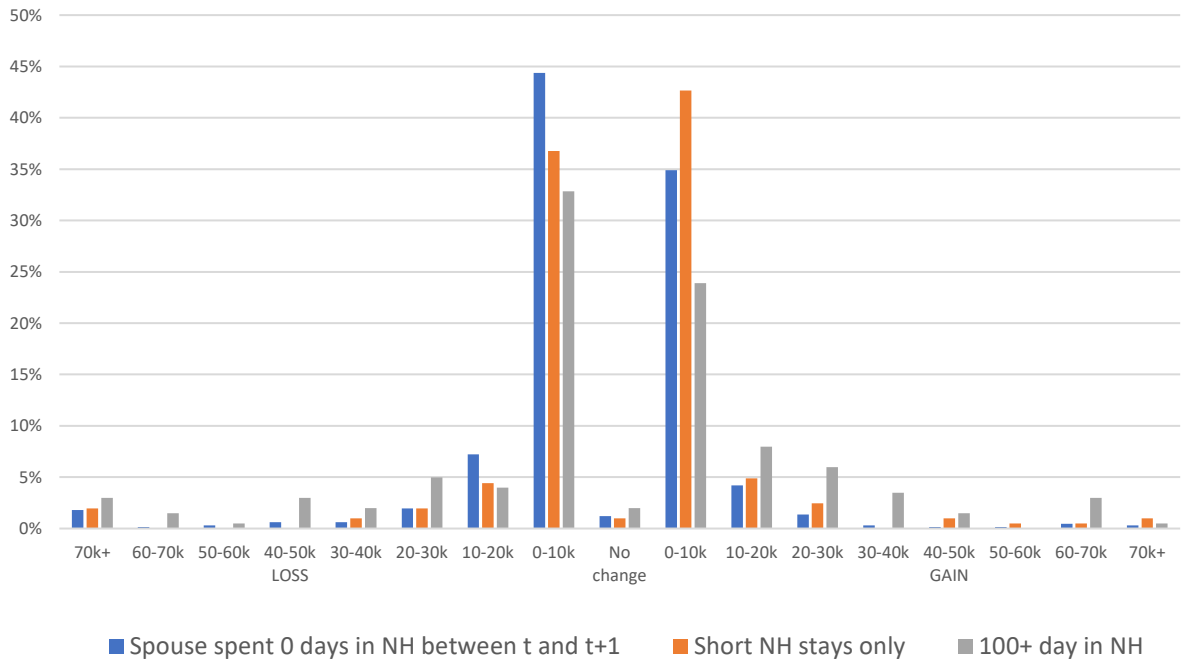
	Not medically needy at t		Medically needy at t	
	[1] at t+1	**[2] at t+2**	**[3] at t+1**	**[4] at t+2**
High Soc. Sec. income at t+1	-0.0286*	0.00274	-0.146***	-0.147***
	(0.0152)	(0.0161)	(0.0372)	(0.0390)
Spouse spent 0 days in NH	ref.	ref.	ref.	ref.
Short NH stay only	0.0210	-0.0173	-0.000749	-0.0590
	(0.0266)	(0.0259)	(0.0533)	(0.0538)
100+ day NH stay	-0.0332	-0.0255	-0.130	-0.212***
	(0.0373)	(0.0359)	(0.0867)	(0.0815)
Interactions of high Soc. Sec income with …	ref.	ref.	ref.	ref.
… short NH stay only	-0.0331	-0.0347	-0.100	0.139
	(0.0319)	(0.0307)	(0.0836)	(0.0885)
… 100+ day NH stay	-0.00492	-0.0728	0.334**	0.353***
	(0.0474)	(0.0447)	(0.153)	(0.128)
Constant	0.252***	0.218***	0.468***	0.668***
	(0.0677)	(0.0573)	(0.166)	(0.180)
Observations	2,163	2,033	952	914
R-squared	0.229	0.178	0.329	0.261

* Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at *t* and at *t+1*, the spouse did not have prior nursing home use between *t* and *t-1* and the he/she dies between *t* and *t+1*. The regression models include the following set of control variables: interview wave, gender, age, race, education, assets, labor market, detailed health outcomes of respondents and spouses. The full outputs of the models are available in the appendix. "Medically needy" refers to authors' Medicaid eligibility estimates applying most commonly used Medicaid eligibility rules to household income and assets information observed in the HRS.

Figure 1: Histograms of wave-to-wave changes in household out-of-pocket medical expenditures by spousal nursing home use



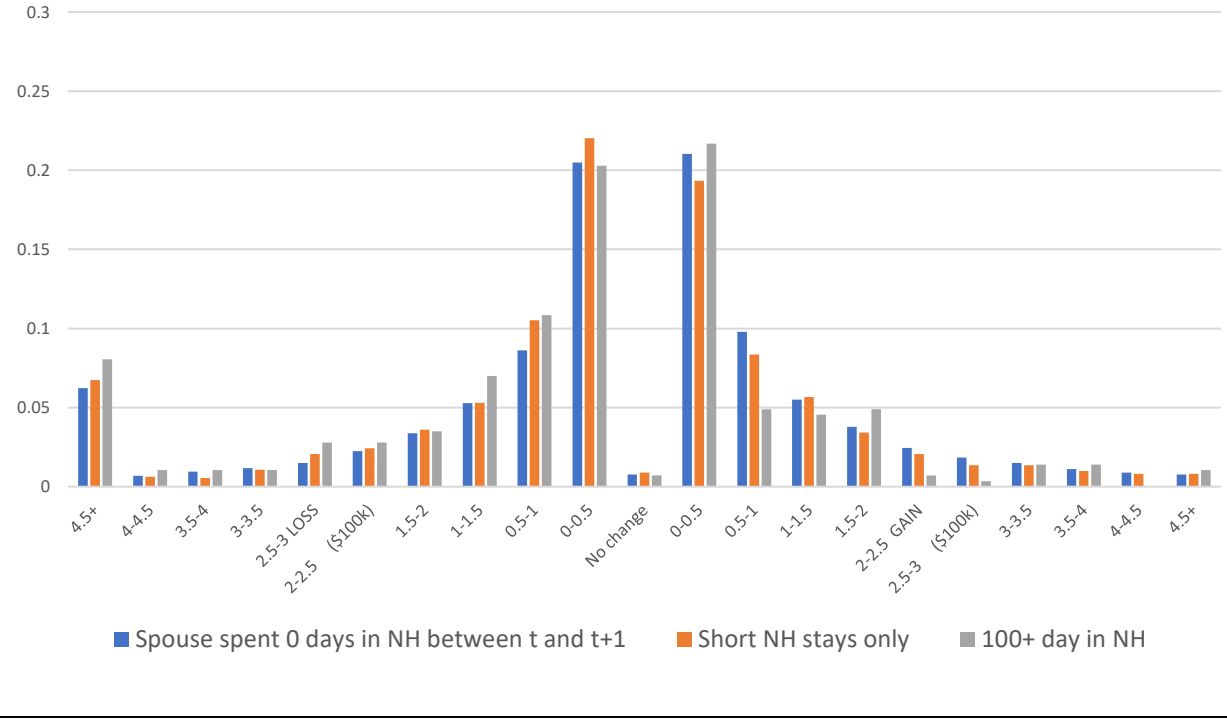
Panel A: Spouse had no nursing home use between *t-1* and *t*



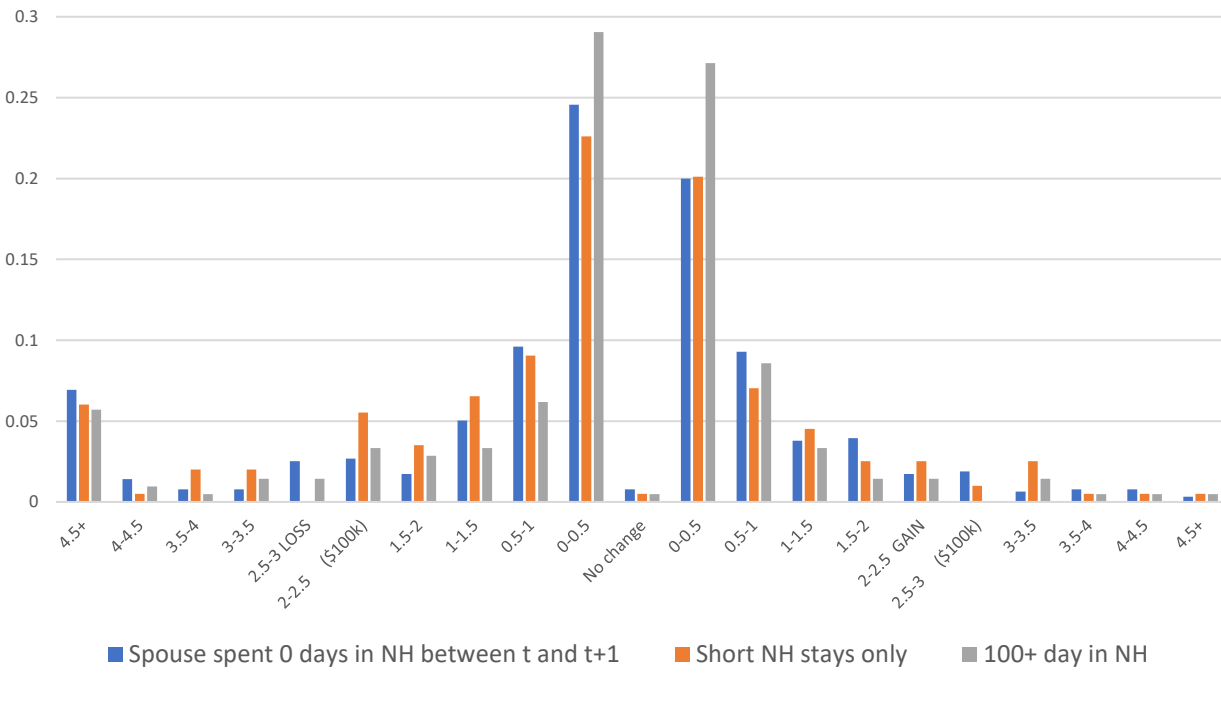
Panel B: Spouse had prior nursing home use between *t-1* and *t*

* **Sample:** HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at *t* and at *t+1*, and the spouse is alive at *t+1*. "NH" stands for "Nursing home."

Figure 2: Histograms of wave-to-wave changes in household total financial assets by spousal nursing home use



Panel A: Spouse had no nursing home use between *t-1* and *t*



Panel B: Spouse had prior nursing home use between *t-1* and *t*

* Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at *t* and at *t+1*, and the spouse is alive at *t+1*. "NH" stands for "Nursing home."

