Elderly Households and Housing Wealth:

Do They Use It or Lose It?

DRAFT

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Abstract

1 Introduction

As the baby boom generation ages, they carry with them into old age an unprecedented amount of wealth. In 1998, households aged 50 and older held over $24.8 trillion in net worth, or 2.9 times the U.S. GDP for that year (Kopczuk and Lupton, 2001). Most of these households will hold a sizeable portion of their wealth in their house. Housing wealth is by far the single largest asset for elderly homeowners. Among homeowners aged 51 and above, housing wealth accounts for over 50 percent of household wealth and it dominates liquid asset holdings for the majority of these households[1].

Despite the significance of housing wealth in the household's portfolio, there is still little consensus on how it affects the savings and consumption decisions of the elderly homeowner. The research to date finds little evidence that the elderly are drawing down their housing wealth[2]: home ownership continues to be high in very old ages and home equity does not appear to fall with age. This empirical regularity cannot be explained by the conventional life-cycle story, which predicts that households will consume their wealth as they age. The apparent unwillingness to consume housing wealth presents a puzzle when combined with the empirical observation by others that consumption falls at retirement. Homeowners could be made better off by tapping into their housing wealth to support a higher level of non-housing consumption in retirement, but the high level of home ownership and housing equity in old age suggests that they aren't doing so.

The evidence from existing work has settled on two possible explanations for current observations. The first, and perhaps the most widely-held, view is that the elderly do not regard housing wealth as fungible wealth. They simply think of their house as a place to live and do not make consumption decisions based on that wealth. If true, this implies that appropriate accounting of wealth for the elderly should not include housing wealth and any assessment of elderly well-being, such as the adequacy of retirement savings or eligibil-

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[1]Based on data from the 1998 Health and Retirement Study. Liquid assets include stocks, bonds, savings and checking accounts, Certificate of Deposits, the value of automobiles, and other assets.

[2]The exceptions are Sheiner and Weil, 1992; and Skinner, 1994.

ity for means-tested programs, should exclude the value of housing equity. In addition, if the elderly are not making adjustments to consumption or savings based on their housing wealth, then it has implications for the efficacy of estate taxation, intergenerational wealth transfers, and national savings.

The alternative view is that the elderly are holding onto their house as "insurance" against high cost events in old age, such as entry into a nursing home. For this reason, they are unlikely to consume that wealth until the bad outcome happens and since the bad event has a low probability of occurring, most homeowners do not end up consuming their housing wealth. The economic and policy implications under this alternative explanation will differ, in some ways substantially, from those that arise when homeowners regard their housing wealth as irrelevant.

Yet another competing explanation, although one that has found little empirical support to date, is that the elderly have very strong bequest motives. If the house affords favorable tax treatment or is protected from Medicaid estate recovery, then leaving the house as an inheritance is preferred to leaving cash or other financial assets. The policy implications under this scenario will also differ from that which presumes that housing wealth is non-fungible. If the homeowner maximizes a dynastic utility function, then Ricardian equivalence should hold and fiscal policies will be neutralized; although, it is possible that the illiquid nature of housing might generate results that do not conform to standard theory. In any event, because motivation affects behavior which, in turn, affects policy, understanding the reasons for holding housing wealth has fundamental economic implications and is necessary for making informed policy recommendations.

Given the importance of housing wealth and the current lack of consensus, this paper revisits the puzzle. I look at the housing transitions of the very elderly to assess if they are consuming their housing wealth. The paper differs from previous research in that it looks at households when they are very old (households aged 70 and above) and it follows them into death. I take advantage of the panel feature of the Asset and Health Dynamics of the Oldest Old (AHEAD) data and look at: (1) whether home-ownership rates fall with age; (2)

the extent to which changes in home-ownership among married households are attributable to widowhood; (3) the extent to which households are selling the house just before dying and what about death explains the selling; and (4) how much of housing equity is consumed when homeowners sell the house.

Contrary to earlier evidence, I find that the elderly are consuming their housing wealth, albeit at very old ages. As with previous research, I find that the probability of selling the house increases when a spouse dies. More than that, I also find that poorer households are selling and households that incur nursing home expenses are selling the house. Homeowners that sell the house are consuming between 71 to 95 cents of each dollar change in housing equity. The evidence suggests that the elderly are holding housing wealth for precautionary reasons; although the observed behavior is also consistent with life-cycle motives for savings.

2   Previous Research

Two stylized facts emerge from the body of research on the housing wealth of the elderly: the first is the elderly are not reducing housing wealth as they age and the second is they do not respond to conventional economic incentives in their behavior towards housing.

Merrill (1984), Venti and Wise (1989, 1990, 2001), and Feinstein and McFadden (1989) find that a substantial majority of the elderly are homeowners and home ownership rates do not decline with age. When a homeowner sells the house, it is usually because a spouse died or entered a nursing home. This evidence is drawn from the Retirement History Survey (RHS), the Panel Study of Income Dynamics (PSID), and more recently, the Health and Retirement Study (HRS), and the Asset and Health Dynamics Among the Oldest Old (AHEAD) survey. In addition, Merrill (1984) and Venti and Wise (1990) find that if the elderly moved, they are just as likely to move into a bigger house as to a smaller house.

For the most part, the earlier work suffered from shortcomings of the data. Most relied on cross-sectional data and, as such, could not control for sample selection. For instance,

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wealthier households are more likely to be homeowners and are also more likely to live to an older age. Thus, one might observe a high rate of home-ownership at older ages in the cross section and attribute that to a propensity to hold onto housing when it might be due to the higher probability of observing healthier, and thus, wealthier households at those ages. The most recent paper by Venti and Wise (2001) uses the same panel data that is used in this paper, which is the HRS and the AHEAD. They find results similar to their earlier work using different datasets: homeowners have a propensity to hold onto their house in old ages and most of the sales are precipitated by changes in household structure. My results differ from theirs mostly because of selection. Venti and Wise observe only living households, whereas because of additional years of data, I am able to follow households into death. As we shall see in the next section, the reduction in home ownership in the years just prior to death imparts a bias to estimates that look only at living householdsfootnoteInstead of selling the house, homeowners could access housing equity by purchasing a reverse mortgage. Venti and Wise (1991), however, find that few elderly homeowners purchase reverse mortgages. Alternatively, a homeowner could borrow against the equity in the home; however, based on the AHEAD data, I find homeowners in this age group have small housing loans. The average homeowner has about $100,000 in housing equity but less than $10,000 in housing loans. Most have paid off their mortgages and few borrow against the equity in their house..

The second stylized fact is that housing wealth does not seem to influence the consumption and savings decisions of elderly homeowners. Skinner (1989), Levin (1992), and Engelhart (1995) observe that increases in housing prices over the 20-year period from the 1960s to the 1980s had little effect on aggregate savings. Levin (1989) find that the marginal propensity to consume out of housing wealth is lower than the marginal propensity to consume out of financial wealth. In this mental accounting, housing wealth is considered non-fungible and changes in housing wealth have little impact on savings or life-time consumption.

To some extent, these observations are not inconsistent with reasonable economic decision-making. If the homeowner is "saving" in the house for precautionary reasons, then uncertainty about future events will discourage her from accessing her housing wealth earlier in her life-cycle. If the event against which she is insuring never materializes then she doesn't

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sell the house. Because she is saving in the house for unexpected events later in life, she is unlikely to tap into the wealth through reverse mortgages or home equity loans.

