HOW PORTFOLIOS EVOLVE AFTER RETIREMENT: THE EFFECT OF HEALTH SHOCKS

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Abstract

We study the household portfolios of the elderly using data from the Health and Retirement Study. In particular, we investigate the influence of aging and health shocks on both a household's ownership of various assets and the dollar value and share of total assets held in each asset class. We find that households decrease their ownership of most asset classes as they age, with the strongest evidence for principal residences and vehicles. Using several types of health shocks, we proceed to relate the observed asset changes to the onset of different health problems. Consistent with the previous literature, we find that the death of a spouse is a strong predictor of selling the principal residence. However, we find that more subtle health shocks have equally strong, although more gradual, impacts on the asset choices of the elderly. These findings help us to understand the methods by which and extent to which households are able to self-insure against some of the risks of old age.

I. Introduction

For older households, assets held at retirement represent a resource that may be used to help finance routine consumption during retirement and to weather financial risks in old age, such as consequences that may follow a health shock. The value of these assets may be even greater for coming generations, thanks to the expansion of retirement savings programs and strong returns in housing and equity markets over the past several decades. For example, the median level of non-Social Security wealth (in $2003) for households aged 65-69 rose from $109,000 in 1984 (Poterba et. al., 1994) to $172,000 in 2002.[1]

Despite the potential importance of non-Social Security assets for the financial security of older households in retirement, relatively little is known about how these assets evolve during retirement. Much of the existing literature has focused on housing equity (Venti and Wise, 1989, 1990, 2002), which is a logical place to start given its primary role in the asset holdings of many older households. These studies have generally found that the elderly are reluctant to sell their homes, except in the case of a shock such as the death of a spouse. A few studies (Poterba and Samwick, 2001) have looked at household portfolio allocation across all ages, finding sharp differences in holdings of various asset classes by age and cohort, but have not focused on how assets evolve during old age. Finally, a few studies have explored the effect of health on elderly portfolios, either by examining whether health status is related to the risk characteristics of older households' portfolios in a cross-section (Rosen and Wu, 2004) or by relating changes in health status to the spending down of total assets (Feinstein and Ho, 2001; Wu, 2003).

We build on the existing literature in two important ways. First, we document how asset holdings evolve during old age, looking comprehensively at holdings in numerous asset classes rather than focusing exclusively on housing. Second, we examine whether changes in asset

[1] The latter figure is the authors' calculation from the 2002 Health and Retirement Study.

holdings during old age are related to health shocks such as the death of a spouse or a stroke or new cancer diagnosis. We expect that health shocks may be associated with changes in household portfolios since shocks may result in substantial out-of-pocket medical expenditures or make it more difficult for households to manage certain types of assets.

The data for our analysis are the first six waves of the Health and Retirement Study (HRS), which allows us to follow older households for up to ten years, 1992-2002. In our examination of asset holdings, we look not only at the decision to hold a particular type of asset but also the dollar value and the share of the household's portfolio invested in that asset class. In our analysis, assets are grouped into five asset classes: principal residence; vehicles; financial assets including IRAs, stocks, and bonds; bank accounts and CDs; and business and other real estate.

In examining how portfolios evolve with age, we attempt to distinguish the true effect of aging from cohort effects. We begin simply by looking at how household portfolios vary with age in a cross-section, where age and cohort effects may be mingled. We then take advantage of the panel nature of the HRS to explore how the assets of the same households vary over time and to estimate models with cohort and family fixed effects. In our analysis of the effect of health shocks, we examine whether there are any patterns in asset holding in the periods before and after the health shock. We employ numerous definitions of a health shock in this analysis.

We have two principal findings. First, we find that the ownership rates for principal residences and vehicles fall dramatically with age; the ownership rate for other types of assets generally fall with age as well, though the results are more sensitive to the choice of specification. The share of total assets invested in bank accounts and CDs rises with age, while the share invested in all other asset classes declines with age. Second, we find that health shocks

play an important role in explaining changes in household portfolios over time, although the timing of the response and the assets affected differ by the type of health shock.

The remainder of the paper is organized as follows. In section II, we present a brief literature review. In section III, we discuss our data and empirical strategy. In sections IV and V, we present our main findings, and in Section VI we conclude.

II. Literature Review

Our work builds on three literatures. The first looks at the special role of housing in the financial decisions of the elderly. Venti and Wise (1989, 1990) and Feinstein and McFadden (1989) find evidence, in the Retirement History Survey and the Panel Study of Income Dynamics respectively, that elderly households are very unlikely to consume their housing equity. Venti and Wise (1989) demonstrate that moving is best predicted by a severe shock such as the death of a spouse. They also find that transactions costs – broadly conceived to include the psychic costs of leaving behind familiar people and surroundings – play a significant role. Venti and Wise (2002) revisit the question of housing equity, using the Survey of Income and Program Participation and the Asset and Health Dynamics Among the Oldest Old survey. They find similar evidence that few elderly households want to move and that changes in family structure are the best predictor of moves. Skinner (1996), on the other hand, does find evidence that housing wealth is consumed. However, this is more prevalent among younger than older households. Our work will contribute to this literature by showing how housing equity among the elderly fits into their household asset portfolio, and how health shocks other than the death of a spouse affect housing and other asset choices.

A second body of work we draw upon studies the portfolios of households across the lifecycle. Poterba and Samwick (2001) document the patterns in the United States, using the Survey of Consumer Finances. They find large differences in the age-paths for different asset classes, and that these paths vary substantially across cohorts. International comparisons are provided in the volumes by Guiso, Haliassos, and Jappelli (2002) and Börsch-Suppan (2003). There is little evidence that the elderly draw down their assets substantially during retirement, but there is evidence of reallocation across asset categories as households age. Finally, Milligan (2005) looks at household portfolios in Canada using three cross-section wealth surveys. He uncovers evidence that elderly households do not sell their houses or vehicles until late in life, and suggestive evidence that liquid assets increase with age. The present paper contributes to this literature both by using the Health and Retirement Study to document the age-paths for asset holdings of the elderly in the United States and by relating the observed changes to health shocks.

The third relevant literature that provides context for our work investigates the effects of health on portfolio decisions. One question relates to how health affects the riskiness of household portfolios. Rosen and Wu (2004) find that households in poor health are less likely to own risky assets than other households. Other papers by Feinstein and Ho (2001) and Wu (2003) relate changes in households' health status to changes in the total wealth levels of the households. Feinstein and Ho (2001) note the especially strong predictive power of the death of a spouse on wealth draw-downs. Wu (2003) finds strong gender differences, as men's health problems lead to more caregiving by wives but women's health problems lead to more wealth decumulation. By looking at the relationship between health and assets for multiple asset

categories as well as looking at a wider variety of health indicators, our work allows us to draw more precise conclusions about the effects of health on portfolio choices.

III. Data and Empirical Strategy

In this analysis, we use the Health and Retirement Study (HRS). The HRS began in 1992 as a survey of individuals born in 1931-1941 and their spouses, with re-interviews of these individuals every two years. In 1998, the HRS was expanded through a merger with the Study of Assets and Health Dynamics among the Oldest Old (AHEAD), which had interviewed households born before 1924 in 1993 and 1995. At the same time, the survey added two new cohorts, the Children of the Depression (CODA, born 1924-1930) and the War Babies (WB, born 1942-1947). In total, the enhanced HRS had nearly 22,000 respondents in 1998 and continues to interview these individuals every other year. We use the first six waves of the HRS, 1992-2002.

The HRS is well-suited for our purposes because it contains detailed information on assets and health and follows the same older households over time. For most analyses, we use data on all households for all waves that participate in the sample; thus, each household may provide up to 6 observations if from the original HRS cohort, 5 if from the AHEAD cohort, and 3 if from the CODA and WB cohorts.[2] We use the RAND version of the HRS, a user-friendly subset of the HRS with cleaned and consistent variables.[3] Of particular note, we use RAND's model-based imputations for any missing wealth data.

[2] AHEAD data from 1993 and 1995 are treated as having been collected at waves 2 and 3, respectively; thus, there is no wave 1 observation. As detailed below, some analyses are conditioned on remaining in the sample through 2002 or are limited to certain age groups only.

[3] Specifically, we use the RAND data file rndhrs_d8.dta, which contains preliminary data for wave 6 and final data for all other waves.

Our analysis proceeds in two parts. First, we explore how wealth evolves with age, looking primarily at five asset categories: principal residence; vehicles; financial assets including IRAs, stocks, and bonds; bank accounts and CDs; and business and other real estate.[4] We start with a simple cross-sectional analysis of wealth holdings by category and age using the 2002 HRS. However, any differences by age in such an analysis may also reflect cohort and time effects and be tainted by survivorship bias, as wealthy individuals tend to live longer. We begin to address these concerns by instead examining how asset holdings evolve over time for the same individuals in the HRS. Finally, we regress asset holdings on age, first with cohort dummies and then with family fixed effects, which should account for any unmeasured effects and biases as long as they are time invariant.