Appendix: Additional tables and figures

Table A1: Comparison of cross-sectional and lifetime cumulative spousal nursing home use and costs, unweighted statistics

	Total sample		Married, R lives in the community			
Panel A: Cross-sectional statistics						
	N	**Any spousal NH use**	**N**	**Any spousal NH use**	**Spousal NH nights**	**Spousal NH costs**
Age 55-59	33,896	0.3%	21,023	0.4%	0.3	15
Age 60-64	33,613	0.5%	21,282	0.8%	0.4	28
Age 65-69	31,632	0.7%	19,974	1.2%	0.7	44
Age 70-74	28,669	1.2%	17,178	1.9%	1.2	30
Age 75-79	25,593	1.6%	13,215	3.0%	2.1	138
Age 80-84	19,391	1.9%	7,521	4.9%	3.7	346
Age 85+	20,889	1.6%	3,924	8.4%	8.3	375
Panel B: Longitudinal statistics						
Lifetime (using splicing)			1,818	34.0%	98.7	6,673
Cumulative (no splicing)			1,818	29.8%	85.2	5,745

* HRS, 1998 to 2018. The “Total sample” in Panel A includes all observations in the given age ranges irrespective of marital status or living arrangements. The longitudinal statistics in Panel B are based on 70- to 74-year-old married individuals in the 1998 wave, who lived in the community in 1998. The “Cumulative” model followed these individuals until 2018 or until death or divorce. The “Lifetime” models are similar, but they apply the splicing model to fill-in the missing waves of right censored observations. “NH costs” refer to out-of-pocket expenditures on nursing homes expressed in 2019 dollars. Unweighted statistics.

Table A2: Marital status, survival, and nursing home use patterns between age 60 to 61 and 72 to 73

	Sample size		Spousal NH use		
	N	%	Any spousal NH use	Total spousal NH nights	Total spousal NH OOP costs
Married to same spouse at age 72-73	2,325	65.1%	3.3%	6.5	120
Remarried to new spouse	48	1.3%	8.3%	4.2	0
Separated/divorced	57	1.6%	3.5%	2.3	37
Spouse died, respondent alive	459	12.9%	23.7%	59.4	2,826
Respondent died, spouse alive	584	16.4%	2.7%	2.8	39
Spouse and respondent died	96	2.7%	30.2%	53.5	1,398
Total	3,569	100.0%	6.6%	13.8	486

* HRS, 1992 to 2018. The baseline sample includes 60/61-year-old individuals from the 1992 to 1998 waves, who are followed in the panel until age 72/73. Individuals who drop from the sample are excluded from these statistics.

Table A3: Full output of the linear regression models of wave-to-wave changes in households' financial position on spousal nursing home use and detailed control variables

	OOP [1]	NH OOP [2]	Assets [3]	non-exempt assets [4]	non-exempt income [5]
Spouse spent 0 days in NH	ref.	ref.	ref.	ref.	ref.
Short NH stay only	3,345***	2,000***	-34,005**	-33,314*	3,809
	(758.8)	(308.7)	(14,343)	(17,379)	(7,189)
100+ day NH stay	13,746**	18,078***	-73,383*	-72,656	-20,521**
	(6,937)	(2,061)	(42,017)	(49,246)	(9,216)
Male	-65.34	48.67**	4,142	4,261	398.2
	(115.7)	(23.52)	(6,437)	(8,401)	(639.2)
non-Hispanic White	ref.	ref.	ref.	ref.	ref.
non-Hispanic Black	-22.19	-10.28	-26,976***	-18,495***	-1,924***
	(116.7)	(41.09)	(5,591)	(6,776)	(604.1)
non-Hispanic other	-36.42	-66.74**	-6,170	-2,706	-1,386
	(194.6)	(29.57)	(11,748)	(12,084)	(1,684)
Hispanic	-326.4	-27.35	-37,642***	-33,607***	-339.0
	(217.1)	(25.17)	(7,024)	(9,167)	(681.4)
Age 60-64	ref.	ref.	ref.	ref.	
65-69	-334.7	-45.94**	-1,933	-3,643	2,142*
	(246.9)	(20.08)	(9,946)	(12,760)	(1,142)
70-74	13.83	-44.30	-22,280**	-19,171*	2,032**
	(239.4)	(27.14)	(8,846)	(11,177)	(1,007)
75-79	71.40	-3.557	6,286	16,258	3,488***
	(274.1)	(40.86)	(10,189)	(12,582)	(1,335)
80+	326.4	40.32	-6,512	14,228	4,026***
	(331.2)	(55.86)	(12,115)	(14,674)	(1,150)
Lowest assets quintile at *t*	ref.	ref.	ref.	ref.	ref.
2nd quintile	328.5	74.87***	-6,965***	2,707	-516.7
	(300.8)	(28.39)	(2,374)	(2,457)	(664.0)
3rd quintile	423.5	121.5***	2,138	29,119***	-3,227***
	(269.3)	(40.69)	(3,123)	(3,490)	(828.2)
4th quintile	1,053***	93.68***	21,091***	49,333***	-3,196***
	(286.4)	(33.46)	(4,655)	(5,261)	(936.8)
Highest quintile	712.9***	93.18***	-21,925	-47,180***	-13,489***
	(238.1)	(33.99)	(13,593)	(17,386)	(1,392)
Works full time	ref.	ref.	ref.	ref.	ref.
Works part time	-279.9	13.94	-41,329	-62,147	-4,346
	(322.5)	(42.63)	(35,310)	(51,970)	(3,053)
Unemployed	2,581	-6.649	-32,039*	-23,233	-12,642***
	(2,636)	(20.81)	(18,474)	(21,821)	(3,226)

Partly retired	-85.40	-21.03	-11,157	-10,635	318.7
	(208.1)	(23.65)	(14,306)	(14,781)	(1,876)
Retired	-294.7	-1.548	-24,809***	-26,210**	2,381*
	(188.2)	(25.91)	(9,047)	(10,209)	(1,276)
Disabled	-1,703**	-46.60	-11,286	-4,127	1,795
	(803.5)	(46.77)	(11,342)	(12,840)	(2,047)
Not in labor force, other	-245.2	11.86	13,170	17,104	2,170
	(286.6)	(44.73)	(15,060)	(17,189)	(1,900)
Health excellent at *t*	ref.	ref.	ref.	ref.	ref.
Very good	82.15	24.74	1,914	1,734	1,217
	(180.7)	(22.17)	(18,899)	(22,173)	(2,177)
Good	-310.3	27.00	26,001	33,532	2,081
	(213.5)	(26.30)	(18,255)	(21,303)	(2,157)
Fair	-646.4*	51.66	22,536	32,341	3,678
	(348.8)	(36.58)	(18,166)	(21,488)	(2,364)
Poor	-1,437**	64.10	10,119	15,207	3,717
	(706.5)	(78.94)	(20,005)	(23,638)	(2,541)
No IADL limitations at *t*	ref.	ref.	ref.	ref.	ref.
1 limitation	-794.3**	-2.258	8,906	7,312	1,851
	(330.7)	(55.59)	(20,176)	(23,093)	(1,756)
2+ limitations	-1,367**	-46.38	7,818	15,636	1,981
	(579.0)	(95.87)	(22,843)	(28,627)	(1,842)
No ADL limitations at *t*	ref.	ref.	ref.	ref.	ref.
1 limitation	122.5	59.83	13,691	15,950	-239.7
	(330.6)	(63.53)	(10,732)	(12,362)	(1,781)
2+ limitations	688.3	27.78	1,839	1,826	1,137
	(518.4)	(77.11)	(12,950)	(14,906)	(2,205)
High blood pressure at *t*	-800.2	73.91***	-10,836	-18,563	417.3
	(924.2)	(25.47)	(18,786)	(22,674)	(2,558)
Diabetes at *t*	-1,069**	-33.65	-6,287	-9,201	-1,871
	(444.6)	(85.89)	(13,189)	(15,685)	(2,122)
Cancer at *t*	-1,956***	40.05	-3,950	-10,235	6,966*
	(541.5)	(46.68)	(20,847)	(24,556)	(3,643)
Lung disease at *t*	-429.9	75.73	-11,657	-24,412	2,650
	(582.0)	(66.27)	(27,777)	(34,504)	(3,852)
Heart disease at *t*	-1,575***	65.14	-11,022	-15,742	110.9
	(422.7)	(46.57)	(17,348)	(19,810)	(2,091)
Stroke at *t*	-750.4	-136.9	8,861	21,042	1,441
	(614.1)	(186.7)	(22,329)	(28,991)	(4,271)
Psychological problems at *t*	-488.5	-451.8	4,394	1,287	-2,951
	(785.4)	(339.4)	(17,181)	(18,689)	(3,506)
Arthritis at *t*	144.1	61.11**	-9,893	1,784	-189.5
	(419.3)	(27.45)	(16,853)	(18,777)	(2,316)
Health excellent at *t+1*	ref.	ref.	ref.	ref.	ref.
Very good	11.32	-48.44*	-27,590	-29,410	-1,375
	(224.4)	(28.43)	(20,322)	(24,067)	(2,131)
Good	409.7*	-35.74	-51,492**	-56,710**	-1,397

	(248.0)	(34.35)	(20,707)	(25,490)	(2,189)
Fair	881.4**	-33.87	-64,289***	-66,895***	-3,794*
	(346.7)	(43.47)	(21,048)	(25,628)	(2,227)
Poor	1,027*	-84.93	-52,686**	-54,304*	-4,978*
	(575.8)	(72.61)	(24,077)	(29,697)	(2,567)
No IADL limitations at *t+1*	ref.	ref.	ref.	ref.	ref.
1 limitation	469.6	20.67	-14,857	-15,170	1,484
	(367.4)	(59.15)	(14,728)	(17,287)	(1,584)
2+ limitations	1,490**	101.0	-10,258	-15,148	-1,555
	(615.2)	(107.6)	(19,394)	(23,854)	(1,839)
No ADL limitations at *t+1*	ref.	ref.	ref.	ref.	ref.
1 limitation	326.5	-50.66	-14,341	-18,217	-2,184
	(293.7)	(44.35)	(12,012)	(14,677)	(1,694)
2+ limitations	12.99	-112.1	-1,101	1,841	-430.4
	(426.6)	(75.13)	(15,300)	(19,338)	(1,924)
High blood pressure at *t+1*	893.5	-51.23**	-4,286	1,907	-980.9
	(921.7)	(25.66)	(18,672)	(22,112)	(2,545)
Diabetes at *t+1*	1,183***	14.25	-4,547	1,140	2,979
	(417.0)	(84.04)	(12,670)	(15,058)	(1,955)
Cancer at *t+1*	1,909***	-19.70	9,048	17,298	-4,196
	(467.4)	(41.06)	(19,531)	(23,123)	(3,497)
Lung disease at *t+1*	544.6	-65.34*	8,239	26,944	-2,088
	(543.2)	(35.54)	(26,703)	(32,943)	(3,702)
Heart disease at *t+1*	1,588***	-16.10	11,499	16,432	-1,095
	(360.3)	(38.69)	(15,987)	(18,361)	(1,967)
Stroke at *t+1*	849.6	139.7	-7,000	-15,870	-3,071
	(552.9)	(175.8)	(20,568)	(26,996)	(3,480)
Psychological problems at *t+1*	754.4	406.6	-2,082	2,308	2,182
	(724.1)	(335.6)	(14,453)	(15,272)	(3,078)
Arthritis at *t+1*	-98.42	-42.72*	6,996	-1,757	-615.8
	(451.1)	(25.72)	(17,980)	(20,521)	(2,229)
Spouse health excellent at *t*	ref.	ref.	ref.	ref.	ref.
Very good	86.24	-32.19	-7,732	-7,968	3,981
	(143.7)	(36.42)	(14,856)	(18,464)	(2,788)
Good	-17.23	-20.07	-5,099	-786.8	-11.93
	(159.9)	(43.27)	(13,681)	(16,223)	(2,386)
Fair	-224.7	-76.73	-8,088	-2,691	-3,315
	(303.6)	(56.45)	(14,147)	(17,028)	(2,401)
Poor	-442.5	-220.0**	-17,103	-12,674	5,007**
	(556.0)	(98.10)	(15,854)	(18,891)	(2,494)
Spouse no IADL limitations at *t*	ref.	ref.	ref.	ref.	ref.
1 limitation	-345.5	12.45	6,668	8,120	-2,835
	(326.7)	(41.44)	(18,181)	(19,967)	(2,473)
2+ limitations	-128.6	390.7**	5,023	6,172	5,830**
	(518.9)	(159.1)	(16,842)	(18,135)	(2,489)