Moreover, housing is a durable good and adjusting the level of a durable good is costly[3]. Selling the house involves direct financial costs such as realtor fees (typically about 6 percent of the value of the house), relocating or disposing of household items, searching for alternative housing, packing, and possibly some emotional costs. Because of these high adjustment costs, homeowners will seldom move and, at any point in time, they are either over-consuming or under-consuming housing services (Sinai, 1998). The consequence of the relatively illiquid nature of housing is that households do not smoothly adjust their consumption and savings responses to changes in housing wealth. Given uncertainty about health and mortality, the optimal time to adjust might well be at much older ages if the homeowner places a high marginal valuation on consuming aging service[4].

It is possible, however, that the homeowner has no intention of selling the house; but this too could be economically motivated. If families serve as a relatively well-functioning annuity market (Kotlikoff and Spivak, XXX), then the elderly could turn to family members for financial support if they desired higher non-housing consumption without resorting to selling the house. In this circumstance, the homeowner might enter into an implicit contract with family members: receiving inter-vivos transfers from them and leaving the house to them when she dies. Under this scenario, one will not observe the homeowner selling the house prior to death but housing wealth serves as payment for services received from family members. Even if the homeowner is altruistic and is bequeathing the house because she cares about her child's welfare, it still implies that housing wealth is not fungible.

In any event, these explanations suggest that there might be economic reasons to either

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[3]Estimates of the costs of selling a home range from 13% to 20% of the sale price of the house. Venti and Wise (1984) estimated that for renters, utility would have to increase by 14 percent to induce the average renter household to move.

[4]The gerontology literature documents the desire of the elderly to age gracefully and to die with dignity. This may suggest that the elderly have a very high marginal utility for consuming aging services and are likely to postpone spending until much later in life.

postpone the sale of the house until very old ages, or not sell the house at all. To this end, Sheiner and Weil (1992) and Skinner (1994) provide convincing evidence that homeowners are, in fact, selling the house.

Using the Current Population Survey (CPS) from 1983 to 1988 and data from the 1983-1987 PSID, Sheiner and Weil find that home-ownership rates and housing equity decline with age. They find a sharp fall in home-ownership in the year after widowhood for women, and in the year before death for both men and women. Skinner (1994), again using the PSID, also finds evidence that the elderly are selling the house. He finds that movers experience a larger decline in income over time than non-movers and the difference in income between movers and non-movers is partly, but not entirely, explained by changes in family composition. Both papers also find evidence the housing equity is consumed when the house is sold. Skinner estimates that households that downsize spend 69 cents of each dollar of home equity, with approximately half of the proceeds spent near the time of sale and a smaller portion spent in subsequent years.

Results from both papers, however, were drawn from very small sample sizes. In addition, because wealth in 1993 and home equity data are not available in the PSID, Sheiner and Weil imputed household wealth from asset income and used housing value as a proxy for home equity. The former might understate the impact of wealth changes on housing transitions (that is, it might appear as if households are selling the house for non-financial reasons), the latter might understate the behavioral impact of housing wealth, and both might overstate the non-pecuniary reasons for selling the house.

3   Data and Descriptive Statistics

Data

This paper uses data from the Asset and Health Dynamics Among the Oldest Old (AHEAD) survey, which in 1998 became part of the Health and Retirement Study (HRS). The AHEAD survey is a national panel data set of the non-institutionalized elderly population who were

born in 1923 or earlier, and their spouses. At the time of the baseline interview in 1993, eligible respondents were 70 years of age or older. When appropriately weighted, the sample is representative of the U.S. population of the target cohort. The first wave of interviews was conducted in 1993 and 8222 respondents from 6,047 households were interviewed. The second wave of the survey was conducted two years later, in 1995. Subsequent waves followed in 1998 and 2000. The AHEAD follows respondent from the time of the initial interview until death. End of life information of the deceased respondent is obtained by interviewing proxy respondents in an exit interview. The proxies are generally the spouse, if the decedent was married, or a child, if the decedent was single at the time of death. The age of the sample, the information available from the exit interviews, such as home ownership status and estate value, the panel feature of the survey, and the rich set of data on wealth, income, living arrangements, and family structure make the AHEAD data particularly suited for this paper.

Household Wealth and 1993 Data

The AHEAD data contain detailed wealth information of each households. Cases of missing wealth data were imputed by the Health and Retirement Study (HRS) by a method of hot-decking and using information from a series of unfolding brackets[5]. Table 1 presents aggregated household wealth for the AHEAD cohort over the four waves. A cursory glance at Total Net Worth shows a distinct difference in the level of wealth reported in 1993 versus those reported in 1995 and subsequent waves. Even though the survey instrument for wealth did not change between the waves, wealth reported in 1993 is considerably lower than the subsequent waves. A comparison of the components of wealth show unrealistically high jumps in values between 1993 and 1995, particularly for stocks and bonds, while the levels and changes reported between 1995, 1998, and 2000 are considerably more stable and appear more reasonable. Within-household comparison of responses for each wave shows a substantial number of households reporting that they owned no stocks or bonds in 1993, whereas they reported owning them in subsequent waves. The extent of the difference between 1993 and subsequent waves raises concerns that there might be something system-

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[5]More detailed discussion of the imputation method is reported in Juster (XXX?).

atically different in the 1993 data from subsequent years. Consequently, I exclude the 1993 data in much of the analysis that follows and only look at transitions from 1995 through 2000.

In the 1995, 1998, and 2000 waves of the AHEAD data, the survey distinguished between a primary residence and a secondary residence. Home ownership, housing values, and loans taken against the house were asked separately for each residence. In 1993, however, the survey did not distinguish between a primary and a secondary residence. Households were simply asked to report the value of their home and land, and loans taken against the house. The difference with the 1993 housing data provides additional justification for excluding the 1993 data.

Housing Variables

Since this paper is concerned with whether homeowners are tapping into their housing wealth by selling or trading down their home, the focus is only on the primary residence. I use changes in ownership status of the primary residence between waves (going from owning to not owning a primary residence) to identify households that sell the home. If households bought and sold a house in the same wave interval, it will not be possible to identify trade-ups (households that changed residences and increased home equity) and trade-downs (changed residences and reduced home equity) by looking at home ownership status alone. The AHEAD data, however, also report whether the household has changed primary residences between waves. I use this move variable to identify the trade-ups and trade-ups; and distinguish between the two by comparing home equity in the new home to that in the old. A household is coded as having traded down in housing if it reports owning a home in both waves, moving between waves, and home equity falls between waves[6].

If a home owner sold a house, lagged home equity was constructed by using the sale price of

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[6]Beginning in 1995, households were asked if they bought or sold their primary and/or secondary home since the previous interview. Households could report that they bought a home only, sold a home only, or bought and sold a home. This housing transition question, however, does not distinguish between the primary residence and the second home. For this reason, the variable was not used to construction the housing transition variables.

the home and subtracting total housing loans reported in the previous waves[7]. Otherwise, lagged home equity was based on self-reported housing values less total housing loans. It is presumed that households that recently purchased a home were less likely to overstate the value of their, so current home equity was constructed using self-reported housing values.

The exit data provides information on home-ownership status and living arrangement at the time of death. In addition, it contains data on the value of the decedent's estate. For single households that died, I use the estate value in the exit to construct household wealth at death. For the 2000 exit interview, proxy respondents are explicitly asked to exclude the value of the house in their estate valuation. Consequently, for 2000 exit respondents who owned a home at death, I constructed household wealth by adding the value of home-equity to the value of the estate. The estate data, however, does not contain information on the components of wealth, such as home equity, so home equity reported in the previous wave was used instead. For single homeowners who died in 1995 and 1998, I assumed that the estate value included housing wealth[8].