These regressions using data for family i in time period t take the form:

$$Assetholdings_{it} = b_0 + b_1 age_{it} + b_2 X_{it} + e_{it}, \qquad (1)$$

where $Assetholdings_{it}$ is a measure of the holdings in a particular asset class, age_{it} is the age of the family, and X_{it} is a vector of control variables. The ß terms are parameters to be estimated from the data, and e_{it} is an error term. The control variables include dummies corresponding to the HRS wave of the observation and a set of indicators for marital status (widow, married, divorced/separated).[5] Here, and elsewhere in the paper, we measure the age of the family by taking the age of the older spouse. While the linear age specification is simple, it will provide

[4] 'IRAs' includes all funds in Individual Retirement Accounts or Keoghs. 'Stocks' includes stocks, mutual funds, and investment funds. 'Bonds' includes bonds and bond funds. 'CDs' includes certificates of deposit, savings bonds, and t-bills. 'Other savings' includes items such as jewelry, money owed to the respondent by others, a collection for investment purposes, rights in a trust or estate where the respondent is the beneficiary, or an annuity.

[5] We include only these time-varying characteristics because our family fixed effect specification will control for any fixed characteristics of the family.

some indication of which assets vary strongly with age.[6] Throughout our analysis, we examine three measures of asset holdings: positive holdings of the asset class, share of total assets in the asset class, and dollar value of assets in the asset class.[7]

In the second part of the analysis, we explore how health shocks affect asset holdings. Specifically, we estimate regressions of the following form:

$$Assetholdings_{it} = b_0 + b_1 shock\min us3_{it} + b_2 shock\min us2_{it} + b_3 shockplus1_{it} + b_4 shockplus2_{it} + b_5 shockplus3_{it} + b_6 shockplus4_{it} + b_7 X_{it} + e_{it} \quad (2)$$

where the $shock_{it}$ is a dummy equal to 1 if household i experiences a health shock in period t and the *shockplus* and *shockminus* variables are dummies equal to 1 if the observation occurs a specified number of periods before or after the shock; *shockminus1* is the omitted category.[8] This allows us to see whether there is any change in asset holdings prior to the shock and whether the response to the shock occurs immediately or later. The X_{it} vector includes a detailed list of demographic controls, along with dummies for age and for the HRS wave.[9] We estimate these models for all five asset categories and for our three measures of asset holdings.

We use several definitions of a health shock: 1) experiencing an "acute event" (heart problems, stroke, or cancer), 2) receiving a new diagnosis of a chronic illness (high blood pressure, diabetes, lung disease, psychological problems, or arthritis), 3) reporting a worse health

[6] We also tried a quadratic specification. Those results are discussed later in the paper with the discussion of the linear results.

[7] We are aware that there may be significant measurement error in the dollar value in each asset class, and therefore also in the share of total assets in each asset class, since wealth data are notoriously noisy. For this reason, we present results first for the ownership of each type of asset, which is much less likely to be subject to error. We also acknowledge the contribution of Rohwedder et. al. (2004) in noting that changes in wealth holdings between the 1993 and 1995 AHEAD survey are due in part to survey design; we have made no explicit correction for this here, but plan to test the sensitivity of our results to this in future work by dropping affected observations from the analysis.

[8] Because shocks occur between survey waves, there is no "period 0" in the analysis.

[9] The controls include dummies for the respondent's Census region, religion, race, Hispanic status, being US born, and four educational categories.

status than at the previous wave, 4) reporting more difficulty with activities of daily living (ADL) than at the previous wave,[10] and 5) becoming widowed. In all cases, we treat the household as experiencing a shock if either spouse receives a shock.

IV. Results for Age Patterns of Household Asset Holdings

Table 1 provides a cross-sectional analysis of household asset holdings by age in the 2002 HRS.[11] The top panel indicates how the rate of ownership of various assets evolves with age and it reveals some interesting patterns. Home ownership is flat at 80% until age 80, but then drops consistently in every successive age group, to a rate of 54% in the age 90 and above group. Vehicle ownership displays a similar pattern of being relatively flat until age 80 and falling dramatically thereafter, from 82% in the age 75-79 group to 40% in the age 90 and above group. Three other asset categories – other real estate, business, and other savings – start at a lower level, but in all cases asset ownership is cut in half between the 60-64 age group and the 90 and above age group. IRA ownership falls dramatically after age 70, no doubt due to the automatic withdrawal provisions. On the other hand, ownership of CDs and bonds rises over time, perhaps due to the greater liquidity or lower risk properties of these assets. Stock and bank account ownership are essentially flat with age.[12]

The other two panels in Table 1 display the share of total assets in each category and the median value conditional on holding the asset. The assets experiencing a drop in ownership with age in the top panel also experience a slide in asset share. In the case of homes and vehicles, the

[10] The ADL variable is formed by asking if any of the following five activities present difficulties: bathe, dress, eat, get in/out of bed, walk across room.

[11] Data are weighted by HRS household weights; age patterns in unweighted data are largely similar.

[12] Results for the quadratic specifications revealed similar patterns to the linear specifications. For vehicle ownership, for example, the marginal effects of the quadratic coefficients implied that ownership trends turned negative around age 69, and approached the linear effect in the 80s.

median value conditional on holding the asset also falls over time. Asset shares rise with age in stocks, bonds, CDs, and bank accounts; the increase in the bank account share is particularly dramatic, rising from 10% at ages 60-64 to 28% in the oldest age group, while CDs also rise sharply, from 2% to 10%. The median value of total assets falls considerably starting at age 80, potentially reflecting some dissaving to finance retirement consumption.

As noted above, however, there are several potential problems with this analysis. Observed patterns may reflect cohort or time effects as well as age effects. Moreover, since wealthier households are more likely to survive, observed patterns may reflect the selection of a wealthier sample in the higher age groups.

To begin to address these concerns, we conduct a cohort-based analysis that tracks asset holdings of the same households over time. Specifically, we divide the sample into 20 groups, each of which consists of two single birth cohorts (e.g., 1931-1932). Depending on whether the group is part of the original HRS, AHEAD, WB, or CODA cohorts, households appear in the survey 3 to 6 times. We drop households that do not stay in the survey for all waves where they might be observed, to avoid having the composition of the group change over time as households leave the survey due to death or attrition; however, we acknowledge that older cohorts may still be wealthier due to differential mortality.

Figures 1a-1e display the results of this analysis. Each of the short lines on a graph represents the asset holdings for a particular group at the ages they are observed. So for example, the 1931-1932 group, which is part of the original HRS cohort, appears in all 6 waves of the survey and contributes information for ages 60-61, 62-63, etc. through 70-71. Any given line shows the effect of aging for a fixed sample of households; if the various lines that cover the

same age range are close together, this will indicate that cohort effects are small, at least for cohorts that are relatively close together.

The graphs largely confirm that the results from Table 1 remain when we do a better job of controlling for cohort effects and survivorship bias. Home and vehicle ownership rates fall dramatically after age 80, with the slide in vehicle ownership clearly visible at much younger ages as well. There is also a steady decline in the business and other real estate ownership rate starting at age 60. Ownership of bank accounts and CDs are roughly flat, with perhaps a small decrease at the oldest ages. Ownership of financial assets (IRAs, stocks, or bonds) is declining over time, driven primarily by a steady drop in IRA ownership, though there is a small drop in stock ownership as well. Figure 1e is the one case where cohort effects are apparent – the AHEAD cohorts are significantly less likely to own such assets.

We now turn to some basic regression analysis to document more precisely the trends observed in the figures. Table 2 contains regression results for the sample of families in which the older spouse is age 60 or above. We provide results for the five asset classes and three asset holding measures (positive asset value, share of total portfolio, and asset value), with the three econometric specifications discussed above (no fixed effects, cohort fixed effects, and family fixed effects). The regressions are estimated by OLS, with robust standard errors clustered to account for repeated observations on the same cohorts and households.

The first column of the table shows the results from a specification with a linear age term and no controls for cohort or individual fixed effects. This specification most closely aligns with the simple analysis in Table 1, since no attempt is made to disentangle the age from the cohort effects. The dependent variable in the first panel of results, asset ownership, is binary, so the coefficient can be interpreted as a change in the probability in owning the asset for an additional

year in age. For example, the first reported coefficient for ownership of a principal residence is -0.0045. This coefficient suggests that as a family becomes one year older, the probability that the family owns a home will decline by 0.45 percent. Given the mean of 0.8, this coefficient suggests a 5.6 percent (or 4.5 percentage point) decline in the probability of ownership over a decade.[13] The coefficients for the other asset categories are also negative and highly significant, with the business and real estate coefficient being the largest in percent terms – the coefficient suggests a 17.5 percent (or 4.3 percentage point) decline in the probability of ownership over a decade.