Spouse no ADL limitations at *t*	ref.	ref.	ref.	ref.	ref.
1 limitation	210.7	46.98	7,384	9,515	-8,182***
	(298.3)	(66.73)	(9,451)	(10,416)	(2,466)
2+ limitations	404.9	-75.46	-4,014	373.2	2,997
	(444.9)	(109.7)	(11,605)	(12,722)	(2,339)
Spouse high blood pressure at *t*	-60.24	-6.343	-17,481**	-20,317**	3,728
	(108.2)	(22.18)	(7,226)	(9,450)	(2,470)
Spouse diabetes at *t*	68.54	3.609	-13,213***	-11,258**	4,371
	(138.0)	(30.09)	(4,750)	(5,320)	(2,671)
Spouse cancer at *t*	-636.1***	-36.81	5,884	6,578	391.1
	(232.6)	(31.53)	(7,014)	(7,877)	(3,487)
Spouse lung disease at *t*	12.22	18.62	-6,483	-3,904	1,931
	(202.5)	(53.42)	(7,761)	(10,328)	(1,895)
Spouse heart disease at *t*	-37.33	17.57	-3,039	-2,478	1,634
	(198.9)	(32.71)	(6,189)	(7,223)	(1,695)
Spouse stroke at *t*	89.32	-23.92	-746.2	691.0	818.8
	(204.1)	(63.79)	(9,140)	(10,135)	(1,864)
Spouse psychological problems at *t*	-24.30	58.63	-3,855	-2,762	975.6
	(282.2)	(49.26)	(7,447)	(8,813)	(1,921)
Spouse arthritis at *t*	-193.0*	-35.54	-11,258*	-9,172	547.6
	(105.0)	(23.80)	(5,902)	(7,091)	(1,672)
Wave 1993/1994	ref.	ref.	ref.	ref.	ref.
Wave 1995/1996	-5,601***	-15.81	-15,355	-27,358	2,079
	(363.4)	(34.14)	(12,830)	(17,046)	(1,753)
Wave 1998	-4,525***	35.93	-23,382	-47,014*	592.0
	(373.6)	(36.49)	(19,647)	(28,234)	(1,410)
Wave 2000	-2,229***	72.19	-61,424***	-101,776***	1,390
	(422.4)	(46.04)	(15,527)	(19,965)	(1,734)
Wave 2002	-3,773***	88.21*	30,040*	-8,120	-1,075*
	(499.8)	(47.75)	(16,952)	(21,112)	(634.7)
Wave 2004	-7,144***	89.70	40,393**	25,445	541.1
	(476.0)	(64.53)	(17,575)	(22,075)	(689.4)
Wave 2006	-6,160***	39.28	-65,198***	-98,818***	1,875*
	(338.3)	(50.07)	(19,024)	(23,967)	(1,103)
Wave 2008	-3,690***	93.95*	-115,530***	-115,960***	1,536
	(342.3)	(55.21)	(17,156)	(21,159)	(1,761)
Wave 2010	-6,201***	47.70	-48,625***	-68,896***	594.3
	(349.6)	(45.02)	(14,013)	(17,543)	(785.8)
Wave 2012	-6,221***	4.341	23,770	-3,379	-520.4
	(332.1)	(41.54)	(14,484)	(17,764)	(1,146)
Wave 2014	-4,813***	19.46	19,883	-4,912	-1,285
	(321.6)	(37.33)	(15,785)	(18,926)	(1,177)
Wave 2016	-5,746***	15.28	79,756***	39,743	-1,374

	(340.0)	(47.78)	(22,451)	(24,811)	(845.6)
Constant	4,828***	-98.95*	143,978***	133,166***	-3,315
	(392.6)	(53.98)	(23,540)	(29,992)	(3,481)
Observations	67,728	70,150	70,150	70,150	70,150
R-squared	0.012	0.175	0.004	0.003	0.004

* Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at *t* and at *t+1*, and the spouse is alive at *t+1*.

Table A4: Full output of the linear regression models of being medically needy at the next wave (t+1) on spousal nursing home use and detailed control variables, the spouse is alive next wave

	No nursing home use between *t-1* and *t*		Had nursing home use between *t-1 and* t	
	[1] Not medically needy at *t*	**[2] Medically needy at *t***	**[3] Not medically needy at *t***	**[4] Medically needy at *t***
High Soc. Sec. income at t+1	-0.0462***	-0.209***	-0.0599**	-0.0623
	(0.00274)	(0.0108)	(0.0284)	(0.0858)
Spouse spent 0 days in NH	ref.	ref.	ref.	ref.
Short NH stay only	0.0381*	0.0319	0.109	-0.00419
	(0.0216)	(0.0283)	(0.0689)	(0.102)
100+ day NH stay	0.143***	-0.0213	0.114	-0.00923
	(0.0508)	(0.0441)	(0.0706)	(0.0721)
Interactions of high Soc. Sec income with …	ref.	ref.	ref.	ref.
… short NH stay only	-0.0235	-0.0227	-0.107	-0.421**
	(0.0244)	(0.0623)	(0.0744)	(0.188)
… 100+ day NH stay	-0.0657	0.0863	-0.0721	-0.0162
	(0.0611)	(0.0984)	(0.0754)	(0.134)
Male	-0.00521*	-0.0151	0.0301	0.0304
	(0.00278)	(0.0102)	(0.0257)	(0.0680)
Non-Hispanic White	ref.	ref.	ref.	ref.
Non-Hispanic Black	0.0491***	0.0415***	0.0393	0.0468
	(0.00684)	(0.0126)	(0.0534)	(0.0758)
Non-Hispanic other	0.0154*	0.0670***	-0.0375	0.100
	(0.00936)	(0.0248)	(0.135)	(0.157)
Hispanic	0.100***	0.128***	-0.00916	0.187**
	(0.00799)	(0.0120)	(0.0601)	(0.0863)
Age 60-64	ref.	ref.	ref.	ref.
65-69	0.0131***	0.0562***	-0.0357	0.115
	(0.00291)	(0.0110)	(0.0438)	(0.108)

70-74	0.0202***	0.0749***	0.0448	0.191*
	(0.00337)	(0.0117)	(0.0459)	(0.104)
75-79	0.0260***	0.0953***	0.0248	0.129
	(0.00413)	(0.0129)	(0.0453)	(0.114)
80+	0.0420***	0.112***	-0.0248	0.241**
	(0.00542)	(0.0148)	(0.0436)	(0.102)
Lowest assets quintile at t	ref.	ref.	ref.	ref.
2nd quintile	-0.0340***	-0.111***	0.0180	0.0237
	(0.00632)	(0.00972)	(0.0614)	(0.0694)
3rd quintile	-0.0852***	-0.209***	-0.101*	-0.153*
	(0.00595)	(0.0156)	(0.0577)	(0.0845)
4th quintile	-0.135***	-0.295***	-0.158***	-0.278*
	(0.00563)	(0.0309)	(0.0556)	(0.144)
Highest quintile	-0.145***	-0.586***	-0.189***	-0.582**
	(0.00553)	(0.0436)	(0.0545)	(0.234)
Works full time	ref.	ref.	ref.	ref.
Works part-time	0.0217***	0.0881***	-0.0686	0.342
	(0.00564)	(0.0285)	(0.0795)	(0.262)
Unemployed	0.0660***	0.129***	0.423**	-0.165
	(0.0146)	(0.0383)	(0.209)	(0.369)
Partly retired	0.0215***	0.0924***	0.0107	0.218
	(0.00382)	(0.0234)	(0.0551)	(0.219)
Retired	0.0366***	0.182***	-0.00782	0.174
	(0.00322)	(0.0178)	(0.0452)	(0.173)
Disabled	0.0447**	0.230***	0.0541	0.327
	(0.0196)	(0.0239)	(0.152)	(0.215)
Not in labor force, other	0.0482***	0.208***	0.0432	0.287
	(0.00583)	(0.0211)	(0.0629)	(0.188)
Health excellent at t	ref.	ref.	ref.	ref.
Very good	0.000671	0.000730	0.0275	-0.166
	(0.00329)	(0.0180)	(0.0388)	(0.125)
Good	0.00462	-0.00126	0.0122	-0.210*
	(0.00397)	(0.0177)	(0.0403)	(0.120)
Fair	0.0198***	0.0313*	0.0813	-0.216*

	(0.00561)	(0.0183)	(0.0498)	(0.123)
Poor	0.0214**	0.0365*	0.0682	-0.270*
	(0.00976)	(0.0209)	(0.0952)	(0.151)
No IADL limitations at t	ref.	ref.	ref.	ref.
1 limitation	0.000403	0.00200	-0.00934	0.0344
	(0.00683)	(0.0133)	(0.0477)	(0.0746)
2+ limitations	0.00434	0.0177	0.0370	-0.00812
	(0.0115)	(0.0153)	(0.0894)	(0.111)
No ADL limitations at t	ref.	ref.	ref.	ref.
1 limitation	0.00443	0.00299	-0.0649	0.0415
	(0.00602)	(0.0126)	(0.0405)	(0.0895)
2+ limitations	0.00465	-0.0107	0.0432	0.0389
	(0.00997)	(0.0143)	(0.0974)	(0.0847)
High blood pressure at t	-0.0138**	-0.00531	-0.0801	-0.0699
	(0.00596)	(0.0191)	(0.0667)	(0.102)
Diabetes at t	-0.0139*	-0.0417*	0.0895*	0.247
	(0.00828)	(0.0222)	(0.0471)	(0.175)
Cancer at t	-0.00970	-0.0609**	-0.00971	0.0758
	(0.00723)	(0.0254)	(0.0812)	(0.166)
Lung disease at t	-0.00266	0.0332	-0.171	-0.249*
	(0.0111)	(0.0288)	(0.134)	(0.135)
Heart disease at t	-0.0168**	-0.0236	-0.0550	-0.120
	(0.00687)	(0.0189)	(0.0583)	(0.161)
Stroke at t	-0.00973	-0.000752	0.0795	0.309
	(0.0115)	(0.0295)	(0.0771)	(0.228)
Psychological problems at t	-0.00942	-0.0118	-0.109	-0.00626
	(0.0121)	(0.0248)	(0.0946)	(0.124)
Arthritis at t	-0.00201	-0.0170	0.0508	-0.114
	(0.00530)	(0.0163)	(0.0552)	(0.171)
Health excellent at t+1	ref.	ref.	ref.	ref.
Very good	0.00253	-0.0228	-0.0260	0.368**
	(0.00338)	(0.0199)	(0.0475)	(0.149)
Good	0.00417	-0.00956	0.0189	0.300**
	(0.00400)	(0.0196)	(0.0518)	(0.152)