4   Graphical Evidence

As a first step, I look at whether homeowners are consuming their housing wealth by looking at home-ownership rates with age. The selection criteria for the graphical analysis was, generally, inclusive. Households were kept in the sample if they did not have missing information of the variables of interest. Households that went through a divorce or were separated during the survey period (1995 to 2000) were dropped from the sample because of the difficulty of untangling the effects of marriage termination on their housing decisions. Households that reported themselves as divorced or separated at baseline (that is, in 1995) were coded as single households and they remained in the sample [9]. Pooling over the four

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[7]Total housing loans include first and second mortgages, home equity loans, and other loans taken against the first home.

[8]In the 1995 and 1998 exit interviews, proxy respondents were not given explicit instructions about whether or not they should include housing wealth when they were asked to report the decedent's estate.

[9]I assumed there were no lagged effects of marriage termination on housing choices.

waves gave 19,883 observations.

By looking at households over time, I avoid some of the issues of sample selection; however, there might still be cohort differences in home ownership. It is possible that older households are less likely to be homeowners and one might see a fall in home-ownership rates with age and conclude that households are consuming their housing wealth when it could be attributable to cohort effects. To control for possible cohort effects, I sort the households that were alive at the time of the interview into 4 5-year cohort groups: 70-74, 75-79, 80-84, and 80+. Figures 1 and 2 plot the home-ownership rates for married and single households, respectively, over the four waves (1993 to 2000). Each line segment corresponds to a cohort-group. Two points stand out in both figures. The first is that home-ownership remains relatively unchanged over the 7 year period for the younger cohort but it falls for the older cohorts, and the rate of change increases for each succeeding older cohort. Home ownership rates for the 70-74 cohort decreased by 3% over the 7-year period for both married and single households but it decreased by about 30% for married and single households in the 85+ cohort. The second is that there appears to be almost no cohort differences in home ownership rates. The end of a line segment matches up almost perfectly with the 1995 data point for the next cohort. Among single households, older cohorts appear to have slightly lower home ownership rates, but the difference is small.

Because of the negligible cohort effect, one can interpret Figures 1 and 2 as saying home-ownership decreases with age and it decreases at an increasing rate. Among married households, home ownership for the youngest cohort (70-74) declined by only 0.5% annually whereas it decreased by 5.3% annually for the 85+ cohort. Over the 22-year period (70-92), home-ownership rates for married households fell from 89% to 38%, a decrease of 41 percentage points. Among single households, the decline in home ownership was even more dramatic. The proportion owning a home went from 67% at age 72 to 19% at age 92 – a decline of 48 percentage points. This evidence is starkly different from earlier findings and it is mostly because the AHEAD population is much older than the sample used in earlier work. As we see from Figures 1 and 2, most of the decrease in home ownership occurs at very old ages.

Previous research have found that most of the selling occurs when a spouse dies or enters a nursing home. These events are highly correlated with age and the observed decrease in home-ownership rates among married households in Figure 1 might be attributable to either of those two events. Certainly, there is a difference in the level of home-ownership between married and single households, suggesting that married homeowners are selling their house when the first spouse dies. The evidence that home ownership rates continue to decline for single households and at slightly higher rates, however, provide some indication that something other than widowhood might be driving the results[10].

I look at the effect of widowhood on home ownership by comparing home ownership rates between married households that stayed intact (that is, both spouses survived through 2000) and households that were married in 1995 but were widowed during the survey period. Figure 3 plots the proportion that were homeowners for each group with age. The rate of home ownership for widowed households is mostly lower than that for intact married households. The lower level of home ownership for widowed households probably reflects the well-documented wealth-health relationship (Smith, 1997): Widowed households are less healthy and also less wealthy, and consequently, less likely to own a home. Because the less healthy and less wealthy are dying earlier, this implies that healthier and wealthier households are disproportionately represented in older ages and it explains the relatively flat wealth-age profile previously observed in cross-sectional data.

Venti and Wise assert that the fall in home-ownership among single households might be due to the lagged effect of widowhood. That is, it takes time for the widow to get around to selling the house. To assess the effect of lagged widowhood on home ownership, Figure 4 compares home-ownership among newly widowed households to existing widowed households[11]. If want Venti and Wise assert is true, than we would expect to see a much steeper decline in home-ownership among newly widowed households, and a smaller decrease in home-ownership among existing widowed households with some levelling off when over

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[10]Venti and Wise (2001) attribute the decline among single households to the lagged effect of widowhood.

[11]Existing widowed households are households that were previously married and were already widowed at the baseline interview in 1993.

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time. What we see instead is that the gradient of the line segments between the newly widowed households and the existing widowed households are essentially identical. There is some narrowing in the gap between the two profiles for each cohort, suggesting that home ownership rates are falling slightly faster for new widows than for existing widows, but generally, they fall at about the same rate. This suggests that there might be some effect of lagged widowhood on home-ownership among single households, but the decline is mostly attributable to some other factor. Figure 4, once again, highlights the health-wealth relationship: existing widows have lower home ownership rates at all ages than new widows.

Another approach to assess the extent to which widowhood affects home-ownership is to plot home-ownership rates relative to the time of the spouse's death. If the spouses's death is an important triggering event then one would expect to observe a sharp decrease in home ownership in the wave interval of the spouse's death. In addition, if there are lagged effects to widowhood, then one would expect the rate of decrease to be higher in the periods after the spouse dies than before the wave interval of the spouse's death. In Figure 5, the period, T-1, is the wave immediately preceding the wave in which the household reported her spouse died; correspondingly, the period T+1 is the wave immediately proceeding the wave in which the spouse died. For the younger cohort, home-ownership falls by about 5 percentage points in the wave interval of the spouse's death, compared to about 7 percentage points immediately after the spouse's death and about 5 percentage points at other intervals. In short, widowhood does not substantially affect the rate of decrease. The profile for the older cohort is somewhat different. There is a large drop in the wave interval of the spouse's death (13 percentage points), it levels off slightly (6 percentage points) after death, then it decreases sharply again 2 periods after the spouse's death (16 percentage points). Given the smooth decline in home ownership for the younger cohort, Figure 5 is suggestive than something more than just widowhood is explaining the sale at older ages.

Sheiner and Weil find that homeowners sell the house just prior to death[12]. So the decline in Figure 5 might be attributable (all or part) to households dying. I plot in Figure 6, the home ownership rates of newly-widowed households. I separate those households that

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[12]Small sample sizes prevented a more detailed look at why death affects home ownership.

had a surviving spouse through 2000 from those where both spouses died during the survey period. The period T0 corresponds to the period when the first spouse died, which could be in 1995 or 1998. The time T+1 is the period immediately proceeding the death of the first spouse. If the spouse died in 1995, then T+1 is 1998; if the spouse died in 1998, then T+1 is 2000. For married households where both spouses died in the sample, the widow would have died in the immediately proceeding wave (T+1) or, if the first spouse died in 1995, two waves after (T+2). We see in Figure 6 that the profile for surviving households decreases at a fairly constant rate over time. The two lines are almost parallel between T-2 and T-1, but the lines begin to diverge immediately before the first spouse dies, and the gap between the lines continue to widen over time. The graphical evidence suggests that death of the household has a larger effect on home ownership than widowhood.