In the second column of the table, we add a set of dummy variables for the year of birth cohort to which each family belongs. This specification effectively compares families of different ages within the same year-of-birth cohort, allowing the effect of age to be separated from the effect of cohort.[14] The results do not change substantially from the first column, although the coefficient on bank accounts and CDs is now larger. The results remain highly significant.

The final column of Table 2 provides the results using family fixed effects. In this specification, the age coefficient is identified by variation within each family over time, exploiting the panel structure of the data. In comparing the linear age, cohort fixed effect, and family fixed effect specifications, the usual trade-offs apply – the specifications with cohort and

[13] We tried probit specifications to see if accounting for the binary dependent variable with a nonlinear estimator mattered. We obtained similar point estimates for the marginal probabilities. For example, the estimate on principal residence was -0.0055, compared to the -0.0045 in the linear specification.

[14] Observations on families of different ages from the same year-of-birth cohort will necessarily be taken at different points in time. Thus there is the possibility that differences in asset holdings reflect not only age effects but also time effects (e.g., observations from 1998 will have experienced a higher recent rate of return on their stock assets than observations from 1994). As is well known, even with longitudinal data there is no way to separately identify age, cohort, and time effects. We assume that time effects are likely small, particularly with respect to asset ownership.

family fixed effects likely do a better job of controlling for unobservable heterogeneity, but there is a risk of being left with too little variation to estimate statistically significant relationships.

Two of the results from the second column hold up strongly in the third column – the negative effect of age on vehicle ownership and ownership of a principal residence. However, the coefficients showing the effect of age on the ownership of bank accounts and CDs and of business and other real estate turn positive and are statistically insignificant; the coefficient showing the effect of age on financial asset ownership is also insignificant.

The second panel of Table 2 shows the effect of age on the share of the household's portfolio held in a particular asset class. Because the shares must sum to one across the asset categories, an increase in one category must necessarily lead to a decrease in another.[15] For this reason, we expect to find some positive coefficients for this set of results, in contrast to the positive holdings and dollar value results.

In the first specification without cohort or family fixed effects, age is associated with a reduction in the share of assets invested in principal residence, vehicles, financial assets (IRAs, stocks, and bonds), and business or real estate and is associated with an increase in the share of assets invested in bank accounts and CDs. All coefficients are highly significant. The second and third columns display the results of incorporating cohort and family fixed effects. The results in the second column generally look similar to those in the first column, with the notable exception that the coefficient on principal residence is small and insignificant. Curiously, this coefficient is negative and significant in the family fixed effects model, though several of the other coefficients are no longer significant. The only result that holds up across all three specifications is the positive coefficient on bank accounts and CDs.

[15] Recall, however, that we do not report results for the 'other savings' category. The share coefficients for this variable were typically positive, but not very large in magnitude.

The third panel shows the effect of age on the dollar value invested in a particular asset class. Results are broadly similar to those in the second panel. The dollar value invested in all asset classes falls with age, except for bank accounts and CDs, whose value rises with age. Coefficients are fairly similar in the basic linear age and cohort fixed effects specifications and almost always statistically significant; however, coefficients in the family fixed effects models are generally not.

This regression analysis has revealed several important findings. First, the relationship between asset holdings and age is not much affected by the inclusion of cohort fixed effects, but changes substantially when one includes family fixed effects. We feel reasonably confident that the cohort fixed effect results reflect important effects of age on asset holdings and not simply the effects of unobserved heterogeneity, but present the full set of results to allow the reader to make up his or her own mind on this point. Second, we find a negative relationship between age and the probability of holding all types of assets; in the case of principal residence and vehicle ownership, the negative relationship persists even in the family fixed effects model. Finally, we generally find a negative relationship between age and the share of assets or dollar value of assets held in all asset classes except for bank accounts and CDs, whose share and asset value rises with age.

V. Results for the Effect of Health Shocks

Could health shocks help to explain the age-trends in asset decisions observed in Table 2? Figure 2 graphs the incidence (over a two-year period) by age of the five health shocks we consider. Because our asset data are at the family level, we consider a shock to have hit the family when either member of the couple experiences the change in health. In the 60s, the shock

with the highest incidence is for changes in self-assessed health status, peaking at a proportion of 0.15 at age 67. After the mid-70s, the incidence of acute, widow, and ADL shocks increases. For widowhood, the probability of suffering a shock increases from 0.021 at age 70 to 0.048 at age 80; more than doubling. Overall, this figure demonstrates the relatively high incidence of health shocks for the elderly.

More striking than the period-by-period rate of incidence is to look at how many families last until age 89 without suffering a shock. For widowhood, only 40% of families survive to 89 without one or the other partner dying. For ADL, only 14% of families do not have some ADL difficulties by age 89. The magnitude of these numbers suggests that the changes in asset holdings seen previously could conceivably be related to health shocks.

To rigorously examine the link between the health shocks we graphed in Figure 2 and the asset changes we graphed in Figures 1a-1e, we present regression analysis based on equation (2) described earlier. For this analysis, we select the data for each shock by choosing any family in which one member of the couple experiences the shock between one HRS wave and the next. We then use the panel structure of the data set to observe their asset choices several periods before and after the onset of the shock. For some families, we might see a shock occur between waves 1 and 2. For that family, we would observe one 'pre-shock' period and several 'post-shock' periods. For other families, we might observe a shock between waves 5 and 6. For that family, we would observe five 'pre' periods (waves 1 to 5) as well as one period after the shock. Across all the families in the sample, therefore, we can develop a very complete picture of the effect of health shocks on asset decisions both before and after the onset of a shock.

In the regression analysis we consider five shocks. The coefficients reported are for the dummy variables indicating the distance in time from the shock period. The omitted category is

the period just before the shock occurred, so all of the coefficients should be interpreted as the change in the probability of holding positive values of the asset category *relative to* the period before the shock. We also report the mean of the dependent variable for each asset class, which corresponds to the proportion of the sample that holds a positive value of the asset.

We begin with an analysis of the widow shock in Table 3. This marks a sensible starting point because earlier research by Venti and Wise (2002) highlights the importance of widow shocks on housing changes. Across the five asset categories, the clearest results are for vehicle ownership and for the principal residence. In both cases, there is a sharp drop in ownership following the death of one of the spouses. For vehicles, the drop is estimated to be 9.6 percentage points in the first period after the shock, rising to 17.2 points four periods after the shock. This 17.2 point drop represents 22 percent of the 0.80 proportion of this population that has a vehicle. Since there are two years between waves, four periods after the shock corresponds to about 8 years. For the principal residence, the drop in ownership is 5.8 percentage points in the first period after the shock, growing to 12.4 points by the fourth period after the shock. This represents a 16 percent drop from the mean. This corroborates the existing findings on housing equity and extends the finding both by showing the dynamic path of the adjustment of housing equity and by showing the co-movement of vehicle ownership.

For the other asset categories, there is surprisingly little consistent evidence of a relationship between widowhood and asset ownership. One exception is for IRA ownership. The significant positive coefficients for the periods before the shock indicate that the probability of owning an IRA was higher in the 3rd and 2nd periods before the shock than in the period just before the shock. This indicates that IRA ownership drops *before* the shock occurs. Such a pattern might be expected if families were more likely to liquidate their IRA accounts in the last

years before death, either in anticipation of the shorter lifespan or because of increased medical bills through those years. By looking at other measures of health changes, we can explore this phenomenon further.

The second and third panel of Table 3 examine whether health shocks are associated with changes in the share of assets or the dollar value invested in particular assets.[16] There is a significant decrease in the share of assets invested in the principal residence and in the dollar value invested in vehicles following a shock, though it is somewhat puzzling that we don't observe a drop in both asset share and asset value for both assets. There is evidence of an increase in the share of assets held in bank accounts and CDs following the widow shock, which may occur when people sell their homes and move the proceeds to these accounts. There is also evidence that the share of IRA assets falls prior to the shock, which is consistent with the results in the first panel.

Table 4 repeats the analysis for changes in ADL. Vehicle ownership suffers an immediate drop of 2.1 percentage points, which grows slightly larger through time, suggesting that the physical demands of driving may become too strong for some with ADL difficulties. For housing, however, there is no consistently observed decrease in the propensity to own a principal residence after an ADL shock. The share of families that hold business equity or other real estate declines significantly following an ADL shock. After 3 periods, the percentage of families holding a business or other real estate dropped 7.1 points, compared to the mean of 0.26.