Fair	0.0196***	0.0185	0.0981*	0.427***
	(0.00547)	(0.0200)	(0.0577)	(0.151)
Poor	0.0357***	0.0288	0.0524	0.401**
	(0.00902)	(0.0220)	(0.0831)	(0.158)
No IADL limitations at t+1	ref.	ref.	ref.	ref.
1 limitation	0.0106*	0.0287**	-0.0217	0.0482
	(0.00617)	(0.0125)	(0.0454)	(0.0719)
2+ limitations	0.0302***	0.0217	0.0436	-0.00969
	(0.00958)	(0.0144)	(0.0640)	(0.107)
No ADL limitations at t+1	ref.	ref.	ref.	ref.
1 limitation	0.00666	0.0127	-0.0480	-0.0301
	(0.00552)	(0.0123)	(0.0427)	(0.0868)
2+ limitations	0.0114	-0.0139	-0.0431	-0.0163
	(0.00889)	(0.0144)	(0.0719)	(0.0991)
High blood pressure at t+1	0.0113*	0.00840	0.137**	-0.0180
	(0.00595)	(0.0193)	(0.0648)	(0.104)
Diabetes at t+1	0.0108	0.0342	-0.108**	-0.255
	(0.00786)	(0.0217)	(0.0431)	(0.172)
Cancer at t+1	-0.000664	0.0255	-0.0534	-0.0916
	(0.00686)	(0.0228)	(0.0786)	(0.150)
Lung disease at t+1	-0.00927	-0.0152	0.0675	0.329***
	(0.0101)	(0.0270)	(0.131)	(0.117)
Heart disease at t+1	0.0117*	0.0243	0.00609	0.175
	(0.00660)	(0.0185)	(0.0558)	(0.162)
Stroke at t+1	0.00412	0.0157	-0.0252	-0.248
	(0.0103)	(0.0277)	(0.0627)	(0.216)
Psychological problems at t+1	0.00103	0.00695	0.0917	0.242**
	(0.0116)	(0.0235)	(0.0888)	(0.120)
Arthritis at t+1	-0.00251	0.00990	-0.0918*	0.0975
	(0.00536)	(0.0167)	(0.0537)	(0.179)
Spouse health excellent at t	ref.	ref.	ref.	ref.
Very good	0.00182	0.00721	0.0204	-0.172
	(0.00297)	(0.0191)	(0.0607)	(0.228)
Good	0.0117***	0.0208	-0.000623	-0.224

	(0.00346)	(0.0185)	(0.0572)	(0.206)
Fair	0.0399***	0.0702***	0.0287	-0.242
	(0.00504)	(0.0191)	(0.0601)	(0.202)
Poor	0.0471***	0.0920***	-0.0116	-0.269
	(0.00892)	(0.0212)	(0.0624)	(0.194)
Spouse no IADL limitations at t	ref.	ref.	ref.	ref.
1 limitation	0.0130*	0.0194	-0.0212	0.108
	(0.00665)	(0.0132)	(0.0299)	(0.106)
2+ limitations	0.0236**	0.0323**	0.0918**	0.161*
	(0.0102)	(0.0150)	(0.0397)	(0.0832)
Spouse no ADL limitations at t	ref.	ref.	ref.	ref.
1 limitation	0.0110*	0.0123	-0.0992***	-0.197**
	(0.00586)	(0.0124)	(0.0311)	(0.0992)
2+ limitations	0.0227**	-0.000780	-0.0792**	-0.0835
	(0.00933)	(0.0138)	(0.0374)	(0.0845)
Spouse high blood pressure at t	-0.000849	0.0120	-0.00266	-0.0377
	(0.00249)	(0.00922)	(0.0231)	(0.0659)
Spouse diabetes at t	-2.76e-05	-8.21e-05	0.00149	0.0159
	(0.00380)	(0.00987)	(0.0267)	(0.0675)
Spouse cancer at t	-0.0106***	-0.0316**	-0.0158	-0.103
	(0.00327)	(0.0142)	(0.0253)	(0.0820)
Spouse lung disease at t	-0.00379	0.0306**	0.0582	0.0353
	(0.00548)	(0.0140)	(0.0365)	(0.0830)
Spouse heart disease at t	-0.00455	0.00866	0.00515	0.000400
	(0.00320)	(0.0102)	(0.0234)	(0.0651)
Spouse stroke at t	-0.00214	0.0259*	0.0455	0.0655
	(0.00584)	(0.0144)	(0.0278)	(0.0626)
Spouse psychological problems at t	-0.00163	-0.00430	0.0110	-0.0771
	(0.00457)	(0.0123)	(0.0301)	(0.0730)
Spouse arthritis at t	-0.000761	0.00239	-0.00994	0.0257
	(0.00251)	(0.00914)	(0.0263)	(0.0683)
Wave 1993/1994	ref.	ref.	ref.	ref.
Wave 1995/1996	-0.00653	0.0158	-	-

	(0.00685)	(0.0153)	-	-
Wave 1998	-0.0207***	-0.00791	0.0586	-0.0563
	(0.00626)	(0.0151)	(0.0596)	(0.123)
Wave 2000	-0.00460	0.0286*	0.133**	-0.104
	(0.00639)	(0.0161)	(0.0644)	(0.153)
Wave 2002	-0.0179***	-0.0361**	0.0788	0.0911
	(0.00623)	(0.0165)	(0.0605)	(0.135)
Wave 2004	-0.0272***	-0.0246	0.0965	-0.00147
	(0.00623)	(0.0174)	(0.0600)	(0.137)
Wave 2006	-0.0297***	-0.00423	0.0831	-0.0701
	(0.00619)	(0.0180)	(0.0537)	(0.140)
Wave 2008	-0.0152**	0.00268	0.0932*	-0.0623
	(0.00647)	(0.0196)	(0.0554)	(0.156)
Wave 2010	-0.0310***	-0.0665***	0.0358	-0.000358
	(0.00638)	(0.0196)	(0.0511)	(0.144)
Wave 2012	-0.0362***	-0.0718***	0.0923*	-0.232
	(0.00641)	(0.0201)	(0.0550)	(0.164)
Wave 2014	-0.0444***	-0.0808***	0.0774	-0.263
	(0.00640)	(0.0207)	(0.0563)	(0.198)
Wave 2016	-0.0490***	-0.115***	0.133**	-0.0455
	(0.00647)	(0.0221)	(0.0599)	(0.181)
Constant	0.152***	0.495***	0.133	0.530
	(0.00830)	(0.0340)	(0.105)	(0.330)
Observations	56,777	13,353	775	280
R-squared	0.100	0.183	0.252	0.383

* Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at *t* and at *t+1*, and the spouse is alive at *t+1*.

Table A5. Full output of the linear regression models of being medically needy at t+1 on spousal nursing home use and detailed control variable when the spouse dies

	Not medically needy at t		Medically needy at t	
	[1] at t+1	[2] at t+2	[3] at t+1	[4] at t+2
High Soc. Sec. income at t+1	-0.0286*	0.00274	-0.146***	-0.147***
	(0.0152)	(0.0161)	(0.0372)	(0.0390)
Spouse spent 0 days in NH	ref.	ref.	ref.	ref.
Short NH stay only	0.0210	-0.0173	-0.000749	-0.0590
	(0.0266)	(0.0259)	(0.0533)	(0.0538)
100+ day NH stay	-0.0332	-0.0255	-0.130	-0.212***
	(0.0373)	(0.0359)	(0.0867)	(0.0815)
Interactions of high Soc. Sec income with …	ref.	ref.	ref.	ref.
… short NH stay only	-0.0331	-0.0347	-0.100	0.139
	(0.0319)	(0.0307)	(0.0836)	(0.0885)
… 100+ day NH stay	-0.00492	-0.0728	0.334**	0.353***
	(0.0474)	(0.0447)	(0.153)	(0.128)
Male	-0.0135	-0.0109	0.0128	-0.0461
	(0.0144)	(0.0153)	(0.0362)	(0.0372)
Non-Hispanic White	ref.	ref.	ref.	ref.
Non-Hispanic Black	0.0759**	0.138***	0.221***	0.182***
	(0.0338)	(0.0376)	(0.0416)	(0.0462)
Non-Hispanic other	0.0564	0.0121	0.179*	0.267***
	(0.0593)	(0.0612)	(0.108)	(0.0979)
Hispanic	0.275***	0.164***	0.324***	0.229***
	(0.0528)	(0.0519)	(0.0459)	(0.0507)
Age 60-64	ref.	ref.	ref.	ref.
65-69	-0.0171	0.0296	-0.0455	-0.0323
	(0.0247)	(0.0246)	(0.0520)	(0.0567)
70-74	-0.0363	-0.00634	-0.0993**	-0.0317
	(0.0247)	(0.0239)	(0.0497)	(0.0550)
75-79	-0.0571**	0.00281	-0.0663	-0.0580
	(0.0247)	(0.0243)	(0.0515)	(0.0563)
80+	-0.0460*	-0.0131	-0.192***	-0.172***
	(0.0253)	(0.0246)	(0.0549)	(0.0587)
Lowest assets quintile at t	ref.	ref.	ref.	ref.
2nd quintile	-0.0787**	-0.144***	-0.154***	-0.194***
	(0.0396)	(0.0411)	(0.0366)	(0.0382)
3rd quintile	-0.234***	-0.222***	-0.265***	-0.251***
	(0.0345)	(0.0376)	(0.0428)	(0.0458)
4th quintile	-0.276***	-0.257***	-0.364***	-0.296***
	(0.0335)	(0.0359)	(0.0703)	(0.0809)
Highest quintile	-0.308***	-0.289***	-0.524***	-0.399**
	(0.0326)	(0.0352)	(0.168)	(0.187)
Works full time	ref.	ref.	ref.	ref.
Works part-time	0.00584	-0.0200	0.101	0.0113