Cohort analysis suggests that home ownership falls by over 40% between ages 70-92, with most of the selling occurring at very old ages. The graphical evidence substantiates previous research in that part of the selling is due to the death of a spouse but it also provides convincing evidence that there is substantially more selling just prior to the death of the household. This evidence lends support to the precautionary savings model, households might be selling the house to pay for large end-of-life expenses, but it might also be consistent with the life-cycle story if households have depleted their non-financial wealth and are drawing down housing wealth just prior to death. The next section takes a more formal approach to looking at whether or not the elderly are accessing their housing wealth and takes a closer look at what motivates a sale just prior to death.

5   Empirical Evidence

Are The Elderly Selling The House

The graphical evidence suggests a relationship between home ownership and age. In addition, it indicates that homeowners are selling the house when a spouse dies and just prior to when the household dies. There are two reasons why a homeowner will sell the house in

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the time period immediately preceding death; she either needs to access her housing wealth or declining health and function prevents her from continuing in the house. I take a closer look at the economic possible economic reasons for selling the house.

As discussed earlier, selling the house late in life is consistent with both the precautionary and the life-cycle motive for savings[13]. If there is an adverse event, such as a nursing home event, then one would observe both types of households selling the house to access her housing wealth. Because of high adjustment costs to housing transactions, the homeowner will probably draw down her financial assets before she sells the house. Observing this behavior in the data will indicate an economic reason for the sale but it will not help identify the type of household. If we observe the household selling the house close to the end of life and we do not observe an adverse event (that is, there are no high out-of-pocket expenses for the household), then one might attribute that sale to a life-cycle household and not to the precautionary saver. This is because the precautionary saver with a bequest motive will prefer not to sell in the absence of an adverse event since selling the house is costly.

I begin by looking at the transition in home-ownership among married households to replicate the evidence from the previous section. I estimate the impact of a spouse dying (NEWWID) and the household dying (HHDIE) on the probability of selling the house, controlling for age of household (AGE_HH). I iteratively include variables that might proxy for financial need in order to identify the motivation for selling the house.

I select households that were homeowners in 1995 and that did not have missing information in the data through 2000, or through death. This resulted in a sample of 5,777 households, of which 2,705 were married and 3,072 were single households. Of households that started out married in 1995, 16 % become widowed and two percent of households died over the 5-year period. Among single households, 10% died during the sample period. About 70%

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[13]A homeowner with a bequest motive is unlikely to sell the house because her heirs can benefit from the step-up in basis on the house when she dies, which eliminates the capital gains tax on the house. In addition, high transaction costs associated with housing sales will give her negative utility.

of households in the sample were homeowners in 1995 and median household net worth was $86,283. Among homeowners, median housing equity was $66,371 and median household net worth was $139,854. The between-wave transitions in home ownership were as follows: 11% of homeowners sold their house, 2% traded down in housing, 2% traded up in housing, and 4% went from not owning a house to owning a house.

Table 2 presents the probit estimates for married households. The first column of each specification gives the marginal effect of the variable on the probability of selling the house. Specification (1) validates what was observed in the graphical analysis. A spouse dying increases the probability of a sale by almost nine percent but the household dying increases the probability of a sale by almost 13%. As noted in the figures, the homeowner is more likely to sell the house just prior to the household dying than if a spouse dies. The coefficient on the age variable is significant, but the magnitude of the effect is negligible.

In much of the previous research, it was observed that a nursing home event increases the probability of selling the house. Since the risk of nursing home entry increases with age, the declining ownership-age profile in the graphical analysis might be attributable to nursing home entry. A nursing home event might prompt the homeowner to sell the house because there is a need for liquidity (to pay for the nursing home) or because demand for the housing services has changed (for instance, declining health may make it no longer a good fit). I want to be able to distinguish the two reasons.

Most of the respondents in this sample are eligible by age for Part A Medicare which covers inpatient costs in hospitals and skilled nursing facilities. Medicare coverage for skilled nursing facilities, however, is limited: Medicare covers the full cost for the first 20 days, up to $105 for days 21 to 100, and nothing beyond the first 100 days for each benefit period. Consequently, if the respondent required chronic (long-term) care in a skilled nursing facility, she will have to pay for that care out-of-pocket. For the most part, high out-of-pocket medical expenses for the elderly will be mostly due to nursing home costs[14]. If the

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[14]Other out-of-pocket expenses include premiums for Part B Medicare coverage, prescription costs (which can be very costly), and any copayments for covered services. Medicare Part B covers the cost of doctor's

homeowner, whether married or single, is liquidity constrained, then she will sell the house to pay for nursing home expenses.

The exception will be if the nursing home recipient qualified for Medicaid or owned a long-term care insurance policy. Eligibility for Medicaid nursing home coverage varies by state but in general, most states require the individual to have exhausted her assets before she becomes eligible. If the nursing home resident has a surviving spouse and the couple owns a home, Medicaid excludes the value of the house when counting her assets for eligibility. Consequently, if the household is married, the nursing home recipient qualifies for Medicaid, and there is a spouse who continues to live in the house, then a nursing home event should not warrant a sale. It should be pointed out that Medicaid eligibility, in and of itself, does not necessarily imply high out-of-pocket expenses because low income households can receive Medicaid assistance to pay for Medicare Part B coverage. Receiving Medicaid, however, does imply that the household is poor.

The second set of estimates (2) controls for whether anyone in the household was in a nursing home at the time of the interview (inNH_HH). Including the nursing home variable reduces the effect on the NEWWID and the HHDIE variables by almost half. The marginal effect of a spouse dying and a household dying falls to 5 and 7 percent, respectively. A nursing home event has a large effect on the probability of selling the house; it increases the probability of a sale by 14 percentage points. As noted earlier, the impact of nursing home costs on home ownership will vary by household. Wealthier households or households that are not liquidity constrained will not have to sell the house to pay for nursing home costs. In addition, homeowners that are sufficiently poor, who qualify for Medicaid, and who have a spouse living in the house will not have to sell the house. I include a dummy for whether or not the household is currently covered by Medicaid (MEDICAID) and I interact Medicaid with nursing home (inNH_MED) to distinguish between the two types of Medicaid coverage. In addition, I add controls for lagged housing equity (LOG_HELW) and lagged household net worth. Households are sorted into wealth quartiles and the omitted category is households in the lowest wealth quartile (WTHCAT). I also include some basic

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visits and outpatient hospital care. It is generally about $60 a month.

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household characteristics: whether the household has children(ANYKID), race (BLACK, HISPANIC), and whether there is at least a high-school graduate in the household (HS_HH). The estimates are presented in panels (3) and (4).

In specification (3), we see that the coefficient on the Medicaid variable is significantly different from zero. For the average homeowner, being on Medicaid increases the probability of selling the house by 7 percentage points, and the marginal effect exceeds the effect of widowhood. Medicaid, in this specification is likely picking up the effect of low wealth. Poor households are more likely to be on Medicaid, and poor households are more likely to be liquidity constrained and, consequently, more likely to sell the house. In specification (4), we observe the relationship between wealth and the probability of selling the house more directly. As expected, we also see that households in the lowest income quartile are more likely to sell the house than households in the other wealth quartile. Also, since Medicaid was a proxy for low wealth, it loses significance once controlling for wealth. Adding controls for wealth also reduces the impact of the household dying and being in a nursing home on the probability of selling the house.