[16] One potential drawback to estimating the effect of health shocks on asset value in a linear regression is that wealth tends to be highly skewed, so results may be driven by those observations with large changes in asset value. Unfortunately, the log specification cannot be used here because there are many observations with an asset value of zero and quantile (median) regressions did not always successfully converge when the model was estimated using this technique. We also ran regressions using an inverse hyperbolic sine (IHS) transformation of the dependent variable, a specification that may be interpreted like a log-linear regression but can accommodate values of zero. (See Pence (2002) and Burbidge, Magee, and Robb (1988) for details on the theory and application of IHS.) We found, however, that OLS and median regression estimates using the IHS transformation sometimes resulted in unusual results, such as a greater than 100 percent decrease in asset value.

This may indicate that the physical demands of running a small business or managing rental property are harder to meet when physical health deteriorates. Financial assets (IRAs, stocks, and bonds) also exhibit a sharp pattern of decline following an ADL shock; 4 periods later, households are 8.3 percentage points less likely to hold such assets, compared to a mean of 0.50. For bank accounts and CDs, the post-shock dummies are negative but not statistically significant. The decline in ownership of some financial assets may relate to the increased financial stress of those with ADL difficulties, stemming from increased health expenditures or decreased earnings, or to the difficulty of managing more complicated financial assets following a health shock.

The remainder of Table 4 shows the effect of an ADL shock on the share of total assets and the dollar value held in each asset class. There are relatively few statistically significant effects of an ADL shock on asset shares, but the results for dollar value of assets are strikingly different. The total value of assets falls dramatically after an ADL shock, by about $70,000. Statistically significant drops in asset value are seen for all asset classes except for business and other real estate. While these results should be interpreted cautiously, as they may be influenced by a small number of observations with large changes in asset value, they suggest that ADL shocks may have a strong negative impact on household finances.

In Tables 5 and 6, we move to the study of acute and chronic health shocks on asset ownership. In both cases, health shocks are associated with a decrease in principal residence and vehicle ownership, although the response does not occur until at least the 2nd period following the shock. This is in sharp contrast to the results for the widow shock in Table 3, where principal residence and vehicle ownership fell sharply immediately following the shock. This may indicate that it takes time for the full implications of acute and chronic health shocks to manifest themselves.

Acute shocks are also associated with a decrease in business and other real estate ownership, while chronic shocks are associated with a decrease in financial assets (IRAs, stocks, and bonds). Interestingly, there is a significant positive pre-shock coefficient for financial assets in the case of the chronic shock, indicating that ownership of these asset classes may be falling in the periods *before* the shock occurs. Because the chronic condition may exist but not yet be assessed, it could be that this result derives from some measurement error in the timing of the true onset of the condition. Both types of shock are associated with a decrease in the dollar value of total assets, principal residence (though the effect is not always significant), vehicles, and financial assets. Finally, both types of shock are also associated with an increase in the share of assets in bank accounts and CDs; in the case of the acute shock, the increase begins before the shock, while in the case of the chronic shock, the increase is primarily visible after the shock.

Finally, Table 7 reports the results using the change in self-reported health status shock. Relative to the previous four tables, there are very few statistically significant results here. The main exception is that financial asset ownership is lower after the shock and principal residence ownership is falling before the shock. We do not find these results particularly surprising. Change in health status, as defined here, is a dummy equal to one when health status is worse this period than in the previous period. Thus, someone who switches their status from excellent to good and someone who switches from fair to poor are both considered to have experienced a health shock, though we might expect their response to be quite different. There are roughly twice as many households who experience this type of shock as any of the other types, and as Figure 2 indicated, the incidence of this shock peaks quite early. Thus this measure may not effectively capture changes in health status that lead people to make changes in their portfolio.

VI. Conclusions

In this paper, we contribute to the growing literature on the effects of age and health on household portfolio choices in two ways: by exploring the effect of age on asset holdings in many asset classes and by examining whether health shocks are associated with changes in asset holdings.

On the first question, we document a sharp decline in home and vehicle ownership with age that persists even in models that incorporate family fixed effects. In models with cohort effects only, we find that the ownership rate for all asset classes is declining with age and that the share of total assets invested in the principal residence, vehicles, financial assets (IRAs, stocks, and bonds) and business or real estate is falling with age, while the share invested in bank accounts and CDs is rising with age.

On the second question, we find that health shocks have significant effects on asset holdings and that these effects can vary with the type of health shock. Most shocks are associated with significant drops in principal residence and vehicle ownership – the effect is immediate and strongest in the case of a widow shock, only occurs after a few years in the case of an acute or chronic shock, and is evident for vehicles but not for the principal residence in the case of an ADL shock. Acute and ADL shocks are associated with decreases in the ownership of a business or other real estate, which could indicate that these assets are too difficult to manage after such a shock. Widow, ADL, and chronic shocks are associated with decreases in financial assets; in many cases, the decline begins before the shock, indicating that families may be drawing down these resources to deal with out-of-pocket medical expenditures or lost labor earnings prior to the shock or that the date of the shock is imperfectly measured in the survey. In

the case of the widow and chronic shocks, the share of assets in bank accounts and CDs rises after a shock, as families liquidate other assets and move the proceeds into these accounts.

We view this evidence as an interesting first step in the study of health and asset holdings. This work could be extended in several ways, such as examining whether the response to health shocks differs depending on which spouse experiences the shock or the age of the household at the time of the shock. In addition, we could look more carefully at the sequential nature of health shocks. For example, a widow shock may often follow another type of shock, which may help to explain why households respond differently to different types of health shock. It will also be important to learn more about *why* households respond to shocks in the way they do – for example, whether it is because they have experienced large out-of-pocket medical expenditures, have physical or cognitive difficulty managing the asset, etc. Such research would help us understand the portfolio allocation and asset decumulation decisions of older households, which have important implications for the ability of these households to support themselves adequately during retirement.

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Figure 1a: Home Ownership Rate by Age and Cohort