	(0.0414)	(0.0431)	(0.123)	(0.128)
Unemployed	0.252**	0.173	0.463***	0.114
	(0.110)	(0.114)	(0.148)	(0.236)
Partly retired	0.0865***	0.0109	0.102	0.0131
	(0.0308)	(0.0308)	(0.102)	(0.102)
Retired	0.0902***	0.0219	0.165**	0.0145
	(0.0248)	(0.0254)	(0.0826)	(0.0838)
Disabled	0.151	0.390***	0.251**	0.176
	(0.139)	(0.142)	(0.107)	(0.125)
Not in labor force, other	0.0702**	0.0401	0.233***	0.0479
	(0.0308)	(0.0334)	(0.0874)	(0.0893)
Health excellent at t	ref.	ref.	ref.	ref.
Very good	0.00176	-0.0434*	0.00645	0.0168
	(0.0215)	(0.0234)	(0.0681)	(0.0676)
Good	0.00491	-0.0281	-0.0128	-0.0439
	(0.0230)	(0.0250)	(0.0672)	(0.0674)
Fair	0.0339	-0.0336	0.00274	0.0566
	(0.0297)	(0.0304)	(0.0702)	(0.0733)
Poor	-0.0268	-0.0342	0.000123	-0.151*
	(0.0511)	(0.0491)	(0.0797)	(0.0839)
No IADL limitations at t	ref.	ref.	ref.	ref.
1 limitation	0.0297	0.0251	0.0885*	0.0545
	(0.0305)	(0.0360)	(0.0519)	(0.0576)
2+ limitations	-0.0679	0.0319	-0.0144	-0.0293
	(0.0547)	(0.0562)	(0.0719)	(0.0747)
No ADL limitations at t	ref.	ref.	ref.	ref.
1 limitation	-0.00865	-0.00969	0.0279	0.0408
	(0.0302)	(0.0311)	(0.0470)	(0.0548)
2+ limitations	0.0653	-0.0274	0.119*	0.0171
	(0.0503)	(0.0550)	(0.0713)	(0.0754)
High blood pressure at t	0.0123	-0.000393	-0.102	-0.110
	(0.0289)	(0.0334)	(0.0669)	(0.0818)
Diabetes at t	-0.0857	-0.0562	-0.0270	-0.0364
	(0.0527)	(0.0563)	(0.114)	(0.126)
Cancer at t	-0.0109	0.0343	-0.159	-0.206*
	(0.0437)	(0.0348)	(0.103)	(0.115)
Lung disease at t	-0.119	-0.0243	0.154	0.0630
	(0.0740)	(0.0655)	(0.0952)	(0.115)
Heart disease at t	0.0418	0.0285	-0.0152	0.0310
	(0.0321)	(0.0371)	(0.0784)	(0.0825)
Stroke at t	-0.0288	-0.203**	0.0254	0.0952
	(0.0752)	(0.0863)	(0.105)	(0.104)
Psychological problems at t	0.0556	0.0282	0.0280	0.0534
	(0.0432)	(0.0416)	(0.0832)	(0.101)
Arthritis at t	-0.0249	-0.00476	-0.0638	0.0359
	(0.0326)	(0.0312)	(0.0614)	(0.0692)
Health excellent at t+1	ref.	ref.	ref.	ref.
Very good	-0.0495**	-0.00102	0.0973	-0.145*
	(0.0232)	(0.0217)	(0.0761)	(0.0773)
Good	-0.0406	0.00976	0.0963	-0.0744
	(0.0257)	(0.0235)	(0.0757)	(0.0777)

Fair	-0.0241	0.0111	0.118	-0.0839
	(0.0302)	(0.0283)	(0.0786)	(0.0814)
Poor	0.0717	0.0334	0.169*	-0.0515
	(0.0501)	(0.0468)	(0.0901)	(0.0951)
No IADL limitations at t+1	ref.	ref.	ref.	ref.
1 limitation	0.0267	0.00689	-0.00752	-0.0300
	(0.0276)	(0.0294)	(0.0483)	(0.0526)
2+ limitations	-0.0180	-0.0417	0.00819	-0.0288
	(0.0392)	(0.0428)	(0.0618)	(0.0658)
No ADL limitations at t+1	ref.	ref.	ref.	ref.
1 limitation	-0.0111	-0.0127	0.0336	-0.000204
	(0.0269)	(0.0282)	(0.0548)	(0.0557)
2+ limitations	0.0872**	0.0659	-0.00652	-0.122*
	(0.0438)	(0.0509)	(0.0560)	(0.0650)
High blood pressure at t+1	-0.0326	0.00723	0.0542	0.0887
	(0.0286)	(0.0328)	(0.0703)	(0.0834)
Diabetes at t+1	0.0968*	0.0732	0.0373	0.0709
	(0.0503)	(0.0537)	(0.111)	(0.121)
Cancer at t+1	0.0268	-0.0132	0.156*	0.0866
	(0.0406)	(0.0304)	(0.0943)	(0.107)
Lung disease at t+1	0.122*	0.0525	-0.108	-0.0475
	(0.0706)	(0.0604)	(0.0818)	(0.105)
Heart disease at t+1	-0.0617**	-0.0268	0.0232	-0.0287
	(0.0308)	(0.0363)	(0.0755)	(0.0801)
Stroke at t+1	0.0473	0.196**	-0.0428	-0.0419
	(0.0709)	(0.0832)	(0.0938)	(0.0895)
Psychological problems at t+1	-0.00553	0.000255	0.00235	0.0469
	(0.0385)	(0.0360)	(0.0735)	(0.0920)
Arthritis at t+1	0.0349	-0.000824	0.0952	0.0267
	(0.0325)	(0.0317)	(0.0647)	(0.0717)
Spouse health excellent at t	ref.	ref.	ref.	ref.
Very good	-0.0406	-0.0229	-0.0524	-0.0462
	(0.0327)	(0.0290)	(0.108)	(0.115)
Good	-0.0566*	-0.0180	-0.0435	-0.0777
	(0.0311)	(0.0279)	(0.0987)	(0.108)
Fair	-0.0392	-0.0138	-0.0321	-0.0466
	(0.0318)	(0.0285)	(0.0966)	(0.107)
Poor	-0.0471	-0.0138	-0.0591	0.0172
	(0.0332)	(0.0302)	(0.0982)	(0.109)
Spouse no IADL limitations at t	ref.	ref.	ref.	ref.
1 limitation	0.0161	0.00190	0.0384	-0.0371
	(0.0211)	(0.0201)	(0.0432)	(0.0456)
2+ limitations	-0.00779	-0.00257	0.0189	-0.0736*
	(0.0203)	(0.0199)	(0.0396)	(0.0424)
Spouse no ADL limitations at t	ref.	ref.	ref.	ref.
1 limitation	-0.00804	0.0180	-0.0409	-0.0162
	(0.0191)	(0.0213)	(0.0437)	(0.0448)
2+ limitations	-0.0106	0.00940	0.00621	-0.0226
	(0.0200)	(0.0203)	(0.0405)	(0.0431)
Spouse high blood pressure at t	0.00473	0.00576	-0.0139	-0.00129
	(0.0132)	(0.0130)	(0.0329)	(0.0355)

Spouse diabetes at t	0.00260	0.0126	0.0398	0.00816
	(0.0152)	(0.0163)	(0.0326)	(0.0365)
Spouse cancer at t	-0.00645	-0.0190	-0.00851	-0.0174
	(0.0135)	(0.0135)	(0.0344)	(0.0372)
Spouse lung disease at t	0.0365**	-0.00659	0.0310	0.0446
	(0.0162)	(0.0157)	(0.0355)	(0.0381)
Spouse heart disease at t	9.32e-05	0.0168	0.00628	-0.0139
	(0.0129)	(0.0134)	(0.0324)	(0.0339)
Spouse stroke at t	0.0169	0.0321*	0.0607*	0.0407
	(0.0172)	(0.0193)	(0.0367)	(0.0397)
Spouse psychological problems at t	-0.0305	-0.0350*	-0.0224	-0.000151
	(0.0189)	(0.0201)	(0.0377)	(0.0407)
Spouse arthritis at t	-0.00694	-0.0138	0.0349	0.0587*
	(0.0132)	(0.0132)	(0.0324)	(0.0348)
Wave 1993/1994	ref.	ref.	ref.	ref.
Wave 1995/1996	0.0715	0.0619**	-0.114	0.0405
	(0.0470)	(0.0298)	(0.0923)	(0.112)
Wave 1998	0.0824*	0.103***	-0.180**	0.0251
	(0.0458)	(0.0324)	(0.0914)	(0.112)
Wave 2000	0.112**	0.123***	-0.190**	0.0368
	(0.0468)	(0.0328)	(0.0925)	(0.113)
Wave 2002	0.118**	0.114***	-0.120	-0.0161
	(0.0462)	(0.0330)	(0.0976)	(0.117)
Wave 2004	0.111**	0.105***	-0.126	0.0198
	(0.0469)	(0.0323)	(0.0977)	(0.120)
Wave 2006	0.0784*	0.0996***	-0.120	-0.0521
	(0.0461)	(0.0340)	(0.103)	(0.118)
Wave 2008	0.119***	0.106***	-0.0361	0.0901
	(0.0459)	(0.0325)	(0.102)	(0.120)
Wave 2010	0.0943**	0.114***	-0.0989	0.0532
	(0.0478)	(0.0353)	(0.103)	(0.126)
Wave 2012	0.123**	0.0850**	-0.00348	0.0176
	(0.0482)	(0.0348)	(0.107)	(0.126)
Wave 2014	0.0958**	0.0960***	-0.0223	-0.0158
	(0.0465)	(0.0342)	(0.110)	(0.127)
Wave 2016	0.144***	-	-0.180*	-
	(0.0504)	-	(0.109)	-
Constant	0.252***	0.218***	0.468***	0.668***
	(0.0677)	(0.0573)	(0.166)	(0.180)
Observations	2,163	2,033	952	914
R-squared	0.229	0.178	0.329	0.261

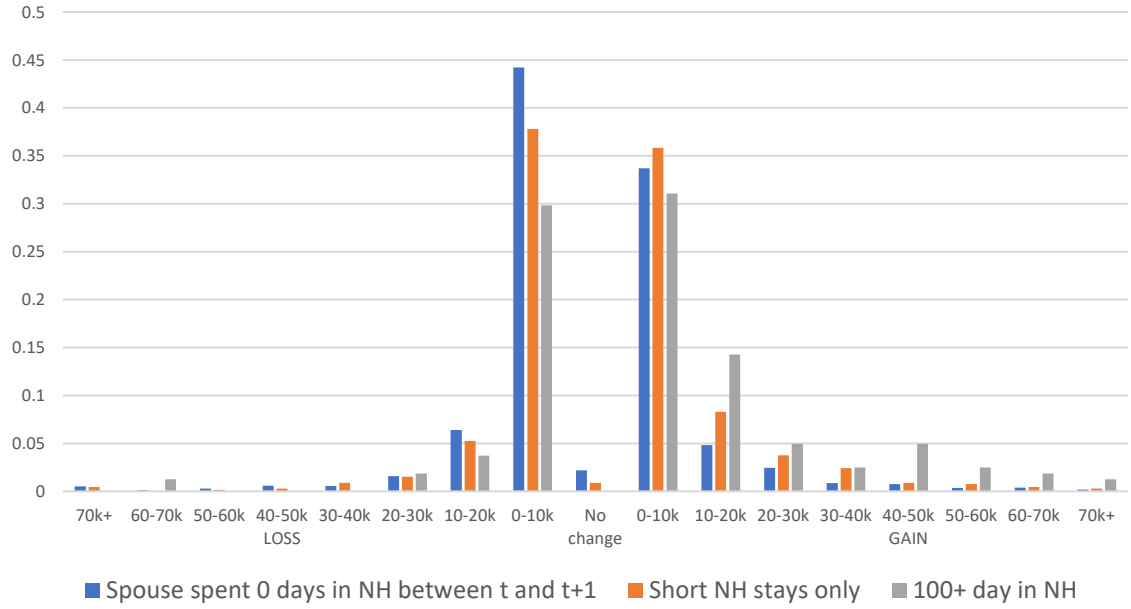
* Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at *t* and at *t+1*, and the spouse dies between *t* and *t+1*.

Table A6. Linear regression models of wave-to-wave changes in households' financial position on spousal nursing home use and a limited set of control variables.