In specification (4), the coefficient on HHDIE is no longer significant. This says that the selling we observed just prior to death was driven by wealth or, last least, the lack of wealth: poor households were selling the house just prior to death. As noted in the graphical analysis section, this highlights the health-wealth relationship. But more importantly, it provides evidence that homeowners are selling the house in order to access the housing wealth. Once controlling for wealth, the marginal impact of a nursing home event falls by a third. That is, a third of households that sold the house because of a nursing home event did so in order to access their housing wealth[15].

It is interesting to note that the impact of widowhood does not change with the addition of controls for wealth. This says that the reasons for selling the house when a spouse dies are probably not attributable to the economic status of the household. The widow may

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[15]Households that had a spouse in a nursing home and on Medicaid were less likely to sell (the coefficient on the interaction term, inNH_Med is negative) but the effect was not significantly different from zero.

be selling the house for non-pecuniary reasons or because demand for housing services fall when there is one less person in the household. Because previous research could not observe the household into very old ages and could only observe the relationship between home-ownership and widowhood in the data, it is not surprising they concluded that housing wealth was fungible and homeowners only regarded their house as a place to live. The observation that wealth doesn't affect the probability of a sale when the first spouse dies but it does when the second spouse dies might also suggest that household wealth is significantly lower when the second spouse dies than when the first spouse dies. This might be indicative that households are consuming their wealth as they age or it could be evidence of the higher risk of poverty with widowhood (documented by Bound,et al. 1991; Weir and Willis, 2000; McGarry and Schoeni, 2001).

It is generally expected that children will have an important influence on whether the elderly sell their house. Previous work have used children to proxy for a bequest motive, positing that households with children want to leave the house to their children and are less likely to sell to house. They find that the dichotomous variable for whether the household has children does not affect the probability of a sale. Similar results are observed in this paper for specifications (1)-(4); the coefficient on the ANYKID variable is not significant. It might be the case, however, that children affect the sell decision only in non-pecuniary ways. For instance, having children may make it easier for the household to move (she has somewhere to move to) and hence she will be more likely to sell, or children may make it less costly for the homeowner to continue living in the house (by providing financial or time transfers) and so she will be less likely to sell. It may also be the case that children are an important determinant only when households undergo change: that is, homeowners will turn to their children for assistance only if there is a change in household finances, or structure, or health status. To see if this is the case, I interact the dummy variable, ANYKID, with widowhood (KID_NEWWID) and with a nursing home event (KID_inNH) and the results are presented in specification (5).

Contrary to previous research, I find that children do affect the sell decision. If a spouse dies, the surviving spouse is less likely to sell the house if she has kids. With the inclusion of the

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interaction terms, the marginal effect on NEWWID doubles. This suggests that widowed households that didn't sell because they had children were mitigating the results in the earlier specification. If a spouse enters a nursing home, the non-institutionalized spouse is more likely to sell the house if she has children. Why does having children work in the opposite direction in this case? At first glance, one might expect that children will decrease the probability of a sale: perhaps because the household has a bequest motive and would like to leave the house to the children or because the household has an attachment to the home and having children would enable the spouse to continue in the house. Particularly since the house is protected from Medicaid estate recovery, one would expect the homeowner to be even less likely to sell given a nursing home event.

As explained earlier, however, most households do not qualify for Medicaid or would prefer not to qualify for Medicaid nursing home care because it is generally regarded as lower quality care. Consequently, most households pay out-of-pocket for nursing costs. The sign on the interaction term, KID_inNH, seems to be saying that the homeowner is more likely to access her housing wealth to pay for that cost if she has children. That is, the coefficient on the KID_NH variable captures the effect of nursing home costs if the household has children. Nursing home costs for households with children increases the probability of selling the house by over 11 percentage points and it is highly significant. The inNH_HH variable now gives the effect of a fall in demand for housing services. Having one less person in the house increases the probability of selling by 3 percentage points and it is significant at the 10% level[16].

Table 4 presents the probit estimates for households that were single at baseline. These are mostly similar to those of married households: poorer households are more likely to sell than wealthier households, and being in a nursing home significantly increases the probability of selling the house. The effect, however, is considerably larger for single households than for married households. For homeowners without children, being in a nursing home increases the probability of selling the house by 42 percentage points. For households with children,

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[16]In specification (5), I also control for between-wave changes in full wealth (CHG_FW). Full wealth include household net worth, social security, pension, and annuity wealth.

the probability increases by 35 percentage points when the respondent enters a nursing home. That is, a nursing home event is less likely to lead to a sale if the household has children, so the interaction term KID_inNH could be capturing bequest intentions. If so, it is certainly small. Homeowners are mostly selling their house in order to pay for nursing home expenses.

Are The Elderly Consuming Housing Equity

The evidence from the probit estimates indicates that the elderly are selling their homes for financial reasons. The next step looks at how much of housing wealth is consumed when the home owner sells the house. Figure 7 plots household net worth(which includes housing wealth) and total financial assets (non-housing wealth) for homeowners relative to the time of the sale. The time period TO denotes the wave interval in which the house was sold. The time, T-1, is one period before the sale, and time, T+1, is one period after the housing sale. We see a sharp fall in household wealth between T-1 and T0. Generally, the sale of the house should simply be a reallocation of wealth portfolio and net worth should remain unchanged. The significant dip in net worth in the wave interval the house is sold might be the reason for the sale (homeowners wanted to tap into their housing wealth) or it might be the result of the sale (that is, homeowners were overstating the value of the home prior to the sale and the sale price is less than self-reported house value[17]). The concomitant but less than offsetting increase in financial wealth indicates that some fraction of the change in housing equity is returned to the household's portfolio when the house is sold. Again, this could indicate that households are consuming housing wealth or it might indicate over-reporting of housing values. To correct for possible over-reported of housing values in the wave prior to the sale, I use the actual sale price, instead of self-reported housing values, to construct housing equity.

I take two approaches to assessing how much of equity is consumed when the homeowner downsizes. The first essentially replicates the approach taken by Skinner (1994) using the PSID. I regress change in household net worth on the change in housing equity. If a homeowner sold her house and thereby reduced her housing equity by, say $100,000, then if

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[17]Which was observed in Venti and Wise(2001).

she consumed all that wealth, her household net worth will fall by $100,000. In this event, the coefficient on the change in housing equity variable will equal 1. A coefficient of less than one on the change in home equity variable gives the fraction of a $1 change in housing equity that was consumed.

I look at changes in net worth and housing equity between 1995 and 2000 (or when the household died), and I allow for lags in housing adjustment. That is, if a homeowner sold the house between 1995 and 1998 and bought a house between 1998 and 2000, I code that as either a trade-up or trade-down rather than two separate transactions. The change in housing equity is positive if the household traded-up in housing, negative if the household sized down or sold the house, and zero if the household neither bought nor sold. I include controls for 1995 household net worth, race, and education. Because of outliers in the wealth data, I estimate quantile regressions of the change. There were 2,879 households in this sample and 19% of households that started out as homeowners subsequently sold their house.

Table 5 presents the results for the quantile regression. The coefficient of 0.71 for the change in housing equity variable is highly significant and suggests that 71 cents of every dollar change in housing equity is consumed by the household within that 5-year period. This value is similar in magnitude to Skinner's results.