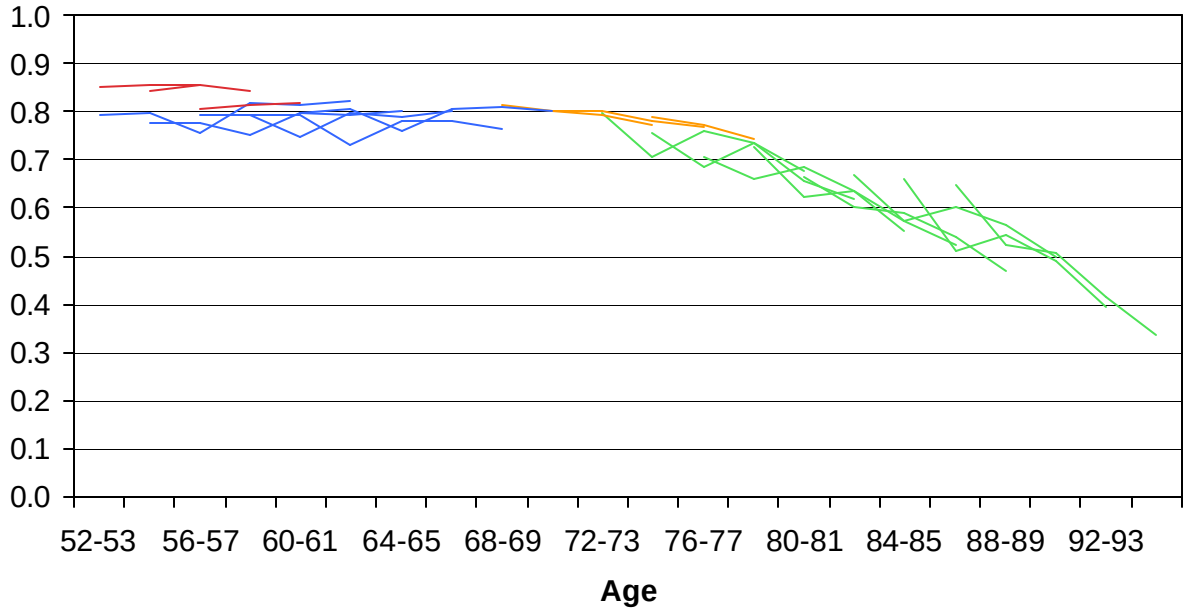

Figure 1b: Vehicle Ownership Rate by Age and Cohort

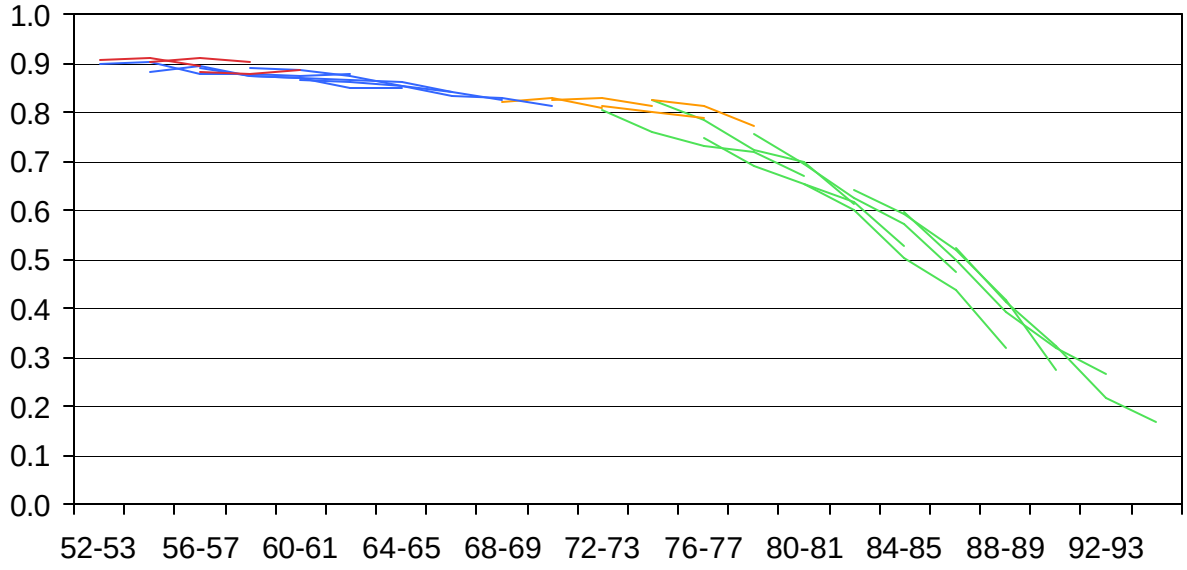

Figure 1c: Ownership of IRAs, Stock, & Bonds by Age and Cohort

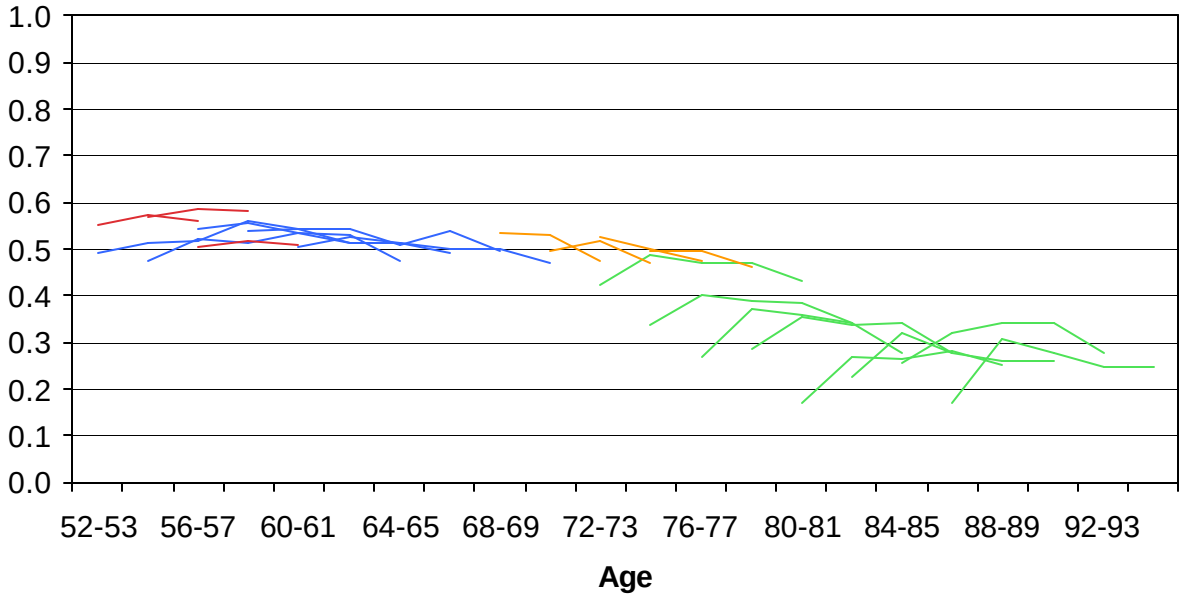

Figure 1d: Ownership of Bank Accounts and CDs by Age and Cohort

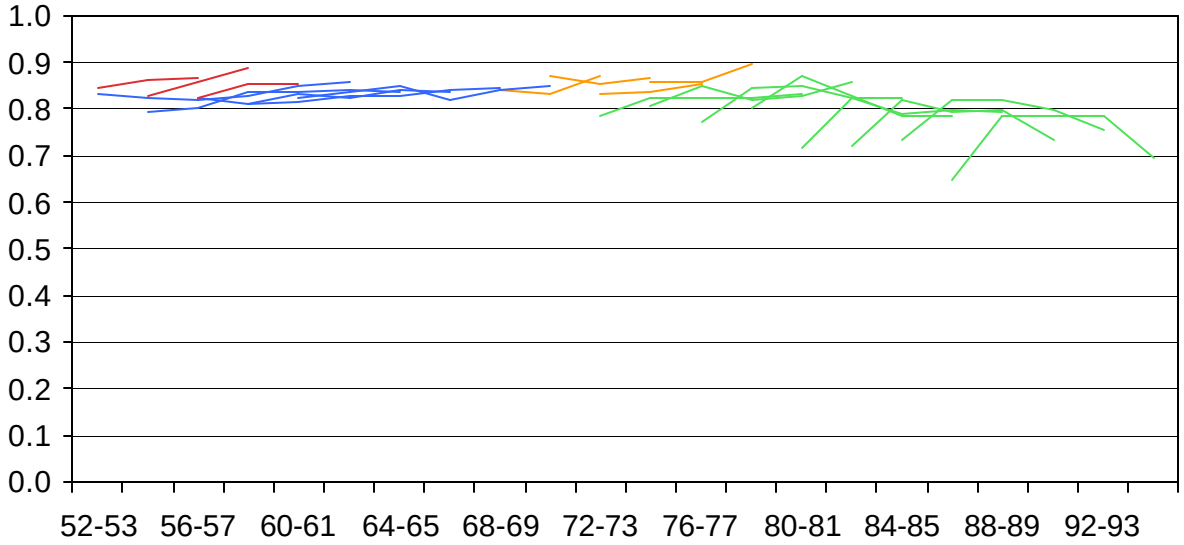

Figure 1e: Ownership of Business and Real Estate by Age and Birth Cohort

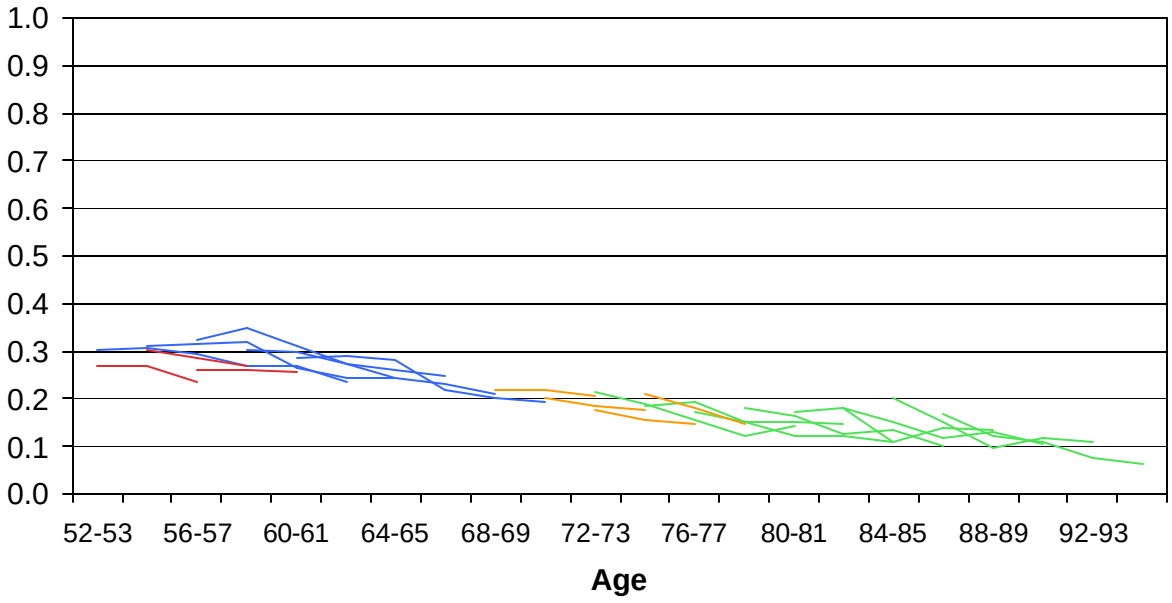

Figure 2: Proportion of Households Suffering Health Shock by Age

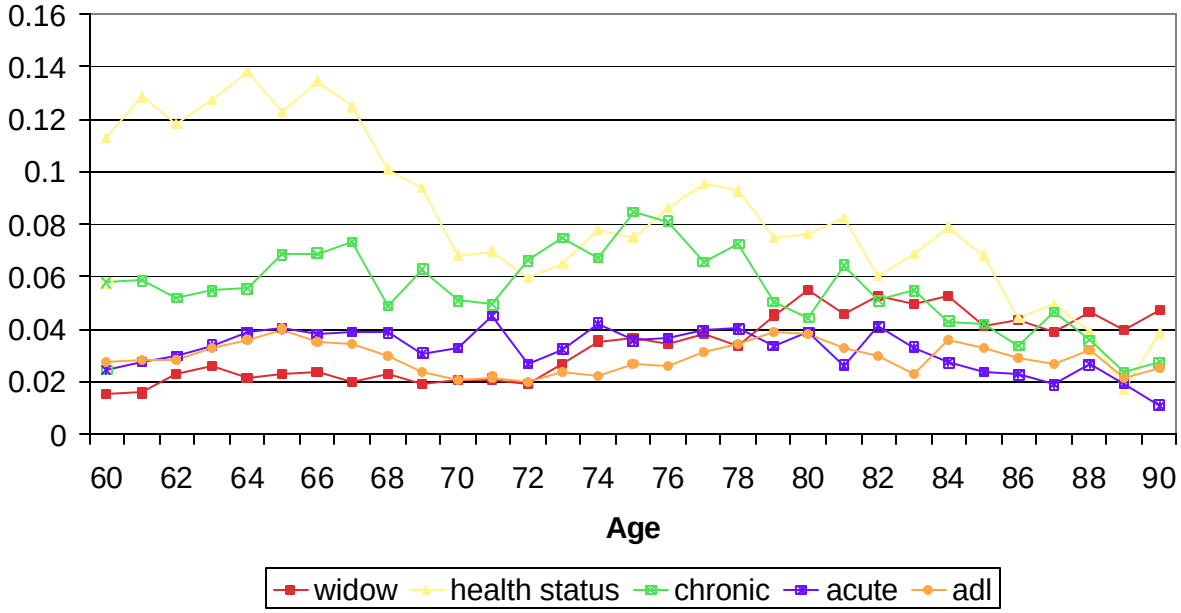

Table 1: Household Assets by Age, 2002 HRS (in $2003)

Asset Type	Age							
	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90+
% With Positive Asset Holdings								
Princ. Resid.	0.80	0.82	0.80	0.80	0.79	0.73	0.65	0.54
Vehicles	0.88	0.89	0.87	0.83	0.82	0.74	0.61	0.40
IRAs	0.42	0.42	0.41	0.40	0.33	0.25	0.09	0.03
Stocks	0.35	0.33	0.33	0.31	0.33	0.31	0.30	0.29
Bonds	0.07	0.07	0.07	0.09	0.09	0.08	0.08	0.11
Bank Accounts	0.87	0.86	0.87	0.86	0.86	0.88	0.86	0.84
CDs	0.18	0.19	0.24	0.27	0.31	0.33	0.34	0.32
Business	0.11	0.12	0.10	0.08	0.08	0.06	0.06	0.06
Real Estate	0.16	0.18	0.18	0.16	0.12	0.12	0.12	0.08
Other Savings	0.17	0.16	0.16	0.13	0.10	0.08	0.08	0.06
Median Value, Conditional on Holding								
Princ. Resid.	127,849	122,735	121,712	117,621	104,325	102,279	86,937	81,312
Vehicles	12,273	10,228	10,228	10,228	9,205	6,137	5,114	4,091
IRAs	39,888	46,189	59,833	61,367	51,140	32,474	20,456	N/A
Stocks	40,400	46,026	51,140	61,367	51,140	76,709	51,140	84,380
Bonds	12,273	25,570	40,912	31,707	43,469	35,798	51,140	N/A
Bank Accounts	5,114	5,114	7,160	8,182	8,182	9,001	7,160	6,137
CDs	10,228	11,251	17,387	20,456	25,570	30,684	31,707	29,661
Business	156,556	153,419	130,406	153,419	153,419	168,760	N/A	N/A
Real Estate	61,367	71,595	76,709	71,595	91,540	76,709	81,823	N/A
Other Savings	20,456	20,456	20,456	25,570	23,524	20,456	17,899	N/A
Total Assets	185,636	169,783	175,920	184,153	174,999	142,168	122,735	92,460
Mean Share of Total Assets								
Princ. Resid.	0.506	0.493	0.451	0.479	0.480	0.430	0.397	0.367
Vehicles	0.138	0.130	0.125	0.102	0.088	0.073	0.057	0.037
IRAs	0.082	0.091	0.098	0.095	0.066	0.047	0.013	0.006
Stocks	0.064	0.064	0.064	0.067	0.083	0.094	0.091	0.119
Bonds	0.003	0.007	0.007	0.008	0.011	0.011	0.014	0.024