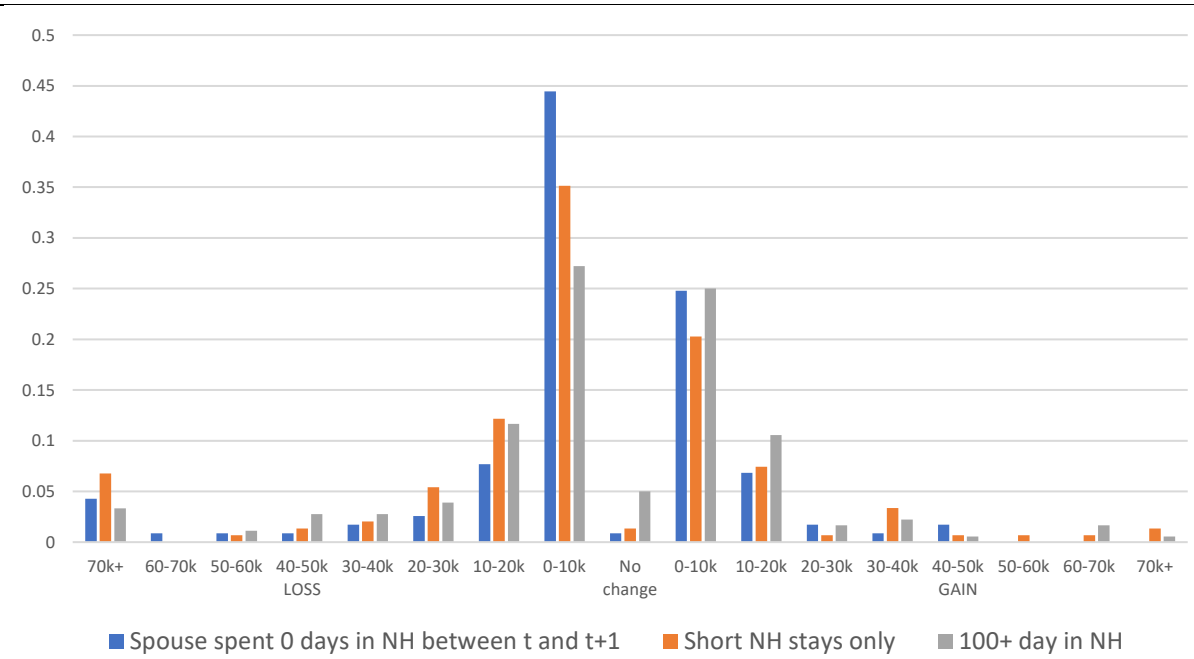
	OOP [1]	NH OOP [2]	Assets [3]	Non-exempt assets [4]	Non-exempt income [5]
Spouse spent 0 days in NH	ref.	ref.	ref.	ref.	ref.
Short NH stay only	3,449***	2,063***	-36,688***	-26,458	6,109
	(748.3)	(302.8)	(14,191)	(17,113)	(6,920)
100+ day NH stay	13,621**	18,519***	-86,265**	-73,817	-17,021**
	(6,470)	(2,028)	(39,580)	(46,605)	(8,641)
Wave 1993/1994	ref.	ref.	ref.	ref.	ref.
Wave 1995/1996	-5,520***	-29.99	-18,518	-29,244*	3,722
	(321.1)	(35.55)	(12,352)	(16,790)	(2,642)
Wave 1998	-4,616***	19.55	-24,154	-46,301*	-332.9
	(316.5)	(37.55)	(17,732)	(25,325)	(2,366)
Wave 2000	-2,181***	60.18	-65,685***	-106,223***	-4,119*
	(409.9)	(48.04)	(14,707)	(19,099)	(2,285)
Wave 2002	-3,770***	72.65	23,010	-15,216	3,765
	(507.7)	(49.18)	(15,900)	(19,938)	(2,348)
Wave 2004	-7,089***	79.57	30,699*	15,196	-3,758
	(411.6)	(60.80)	(16,518)	(20,777)	(2,366)
Wave 2006	-6,114***	33.64	-79,477***	-113,693***	4,292*
	(286.6)	(48.22)	(17,700)	(22,216)	(2,328)
Wave 2008	-3,601***	80.60	-129,384***	-129,940***	-9,861***
	(289.8)	(56.92)	(15,382)	(18,906)	(2,352)
Wave 2010	-6,135***	38.21	-67,057***	-87,216***	1,392
	(290.5)	(43.23)	(12,497)	(15,673)	(2,179)
Wave 2012	-6,116***	-4.467	2,949	-23,221	2,908
	(272.6)	(41.73)	(12,998)	(15,864)	(2,298)
Wave 2014	-4,735***	15.69	-21.23	-25,033	3,048
	(268.7)	(37.74)	(15,079)	(17,675)	(2,523)
Wave 2016	-5,733***	25.32	54,624***	13,923	-1,304
	(278.3)	(48.60)	(20,321)	(22,154)	(3,326)
Constant	5,258***	-34.46	65,884***	74,756***	-3,372*
	(235.1)	(31.75)	(8,766)	(12,163)	(1,840)
Observations	69,660	72,095	72,095	72,095	72,095
R-squared	0.010	0.177	0.003	0.002	0.001

* Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at *t* and at *t+1*, and the spouse is alive at *t+1*.

Figure A1: Histograms of wave-to-wave changes in household out-of-pocket medical expenditures by spousal nursing home use, spouse dead at t+1



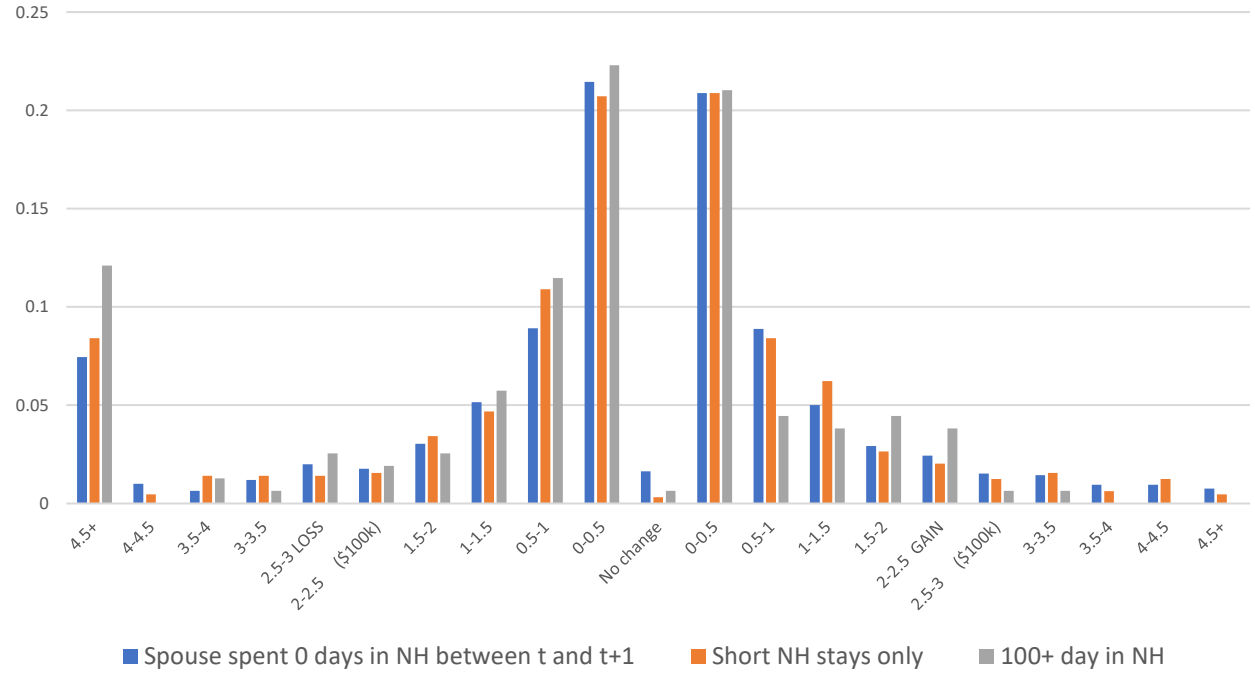
Panel A: Spouse had no nursing home use between *t-1* and *t*



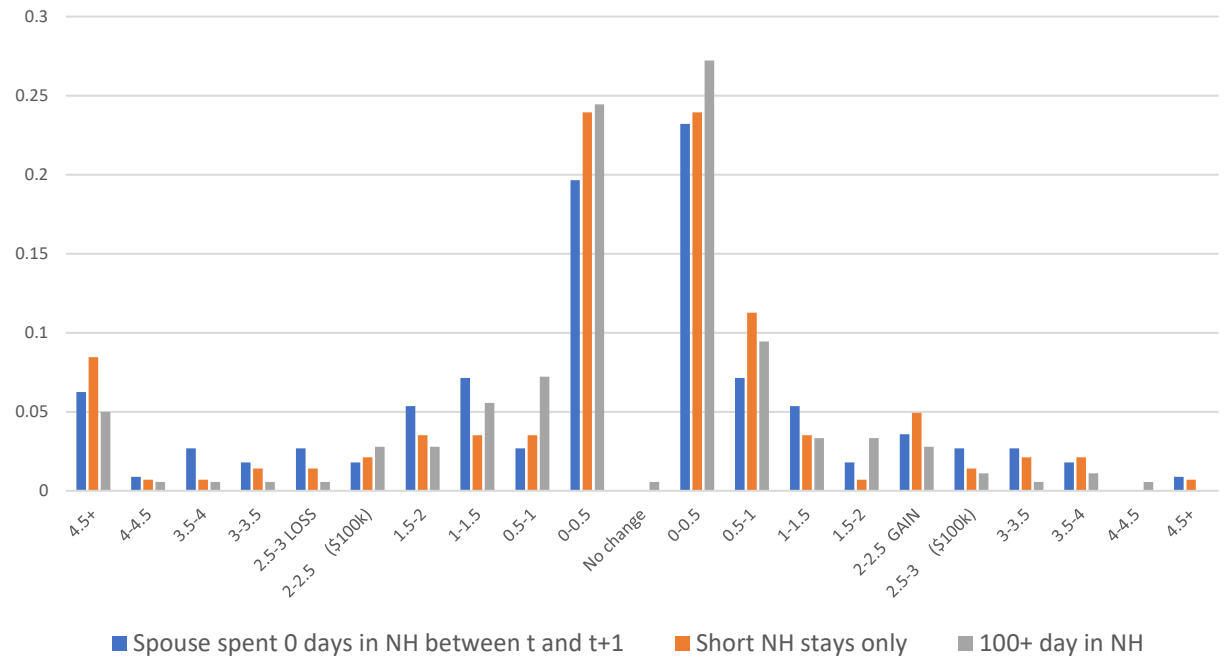
Panel B: Spouse had prior nursing home use between *t-1* and *t*

* Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at *t* and at *t+1*, and the spouse is dead at *t+1*. "NH" stands for "Nursing home."