As discussed earlier, self-reported housing values may overstate the market value of the house and would, in turn, overstate the changes in net worth and housing equity. For that reason, the second approach regresses changes in non-housing wealth (financial wealth) on changes in home equity. If the homeowner sold the house and held that wealth in a different form (either as cash or reinvested in stocks or bonds), then we should see non-housing wealth increase by the same amount as the fall in housing equity. In this instance, a coefficient of 1 on the change in housing equity variable would imply that none of housing wealth was consumed. These estimates are presented in Table 6. It appears that five cents of every dollar change in housing equity is returned to non-housing wealth. Put another way, it says that 95 cents of every dollar change in housing equity is consumed.

The results from this section provides strong evidence that elderly homeowners are consuming their housing wealth. I find that the poor households are more likely to sell the house and households that have high medical expenses are also more likely to sell their house. These results are contrary to findings from earlier research and is primarily driven by the selling that occurs in very old ages and just prior to death. Both of these motivations for selling are consistent with the precautionary and the life-cycle story and it is likely that both are evidenced in the data although I am unable to pin down the individual effects. The estimates from the quantile regressions indicate that when homeowners downsize in housing (by selling or moving to a house with less housing equity), they consume most of the housing equity that is freed up in the move. I estimate that between 71 to 95 cents of each dollar change in housing equity is consumed. These results also substantiates the results from earlier work. As with previous research, I also find that the non-pecuniary aspects of widowhood and nursing home entry increases the probability that the homeowners sells the house.

6   Conclusion

The evidence in the literature on whether the elderly are consuming their housing wealth has been mixed. Most of the earlier evidence had been based on cross-sectional data, which can obscure the relationship of home-ownership and age because of sample selection. Healthier and wealthier households are disproportionately represented among older households, and wealthier households are also more likely to be homeowners. The more recent work have been based on panel data but the evidence continues to be mixed, again because of issues of sample selection. Because a significant number of housing transactions occur very late in life, one most observe households into death in order to get an accurate assessment of whether the elderly are consuming their housing wealth.

This paper shows that homeowners are selling the house just prior to death and the household dying has a larger effect on the the probability of selling the house by than widowhood.

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A closer look at what goes on just prior to death reveals that it is low wealth that motivates a sale and high nursing home expenses. This says that home owners are selling the house in order to consume the housing wealth. This evidence is consistent with both the precautionary and life-cycle motive for savings. Next steps would involve trying to test for these motivations.

Table 1: AHEAD Households

	W1(93) (n=6047)	W2(95) (n=5214)	HRS 98 (n=4527)	HRS 00 (n=3869)	95/93	98/95	00/98	00/93
IRAs	44,620,813	56,634,468	58,316,836	53,969,105	1.27	1.03	0.93	1.21
Business	36,348,552	75,634,284	64,874,401	55,658,900	2.08	0.86	0.86	1.53
Stocks	140,066,661	384,970,476	336,405,571	399,664,932	2.75	0.87	1.19	2.85
Bonds	30,845,747	48,604,908	50,731,354	33,392,607	1.58	1.04	0.66	1.08
CDs	52,342,832	90,853,950	89,815,045	80,135,996	1.74	0.99	0.89	1.53
Savings	100,924,430	123,504,018	101,051,333	86,926,086	1.22	0.82	0.86	0.86
Transportation	39,365,970	31,304,856	28,866,954	28,378,925	0.80	0.92	0.98	0.72
Trusts	14,930,043	194,200,644	2,627,000	336,270,617	13.01	0.01	128.01	22.52
Debts	5,200,420	4,046,064	5,067,448	2,626,710	0.78	1.25	0.52	0.51
Net Real Estate Value	505,662,234	488,317,170	471,828,714	467,172,526	0.97	0.97	0.99	0.92
Other	14,500,706	22,373,274	28,074,525	20,177,584	1.54	1.25	0.72	1.39
Cap Gains		17,896,367						
Net Worth (summed here)	974,407,568	1,530,248,351	1,227,524,285	1,564,373,988	1.57	0.80	1.27	1.61
Total w/o Trusts	959,477,525	1,336,047,707	1,224,897,285	1,228,103,371	1.39	0.92	1.00	1.28

* W1 trusts explicity excludes those already mentioned in other assets; W2 does it parenthetically
   HRS98 excludes them explicitly.

	(1)			(2)			(3)			(4)			(5)		
	dF/dX	Coef	Z-stats	dF/dX	Coef	Z-stats	dF/dX	Coef	Z-stats	dF/dX	Coef	Z-stats	dF/dX	Coef	Z-stats
NEWWID	0.095	0.647	6.800	0.057	0.454	4.130	0.056	0.453	4.150	0.054	0.505	4.550	0.054	0.874	2.470
HHDIE	0.128	0.734	3.440	0.071	0.501	2.180	0.070	0.501	2.170	0.020	0.210	0.810	0.017	0.101	0.350
AGE_HH	0.006	0.054	6.910	0.004	0.046	5.700	0.004	0.047	5.850	0.005	0.061	7.470	0.005	0.058	7.060
inNH_HH				0.138	0.826	6.830	0.123	0.770	6.300	0.088	0.682	5.000	0.087	0.335	1.950
MEDICAID							0.077	0.543	3.020	0.042	0.389	1.590	0.040	0.385	1.570
inNH_MED										-0.008	-0.121	-0.320	-0.008	-0.387	-0.970
LOG_HELW							-0.003	-0.033	-0.750	0.014	0.178	3.020	0.012	0.164	2.760
CHG_FW/(10^6)													-0.004	-0.052	-1.680
WTHCAT_2										-0.049	-0.974	-6.090	-0.048	-0.935	-5.730
WTHCAT_3										-0.072	-1.236	-7.220	-0.071	-1.175	-6.770
WTHCAT_4										-0.118	-1.528	-8.150	-0.115	-1.465	-7.730
ANYKID	0.021	0.240	1.390	0.020	0.247	1.480	0.019	0.243	1.460	0.013	0.197	1.160	0.013	0.217	1.050
KID_NEWWID														-0.313	-0.850
KID_inNH														0.780	3.290
BLACK	-0.006	-0.066	-0.470	-0.011	-0.128	-0.890	-0.018	-0.231	-1.550	-0.026	-0.483	-2.990	-0.025	-0.435	-2.730
HISPANIC	-0.037	-0.574	-2.170	-0.034	-0.539	-2.040	-0.039	-0.755	-2.710	-0.035	-1.040	-3.320	-0.035	-1.074	-3.340
HIGH SCH	-0.018	-0.164	-1.730	-0.017	-0.166	-1.700	-0.010	-0.102	-1.000	0.007	0.102	0.890	0.007	0.082	0.720
Constant		-6.214	-8.690		-5.595	-7.800		-5.393	-6.260		-7.893	-8.420		-7.553	-8.260
n			2814			2814			2814			2814			2814
Pseudo R-sq			0.0866			0.1273			0.1353			0.2076			0.2188