Bank Accounts	0.096	0.098	0.126	0.129	0.150	0.197	0.238	0.280
CDs	0.016	0.017	0.027	0.035	0.049	0.078	0.104	0.101
Business	0.037	0.034	0.034	0.027	0.029	0.023	0.023	0.026
Real Estate	0.037	0.048	0.048	0.040	0.033	0.035	0.051	0.031
Other Savings	0.020	0.018	0.020	0.017	0.012	0.012	0.012	0.008
# of HHs	1,268	2,400	2,274	1,797	1,518	1,333	700	358

Notes:
1) Age of household is defined based on the age of the oldest member of the couple.
2) N/A indicates fewer than 50 observations with positive asset value.
3) Values are weighted by HRS household weights.

Table 2: Effect of Age on Asset Holdings

Asset Class	Mean	Linear Age		with Cohort Dummies		with Family Fixed Effects	
		Positive Holdings of Asset Class					
Principal Residence	0.799	-0.0045	***	-0.0046	***	-0.0049	***
		[0.0002]		[0.0009]		[0.0009]	
Vehicles	0.840	-0.0076	***	-0.0061	***	-0.0037	***
		[0.0002]		[0.0008]		[0.0009]	
IRAs/Stocks/Bonds	0.512	-0.0066	***	-0.009	***	-0.0002	
		[0.0002]		[0.0012]		[0.0012]	
Bank Accounts/CDs	0.866	-0.0004	**	-0.0034	***	0.0004	
		[0.0002]		[0.0007]		[0.0012]	
Business/Real Estate	0.246	-0.0043	***	-0.0041	***	0.0007	
		[0.0002]		[0.0011]		[0.0012]	
		Share of Holdings in Asset Class					
Principal Residence	0.456	-0.0025	***	-0.0003		-0.0032	***
		[0.0002]		[0.0009]		[0.0009]	
Vehicles	0.103	-0.0024	***	-0.0009	**	-0.0012	*
		[0.0001]		[0.0004]		[0.0006]	
IRAs/Stocks/Bonds	0.163	-0.0011	***	-0.0025	***	0.0007	***
		[0.0001]		[0.0006]		[0.0006]	
Bank Accounts/CDs	0.177	0.0074	***	0.0046	***	0.0034	
		[0.0001]		[0.0005]		[0.0008]	
Business/Real Estate	0.082	-0.0010	***	-0.0007	*	-0.0001	
		[0.0001]		[0.0004]		[0.0006]	
		Dollar Value in Asset Class					
Principal Residence	122,381	-1491	***	-1596	***	-468	
		[132]		[459]		[696]	
Vehicles	14,030	-407	***	-436	***	-47	
		[21]		[82]		[111]	
IRAs/Stocks/Bonds	115,326	-652	**	-2784	***	-933	
		[277]		[852]		[1289]	
Bank Accounts/CDs	44,528	1229	***	560		874	
		[151]		[420]		[838]	
Business/Real Estate	79,055	-2039	***	-927		1238	
		[285]		[1221]		[1986]	

Note: Coefficient reported is for linear age. Standard errors appear in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated by one, two, or three stars, respectively. Number of observations is 75,807 in positive holdings and dollar value regressions and 72,569 in share of holdings regressions.