Figure A2: Histograms of wave-to-wave changes in household total financial assets by spousal nursing home use, spouse dead at t+1



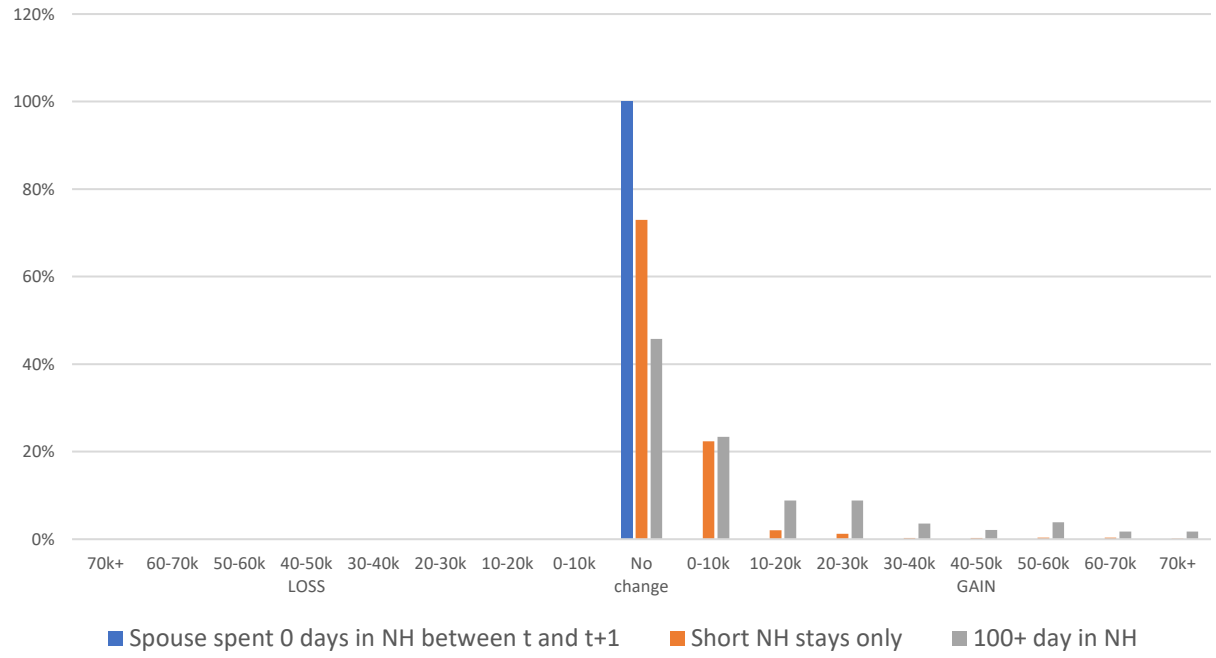
Panel A: Spouse had no nursing home use between *t-1* and *t*



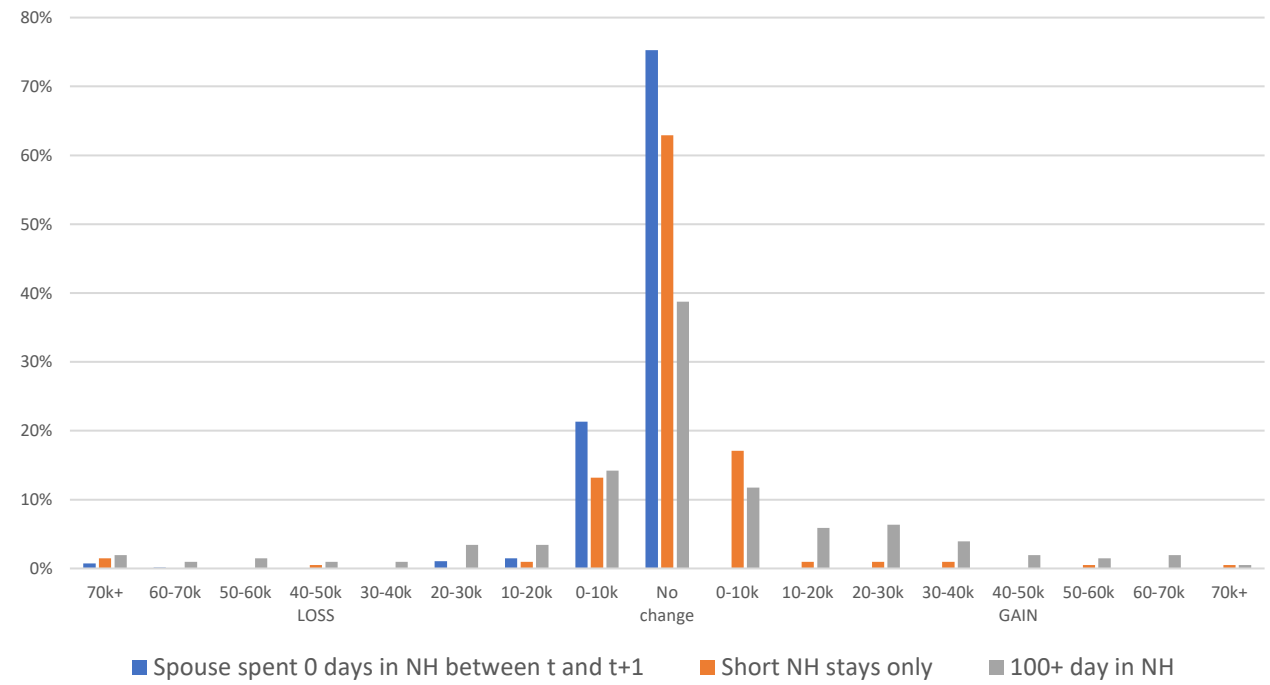
Panel B: Spouse had prior nursing home use between *t-1* and *t*

* Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at *t* and at *t+1*, and the spouse is dead at *t+1*. "NH" stands for "Nursing home."

Figure A3: Histograms of wave-to-wave changes in household out-of-pocket expenditures on nursing homes by spousal nursing home use, spouse alive at t+1



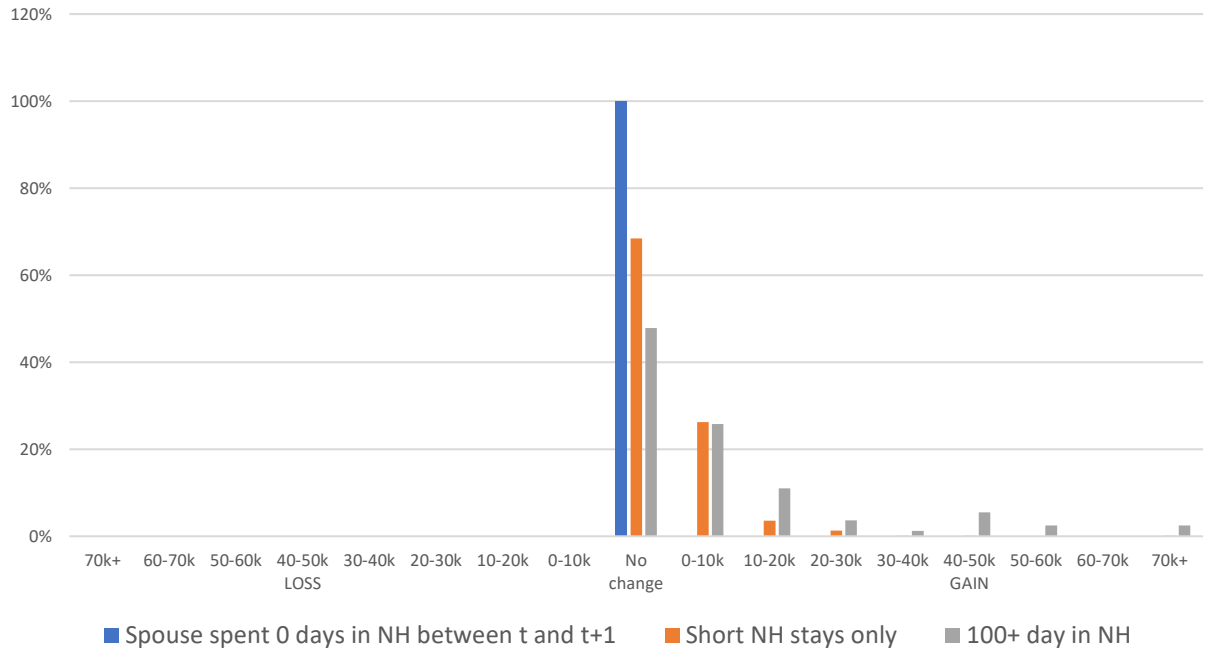
Panel A: Spouse had no nursing home use between *t-1* and *t*



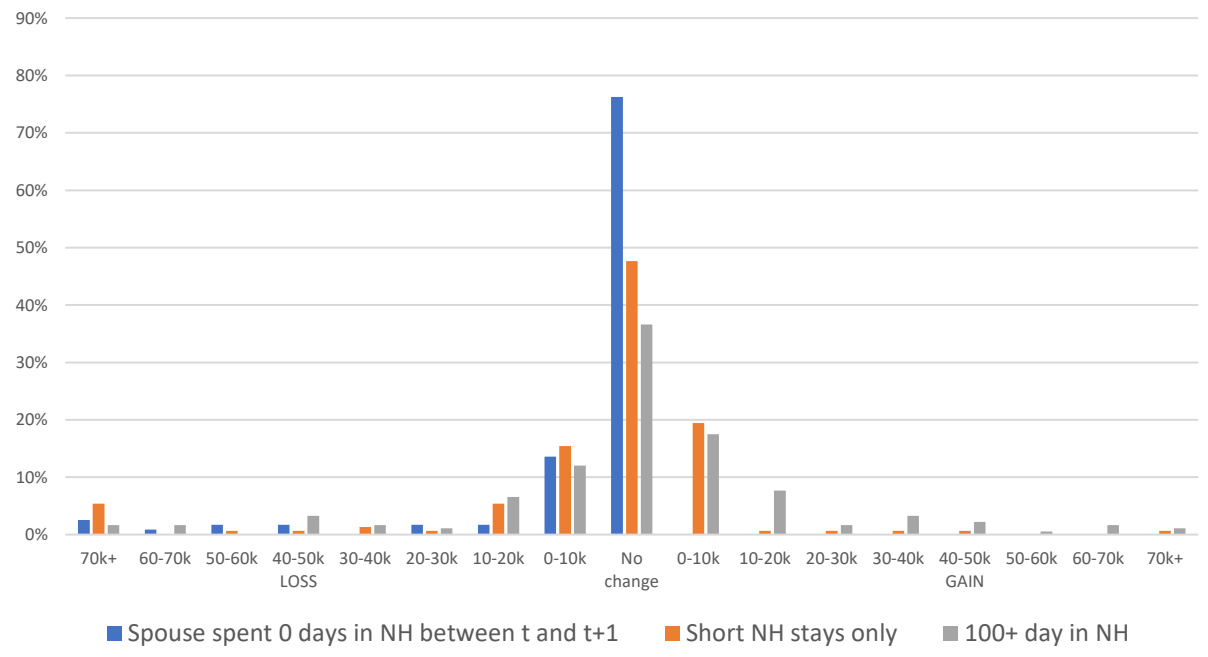
Panel B: Spouse had prior nursing home use between *t-1* and *t*

* Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at t and at t+1, and the spouse is alive at t+1. “NH” stands for “Nursing home.”