Table 2: Probit Estimates for Married Households

	(1)			(2)			(3)			(4)			(5)		
	dF/dX	Coef	Z-stats	dF/dX	Coef	Z-stats	dF/dX	Coef	Z-stats	dF/dX	Coef	Z-stats	dF/dX	Coef	Z-stats
HHDIE	0.067	0.300	3.020	0.004	0.022	0.200	0.005	0.028	0.113	-0.024	-0.152	-1.270	-0.019	-0.122	-1.010
AGE_HH	0.007	0.035	5.790	0.004	0.021	3.430	0.004	0.021	0.006	0.004	0.025	3.790	0.004	0.025	3.790
inNH_HH				0.345	1.185	12.480	0.341	1.177	0.097	0.257	0.983	8.980	0.419	1.430	7.080
MEDICAID							-0.004	-0.023	0.105	-0.054	-0.393	-2.930	-0.053	-0.395	-2.940
inNH_MED										0.074	0.355	1.580	0.087	0.411	1.820
LOG_HELW							-0.011	-0.058	0.034	0.015	0.087	2.250	0.016	0.095	2.410
CHG_FW/(10^6)													0.007	0.043	1.890
WTHCAT_2										-0.101	-0.717	-7.790	-0.100	-0.721	-7.800
WTHCAT_3										-0.136	-1.049	-9.260	-0.135	-1.052	-9.250
WTHCAT_4										-0.132	-1.102	-8.590	-0.133	-1.122	-8.640
ANYKID	0.005	0.026	0.290	0.026	0.152	1.660	0.026	0.150	0.092	0.029	0.185	1.900	0.048	0.338	2.610
KID_inNH													-0.070	-0.589	-2.620
BLACK	-0.008	-0.040	-0.440	0.001	0.006	0.060	-0.004	-0.019	0.094	-0.024	-0.157	-1.590	-0.023	-0.148	-1.490
HISPANIC	-0.013	-0.070	-0.470	-0.003	-0.019	-0.120	-0.005	-0.027	0.159	-0.019	-0.120	-0.710	-0.019	-0.124	-0.740
HIGH SCH	-0.014	-0.071	-1.070	-0.019	-0.103	-1.520	-0.014	-0.078	0.070	0.014	0.085	1.150	0.015	0.093	1.250
Constant		-4.045	-7.760		-3.156	-5.960		-2.524	0.635		-3.812	-5.480		-4.036	-5.730
n			3187			3187			3187			3187			3187
Pseudo R-sq			0.033			0.112			0.113			0.172			0.177

Table 3: Probit Estimates for Single Households

**Table 4:   Quantile Regression for Change in Household Net Worth
Between 1995 and 2000 for Homeowners**

	Coef	Std Errors
Change in Home Equity	0.710	0.024
Log (1995 Net Worth)	-28739.44	1297.74
Age	-10636.84	4797.07
Age^2	63.29	29.04
Black	-13044.11	4919.74
Hispanic	-3919.12	7075.07
High School Grad	27999.90	3500.20
Constant	737718.30	197894.20
n	2879	
Pseudo R2	0.041	

**Table 5:   Quantile Regression for Change in Non-Housing Wealth
Between 1995 and 2000 for Homeowners**

	Coef	Std Errors
Change in Home Equity	0.056	0.010
Log (1995 Non-Housing Wealth)	-8304.75	265.63
Age	4988.94	2173.10
Age^2	-31.31	13.18
Black	-5911.40	2283.10
Hispanic	-7194.02	3354.91
High School Grad	4271.39	1515.64
Constant	-131194.90	89310.72
n	2879	
Pseudo R2	0.012	

Figure 1: Percent Owning for Married Households, 1993-2000
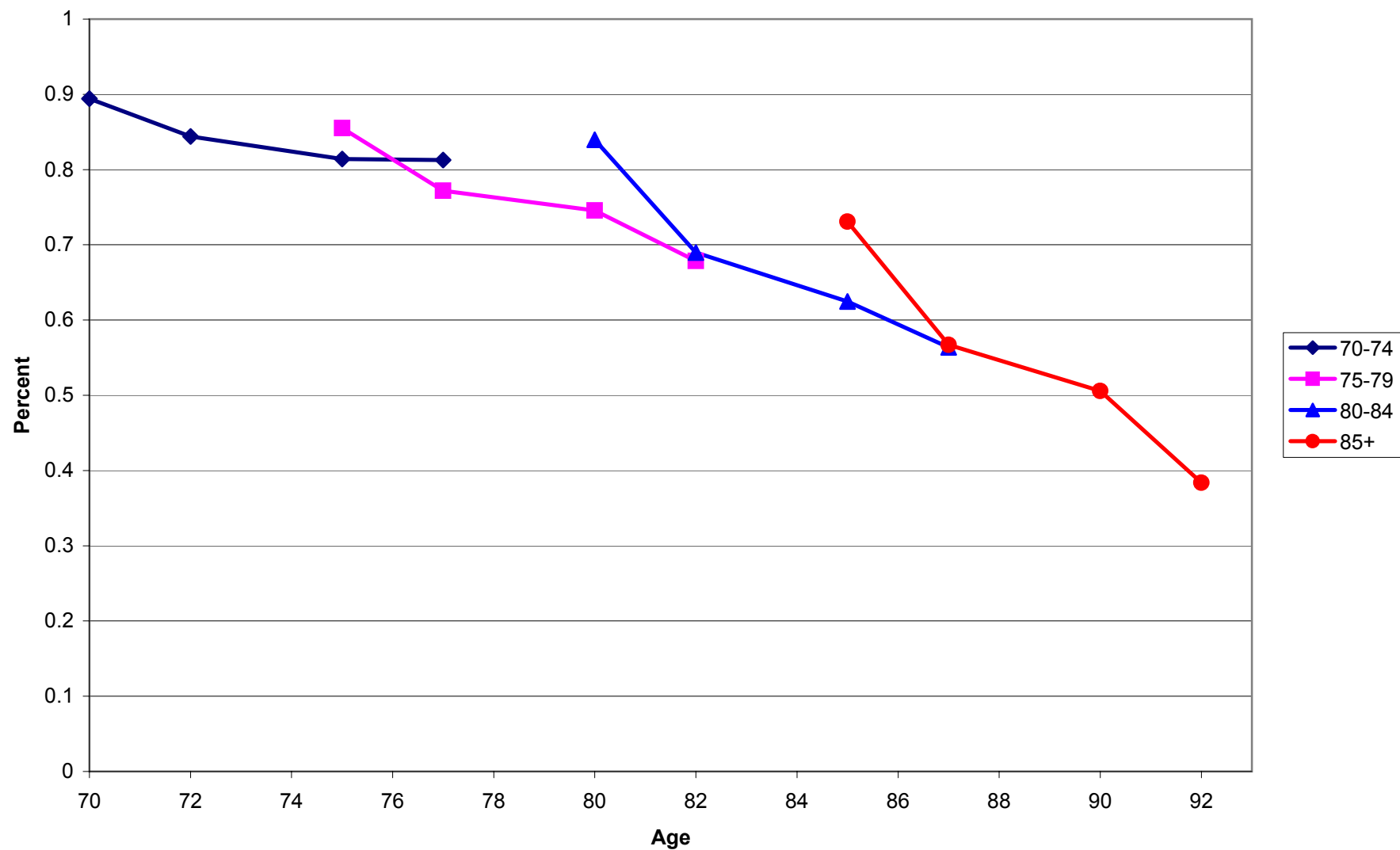
**Figure 2: Percent Owning for Single Households, 1993-2000**
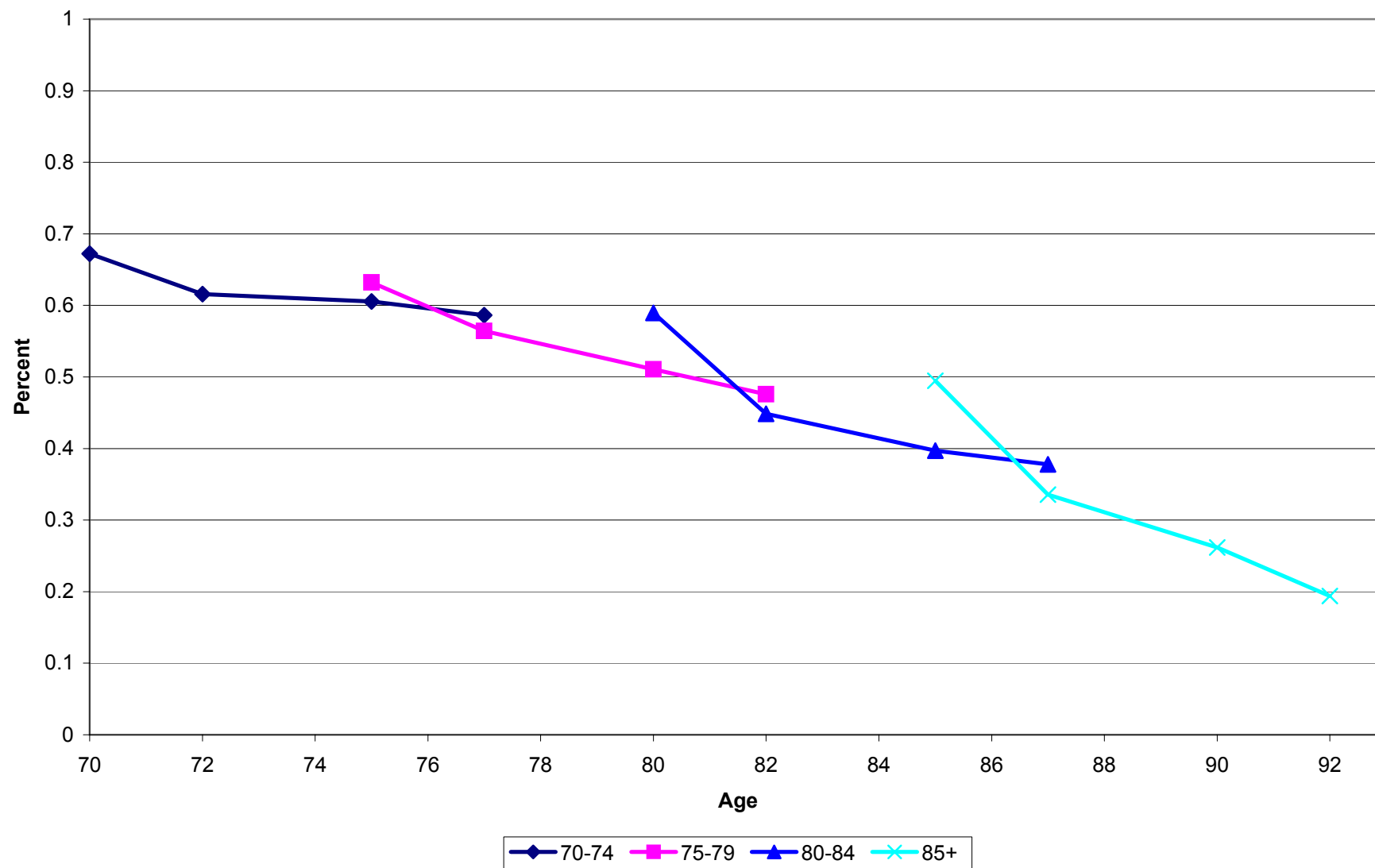
Figure 3: Home Ownership Rate Among Married Households