Table 3: Effect of Widow Shock on Asset Holdings

Asset Class	Mean	Distance From Shock					
		3 Before	2 Before	1 After	2 After	3 After	4 After
Positive Holdings of Asset Class							
Principal Residence	0.754	0.008	0.005	-0.058 ***	-0.077 ***	-0.076 ***	-0.124 ***
		[0.018]	[0.015]	[0.015]	[0.018]	[0.022]	[0.031]
Vehicles	0.797	0.031 **	0.017	-0.096 ***	-0.101 ***	-0.101 ***	-0.172 ***
		[0.013]	[0.011]	[0.013]	[0.016]	[0.020]	[0.028]
IRAs/Stocks/ Bonds	0.427	0.028	0.041 **	-0.004	-0.023	-0.013	-0.035
		[0.021]	[0.017]	[0.016]	[0.019]	[0.023]	[0.031]
Bank Accts/ CDs	0.843	0.018	0.017	0.014	0.005	0.017	-0.029
		[0.015]	[0.012]	[0.012]	[0.014]	[0.016]	[0.023]
Business/ Real Estate	0.187	0.014	0.003	0.007	0.002	0.006	0.013
		[0.019]	[0.015]	[0.014]	[0.016]	[0.019]	[0.026]
Share of Holdings in Asset Class							
Principal Residence	0.465	-0.017	-0.009	-0.034 ***	-0.041 ***	-0.037 **	-0.055 **
		[0.015]	[0.012]	[0.013]	[0.015]	[0.019]	[0.026]
Vehicles	0.110	-0.002	-0.009	-0.011	-0.007	0.006	0.019
		[0.009]	[0.007]	[0.008]	[0.009]	[0.011]	[0.017]
IRAs/Stocks/ Bonds	0.135	0.020 **	0.015 **	-0.001	0.003	0.005	0.024
		[0.009]	[0.008]	[0.008]	[0.010]	[0.012]	[0.018]
Bank Accts/ CDs	0.211	-0.003	0.001	0.041 ***	0.044 ***	0.030 **	0.026
		[0.011]	[0.010]	[0.010]	[0.012]	[0.015]	[0.020]
Business/ Real Estate	0.063	0.003	0.004	0.005	0.000	-0.004	-0.005
		[0.008]	[0.006]	[0.007]	[0.007]	[0.008]	[0.012]
Dollar Value in Asset Class							
Principal Residence	92,893	402	1,681	-7,387 **	-1,597	-1,899	-4,530
		[4,789]	[4,021]	[3,656]	[5,436]	[5,574]	[8,696]
Vehicles	9,436	514	818	-1,732 ***	-2,365 ***	-1,452 **	-3,231 ***
		[737]	[589]	[505]	[530]	[712]	[747]
IRAs/Stocks/ Bonds	76,305	14,015	2,495	-16,744	-16,901	-11,624	-720
		[12,596]	[9,809]	[11,672]	[12,914]	[17,267]	[18,949]
Bank Accts/ CDs	43,037	4,559	5,427	12,620 **	5,545	3,039	3,338
		[4,724]	[4,406]	[5,456]	[3,951]	[4,554]	[5,944]
Business/ Real Estate	42,624	-11,101	-5,580	1,624	331	2,426	22
		[8,969]	[8,449]	[11,570]	[8,723]	[11,460]	[13,695]
Total Assets	270,933	7,041	5,255	-11,548	-14,163	-10,697	-7,044
		[20,883]	[17,884]	[23,419]	[19,927]	[26,099]	[31,582]

Coefficient reported is for a dummy variable "X" periods away from the health shock. The excluded dummy is for the period before the shock. Standard errors appear in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated with two, or three stars, respectively. There are 9,600 observations.

Table 4: Effect of ADL Shock on Asset Holdings

Asset Class	Mean	Distance From Shock					
		3 Before	2 Before	1 After	2 After	3 After	4 After
Positive Holdings of Asset Class							
Principal Residence	0.852	0.030 *	0.016	0.005	-0.005	-0.036 *	-0.018
		[0.017]	[0.014]	[0.013]	[0.015]	[0.019]	[0.025]
Vehicles	0.912	0.019 *	0.009	-0.021 **	-0.040 ***	-0.060 ***	-0.037 **
		[0.011]	[0.009]	[0.010]	[0.011]	[0.014]	[0.018]
IRAs/Stocks/ Bonds	0.490	0.021	0.006	-0.025	-0.044 **	-0.055 **	-0.083 **
		[0.024]	[0.018]	[0.017]	[0.021]	[0.025]	[0.033]
Bank Accts/ CDs	0.863	0.016	0.010	-0.013	-0.013	-0.022	-0.039
		[0.017]	[0.013]	[0.012]	[0.013]	[0.016]	[0.025]
Business/ Real Estate	0.255	0.050 **	0.012	-0.021	-0.044 **	-0.071 ***	-0.041
		[0.024]	[0.018]	[0.016]	[0.019]	[0.022]	[0.030]
Share of Holdings in Asset Class							
Principal Residence	0.503	0.007	0.004	0.032 ***	0.037 ***	0.018	0.025
		[0.016]	[0.013]	[0.012]	[0.014]	[0.018]	[0.024]
Vehicles	0.115	-0.014	-0.007	0.001	-0.005	0.008	0.026
		[0.010]	[0.008]	[0.008]	[0.008]	[0.011]	[0.017]
IRAs/Stocks/ Bonds	0.142	-0.006	0.002	-0.017 **	-0.013	-0.013	-0.038 ***
		[0.010]	[0.008]	[0.008]	[0.010]	[0.012]	[0.014]
Bank Accts/ CDs	0.141	-0.015	-0.005	-0.010	-0.009	0.004	-0.004
		[0.010]	[0.008]	[0.008]	[0.009]	[0.012]	[0.014]
Business/ Real Estate	0.083	0.024 **	0.007	-0.007	-0.011	-0.019 *	-0.003
		[0.010]	[0.008]	[0.007]	[0.008]	[0.010]	[0.013]
Dollar Value in Asset Class							
Principal Residence	116,284	13,757 **	6	6,160	-15,978 **	-25,118 **	-33,352 **
		[6,101]	[5,008]	[10,844]	[7,891]	[11,741]	[16,197]
Vehicles	13,248	776	1,261 **	-988	-1,744 **	-2,207 **	-2,906 **
		[809]	[642]	[618]	[728]	[1,048]	[1,183]
IRAs/Stocks/ Bonds	94,093	-3,955	9,311	-10,694	-20,259 *	-20,116	-32,797 *
		[13,030]	[15,684]	[13,036]	[11,793]	[14,858]	[16,913]
Bank Accts/ CDs	39,272	-5,288	-4,659	-8,194 **	-16,285 ***	-18,259 ***	-20,414 ***
		[5,038]	[4,238]	[4,068]	[4,349]	[5,276]	[6,154]
Business/ Real Estate	65,137	32,591 **	10,060	6,401	-10,288	-7,117	30,397
		[15,733]	[11,859]	[14,167]	[12,043]	[16,897]	[40,075]
Total Assets	335,861	34,970	13,183	-8,534	-69,367 ***	-75,984 **	-65,996
		[28,132]	[25,766]	[26,989]	[24,110]	[34,116]	[52,462]

Coefficient reported is for a dummy variable "X" periods away from the health shock. The excluded dummy is for the period before the shock. Standard errors appear in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated with two, or three stars, respectively. There are 9,142 observations.

Table 5: Effect of Acute Shock on Asset Holdings

Asset Class	Mean	Distance From Shock					
		3 Before	2 Before	1 After	2 After	3 After	4 After
Positive Holdings of Asset Class							
Principal Residence	0.880	0.018 [0.015]	0.023 ** [0.011]	0.001 [0.011]	-0.015 [0.012]	-0.039 ** [0.016]	-0.052 ** [0.024]
Vehicles	0.935	0.001 [0.009]	0.002 [0.008]	-0.015 * [0.008]	-0.028 *** [0.009]	-0.031 *** [0.011]	-0.059 *** [0.018]
IRAs/Stocks/ Bonds	0.591	0.019 [0.021]	0.007 [0.017]	-0.013 [0.015]	-0.009 [0.018]	-0.033 [0.022]	-0.059 * [0.030]
Bank Accts/ CDs	0.902	-0.003 [0.014]	-0.002 [0.011]	0.000 [0.009]	0.003 [0.011]	-0.007 [0.013]	-0.021 [0.019]
Business/ Real Estate	0.279	0.054 ** [0.023]	0.024 [0.018]	-0.004 [0.016]	-0.021 [0.018]	-0.052 ** [0.021]	-0.069 ** [0.028]
Share of Holdings in Asset Class							
Principal Residence	0.466	0.005 [0.014]	0.011 [0.011]	0.002 [0.010]	-0.004 [0.012]	0.003 [0.015]	0.007 [0.021]
Vehicles	0.096	-0.007 [0.007]	-0.005 [0.006]	0.003 [0.005]	0.007 [0.006]	0.015 ** [0.008]	0.008 [0.010]
IRAs/Stocks/ Bonds	0.182	0.005 [0.010]	0.009 [0.008]	-0.004 [0.008]	-0.008 [0.009]	-0.015 [0.012]	-0.006 [0.016]
Bank Accts/ CDs	0.150	-0.022 *** [0.008]	-0.024 *** [0.007]	0.007 [0.007]	0.013 [0.008]	0.017 * [0.010]	0.020 [0.015]
Business/ Real Estate	0.087	0.019 * [0.010]	0.010 [0.008]	-0.010 [0.007]	-0.010 [0.007]	-0.020 ** [0.009]	-0.032 *** [0.011]
Dollar Value in Asset Class							
Principal Residence	136,853	3,009 [6,334]	-46 [5,124]	7,595 [8,259]	-8,583 [6,029]	-4,107 [8,081]	-19,303 * [10,557]
Vehicles	16,450	-884 [931]	-143 [713]	-21 [774]	-2,127 *** [782]	-1,896 * [981]	-4,323 *** [1,137]
IRAs/Stocks/ Bonds	139,409	-13,293 [16,276]	-10,590 [14,094]	-18,414 [17,498]	-39,996 ** [18,437]	-63,741 *** [21,370]	-56,674 ** [24,887]
Bank Accts/ CDs	50,948	-9,187 * [5,029]	-9,647 ** [4,238]	1,130 [4,524]	387 [5,144]	-795 [5,676]	-5,175 [7,224]
Business/ Real Estate	75,853	24,696 [17,919]	10,252 [11,139]	-1,576 [12,639]	-12,233 [13,188]	-17,130 [22,684]	-38,717 ** [18,491]
Total Assets	430,404	6,070 [30,405]	-10,755 [23,820]	-6,716 [28,696]	-64,502 ** [29,693]	-90,845 ** [38,131]	-126,088 *** [41,747]