Figure A4: Histograms of wave-to-wave changes in household out-of-pocket expenditures on nursing homes by spousal nursing home use, spouse dead at t+1



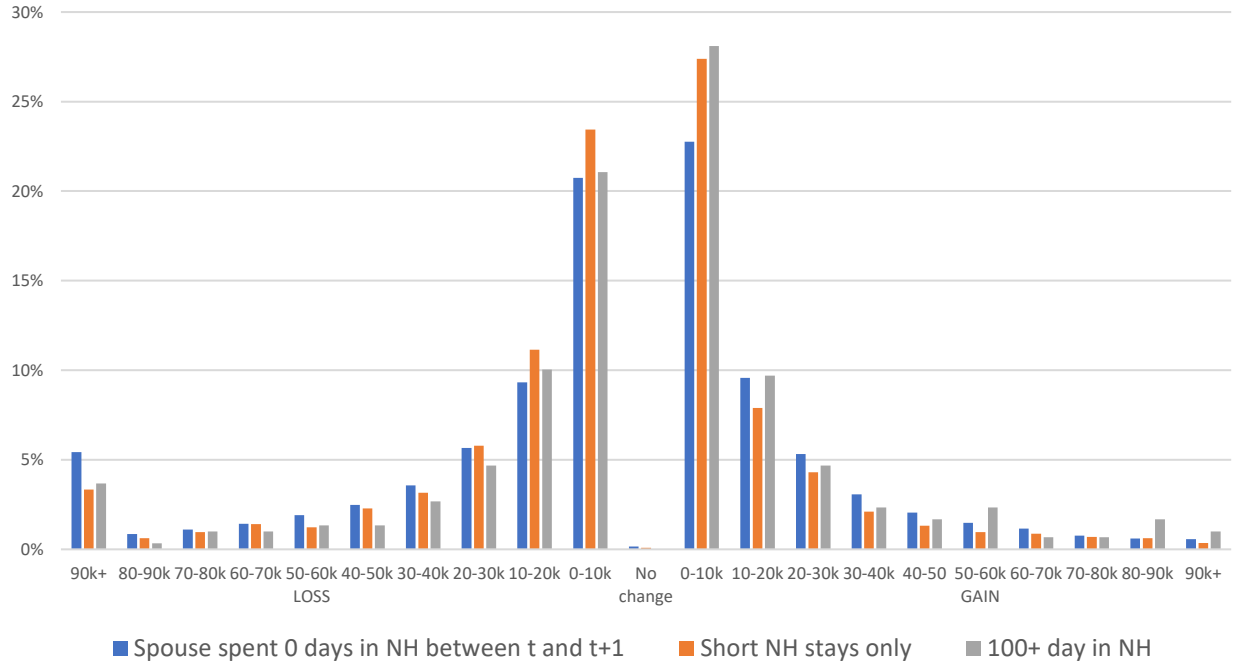
Panel A: Spouse had no nursing home use between *t-1* and *t*



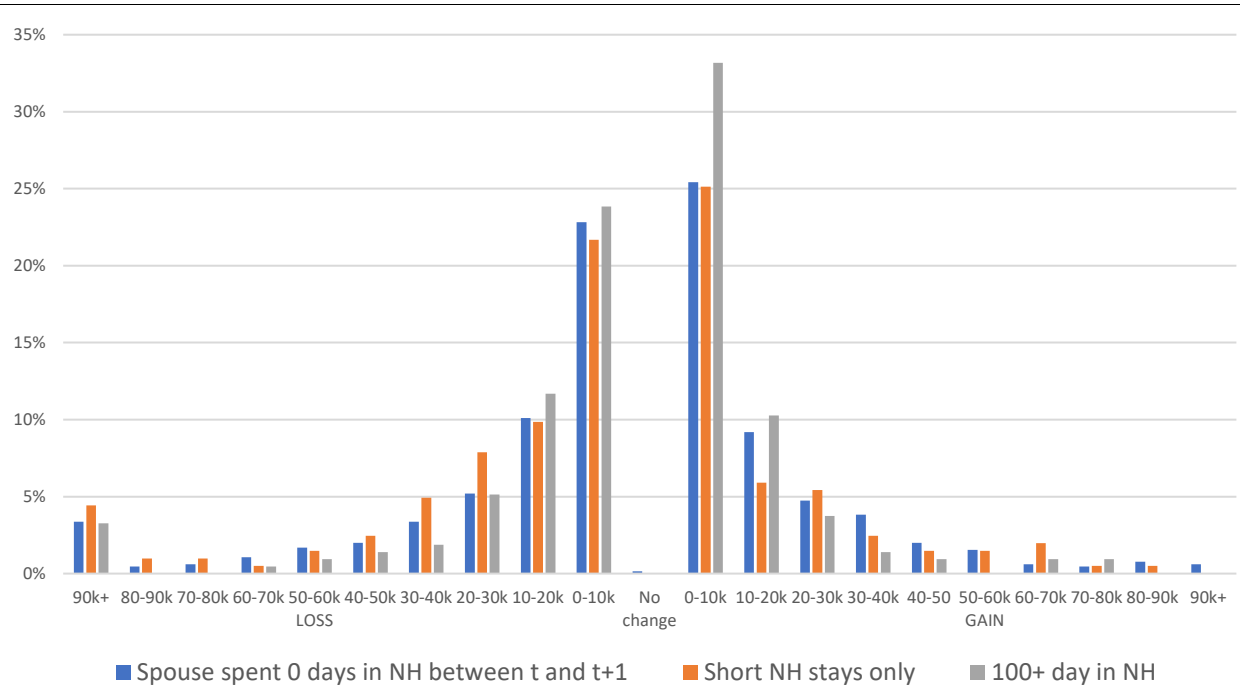
Panel B: Spouse had prior nursing home use between *t-1* and *t*

* Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at t and at t+1, and the spouse is alive at t+1. “NH” stands for “Nursing home.”

Figure A5: Histograms of wave-to-wave changes in household income by spousal nursing home use, spouse alive at t+1



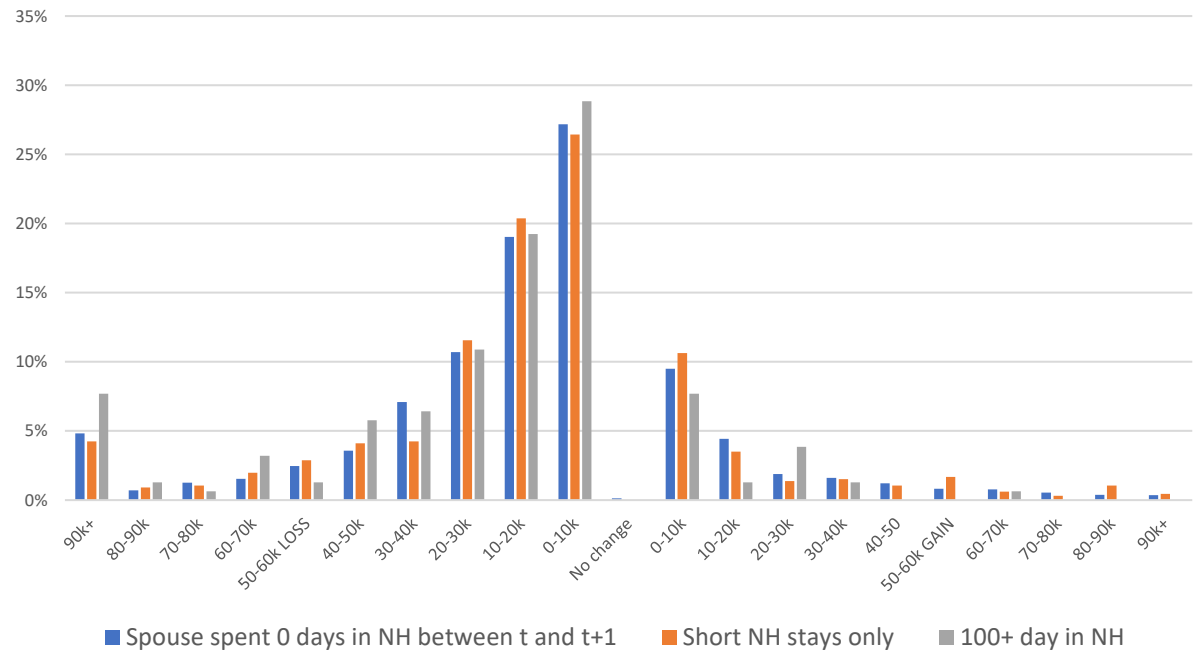
Panel A: Spouse had no nursing home use between *t-1* and *t*



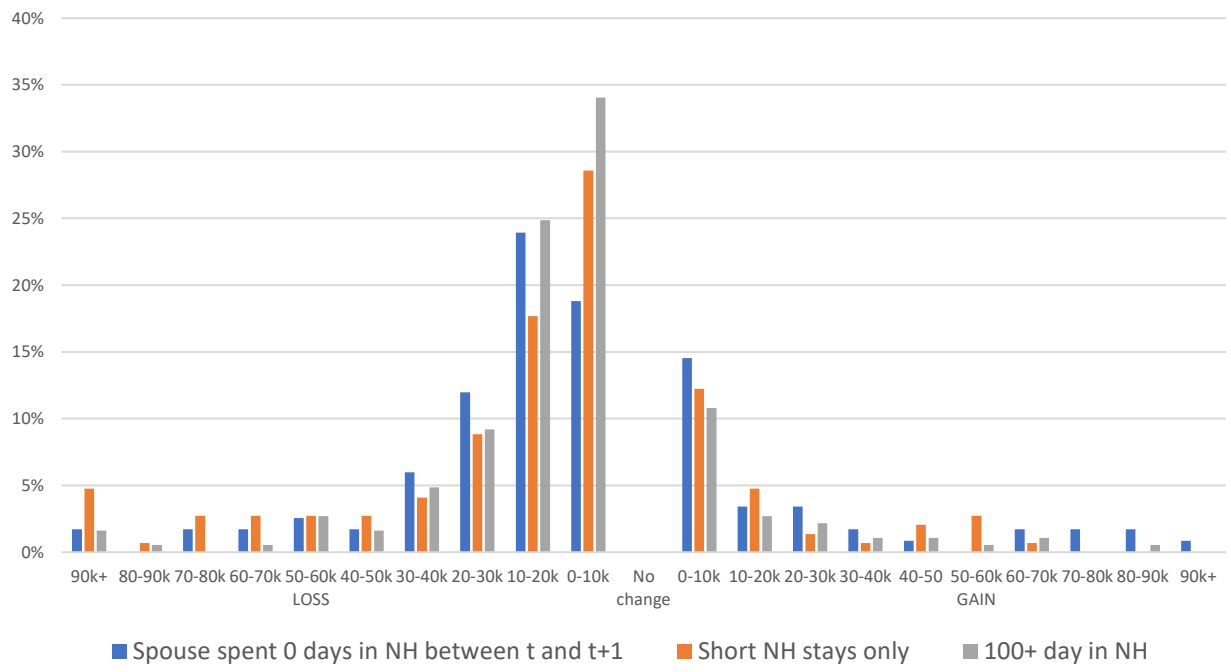
Panel B: Spouse had prior nursing home use between *t-1* and *t*

* Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at t and at t+1, and the spouse is alive at t+1. “NH” stands for “Nursing home.”

Figure A6: Histograms of wave-to-wave changes in household income by spousal nursing home use, spouse dead at t+1



Panel A: Spouse had no nursing home use between *t-1* and *t*



Panel B: Spouse had prior nursing home use between *t-1* and *t*

* Sample: HRS 1992 to 2018, age 60 and older, the respondent lives in the community both at t and at t+1, and the spouse is alive at t+1. “NH” stands for “Nursing home.”