Coefficient reported is for a dummy variable "X" periods away from the health shock. The excluded dummy is for the period before the shock. Standard errors appear in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated with two, or three stars, respectively. There are 10,015 observations.

Table 6: Effect of Chronic Shock on Asset Holdings

Asset Class	Mean	Distance From Shock					
		3 Before	2 Before	1 After	2 After	3 After	4 After
				Positive Holdings of Asset Class			
Principal Residence	0.883	0.005	-0.001	-0.012	-0.027 ***	-0.032 ***	-0.054 ***
		[0.013]	[0.009]	[0.009]	[0.010]	[0.011]	[0.016]
Vehicles	0.930	0.004	-0.002	-0.005	-0.016 **	-0.015 *	-0.039 ***
		[0.008]	[0.006]	[0.006]	[0.007]	[0.009]	[0.013]
IRAs/Stocks/ Bonds	0.592	0.045 **	0.018	-0.027 **	-0.046 ***	-0.044 ***	-0.065 ***
		[0.019]	[0.014]	[0.012]	[0.014]	[0.017]	[0.022]
Bank Accts/ CDs	0.904	0.012	0.009	0.006	0.003	-0.001	0.002
		[0.012]	[0.009]	[0.008]	[0.009]	[0.010]	[0.013]
Business/ Real Estate	0.283	0.013	0.013	-0.005	0.010	0.009	-0.007
		[0.020]	[0.015]	[0.013]	[0.014]	[0.016]	[0.021]
				Share of Holdings in Asset Class			
Principal Residence	0.466	-0.008	-0.009	-0.006	-0.020 **	-0.031 ***	-0.015
		[0.013]	[0.009]	[0.008]	[0.009]	[0.011]	[0.015]
Vehicles	0.097	-0.004	-0.004	0.004	0.007	0.003	0.001
		[0.007]	[0.005]	[0.005]	[0.005]	[0.006]	[0.008]
IRAs/Stocks/ Bonds	0.181	0.012	0.012 *	-0.011 *	-0.014 *	-0.008	-0.016
		[0.009]	[0.007]	[0.006]	[0.007]	[0.009]	[0.011]
Bank Accts/ CDs	0.148	-0.007	-0.003	0.015 ***	0.028 ***	0.030 ***	0.033 ***
		[0.007]	[0.006]	[0.005]	[0.006]	[0.007]	[0.010]
Business/ Real Estate	0.091	-0.002	0.004	-0.002	0.002	0.008	0.000
		[0.008]	[0.006]	[0.005]	[0.006]	[0.007]	[0.009]
				Dollar Value in Asset Class			
Principal Residence	139242	7,982	4,642	-7,308	-13,369 **	-23,780 ***	-37,597 ***
		[6,532]	[5,012]	[6,265]	[6,730]	[7,178]	[10,319]
Vehicles	16829	391	221	-715	-1,181	-2,445 **	-3,976 ***
		[1,337]	[1,401]	[755]	[915]	[966]	[1,187]
IRAs/Stocks/ Bonds	139290	65	3,265	-11,900	-41,180 ***	-29,406 *	-56,896 ***
		[13,588]	[12,966]	[12,786]	[13,313]	[15,514]	[18,567]
Bank Accts/ CDs	50642	3,621	3,437	-1,094	-645	-1,723	-9,958
		[5,069]	[5,076]	[3,745]	[3,925]	[4,609]	[5,765]
Business/ Real Estate	84377	4,972	735	-11,776	-19,749	-29,785 *	-35,749 **
		[15,798]	[12,788]	[12,324]	[14,399]	[15,324]	[16,844]
Total Assets	440492	25,544	12,022	-34,360	-82,270 ***	-93,439 ***	-152,185 ***
		[29,558]	[25,675]	[23,431]	[25,798]	[28,264]	[33,825]

Coefficient reported is for a dummy variable "X" periods away from the health shock. The excluded dummy is for the period before the shock. Standard errors appear in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated with two, or three stars, respectively. There are 16,665 observations.

Table 7: Effect of Health Status Shock on Asset Holdings

Asset Class	Mean	Distance From Shock					
		3 Before	2 Before	1 After	2 After	3 After	4 After
Positive Holdings of Asset Class							
Principal Residence	0.898	0.027 ***	0.016 **	-0.001	-0.011	-0.013	-0.011
		[0.010]	[0.007]	[0.007]	[0.007]	[0.009]	[0.012]
Vehicles	0.949	-0.01 *	0.000	-0.003	-0.005	-0.004	0.008
		[0.006]	[0.005]	[0.005]	[0.005]	[0.007]	[0.008]
IRAs/Stocks/ Bonds	0.626	-0.026 *	-0.012	-0.019 *	-0.035 ***	-0.037 ***	-0.060 ***
		[0.014]	[0.011]	[0.010]	[0.012]	[0.014]	[0.019]
Bank Accts/ CDs	0.911	-0.012	-0.003	-0.001	0.003	-0.003	-0.007
		[0.009]	[0.007]	[0.006]	[0.007]	[0.008]	[0.011]
Business/ Real Estate	0.306	-0.024	-0.013	-0.008	-0.012	-0.015	-0.039 **
		[0.015]	[0.012]	[0.010]	[0.012]	[0.014]	[0.019]
Share of Holdings in Asset Class							
Principal Residence	0.463	0.027 ***	0.020 ***	0.009	-0.002	-0.007	0.000
		[0.009]	[0.007]	[0.007]	[0.008]	[0.009]	[0.012]
Vehicles	0.098	0.001	0.000	0.002	0.004	0.009 *	0.013 *
		[0.005]	[0.004]	[0.003]	[0.004]	[0.005]	[0.007]
IRAs/Stocks/ Bonds	0.193	-0.012 *	-0.007	-0.008	-0.005	-0.007	-0.017 *
		[0.007]	[0.005]	[0.005]	[0.006]	[0.007]	[0.010]
Bank Accts/ CDs	0.132	-0.003	-0.004	-0.005	0.000	0.008	0.002
		[0.006]	[0.004]	[0.004]	[0.005]	[0.006]	[0.007]
Business/ Real Estate	0.096	-0.011	-0.007	0.001	0.000	-0.004	-0.004
		[0.007]	[0.005]	[0.005]	[0.005]	[0.006]	[0.008]
Dollar Value in Asset Class							
Principal Residence	146,548	5,762	6,799	3,885	-11,199 **	-16,107 **	-13,218
		[5,029]	[5,789]	[5,299]	[5,573]	[7,739]	[9,919]
Vehicles	18,313	197	585	-453	-1,073 *	-1,069	-897
		[775]	[563]	[486]	[567]	[716]	[1,125]
IRAs/Stocks/ Bonds	145,421	-15,670	-18,986 **	-8,121	-3,294	2,686	905
		[9,972]	[8,789]	[9,891]	[11,824]	[13,583]	[16,825]
Bank Accts/ CDs	51,108	3,971	-4,471	-2,432	7,559	7,298	4,017
		[6,197]	[3,542]	[2,799]	[9,075]	[5,617]	[6,231]
Business/ Real Estate	96,891	5,440	-863	-11,167	-6,798	-15,603	-39425*
		[13,454]	[11,869]	[11,717]	[25,105]	[21,439]	[22,396]
Total Assets	470,004	-4,981	-20,817	-16,855	-12,654	-20,011	-48,519
		[21,915]	[19,794]	[19,693]	[37,581]	[32,663]	[37,007]

Coefficient reported is for a dummy variable "X" periods away from the health shock. The excluded dummy is for the period before the shock. Standard errors appear in parentheses. Statistical significance at the 10%, 5%, and 1% levels is indicated with two, or three stars, respectively. There are 27,111 observations.

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