Legend:
- 70-74 New Wid
- 75-79 New Wid
- 80-84 New Wid
- 85+ New Wid
- 70-74 Intact
- 75-79 Intact
- 80-84 Intact
- 85+ Intact

X-axis: Age
Y-axis: Percent
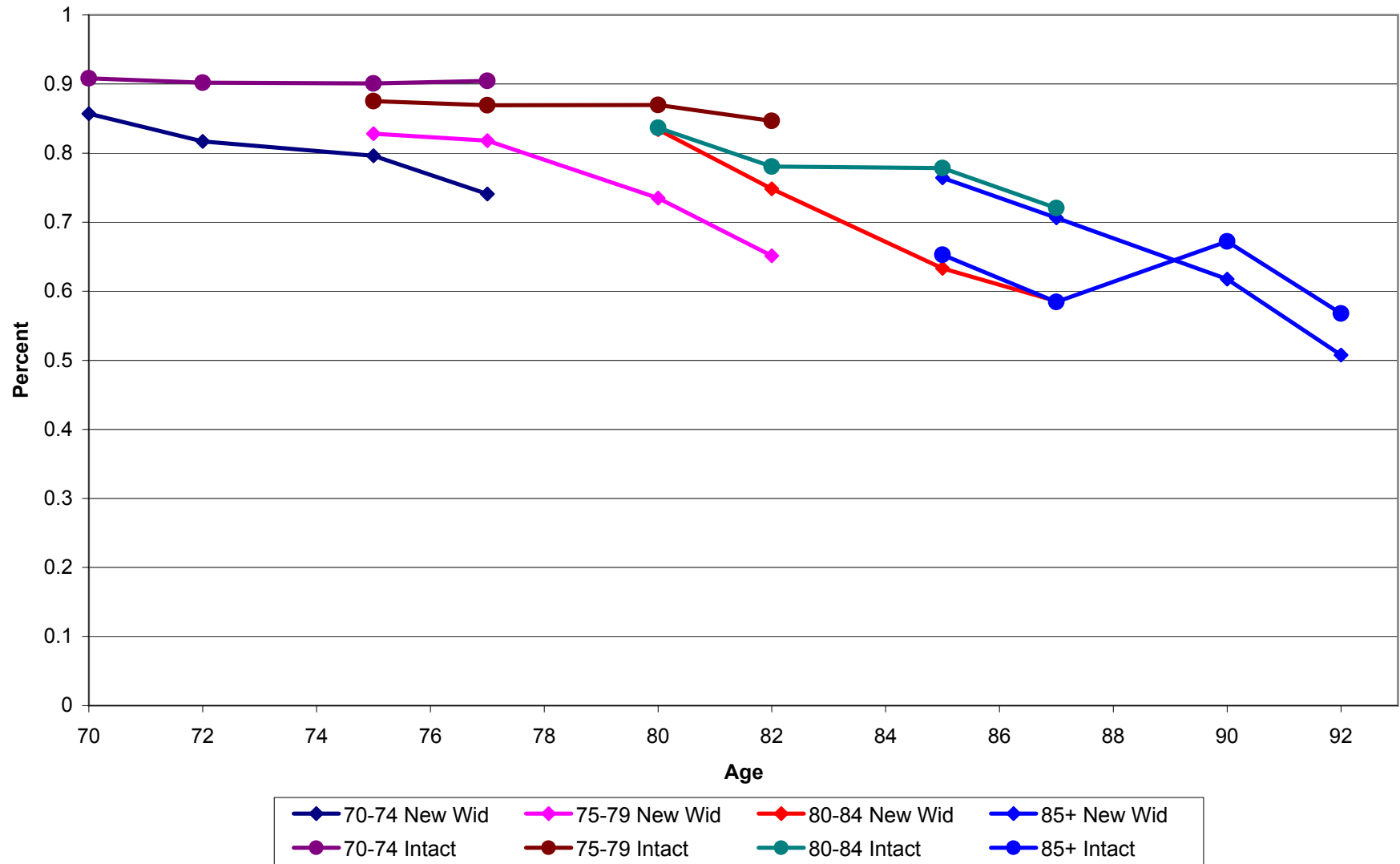
Figure 4: Home Ownership Rates for New and Existing Widowed Households
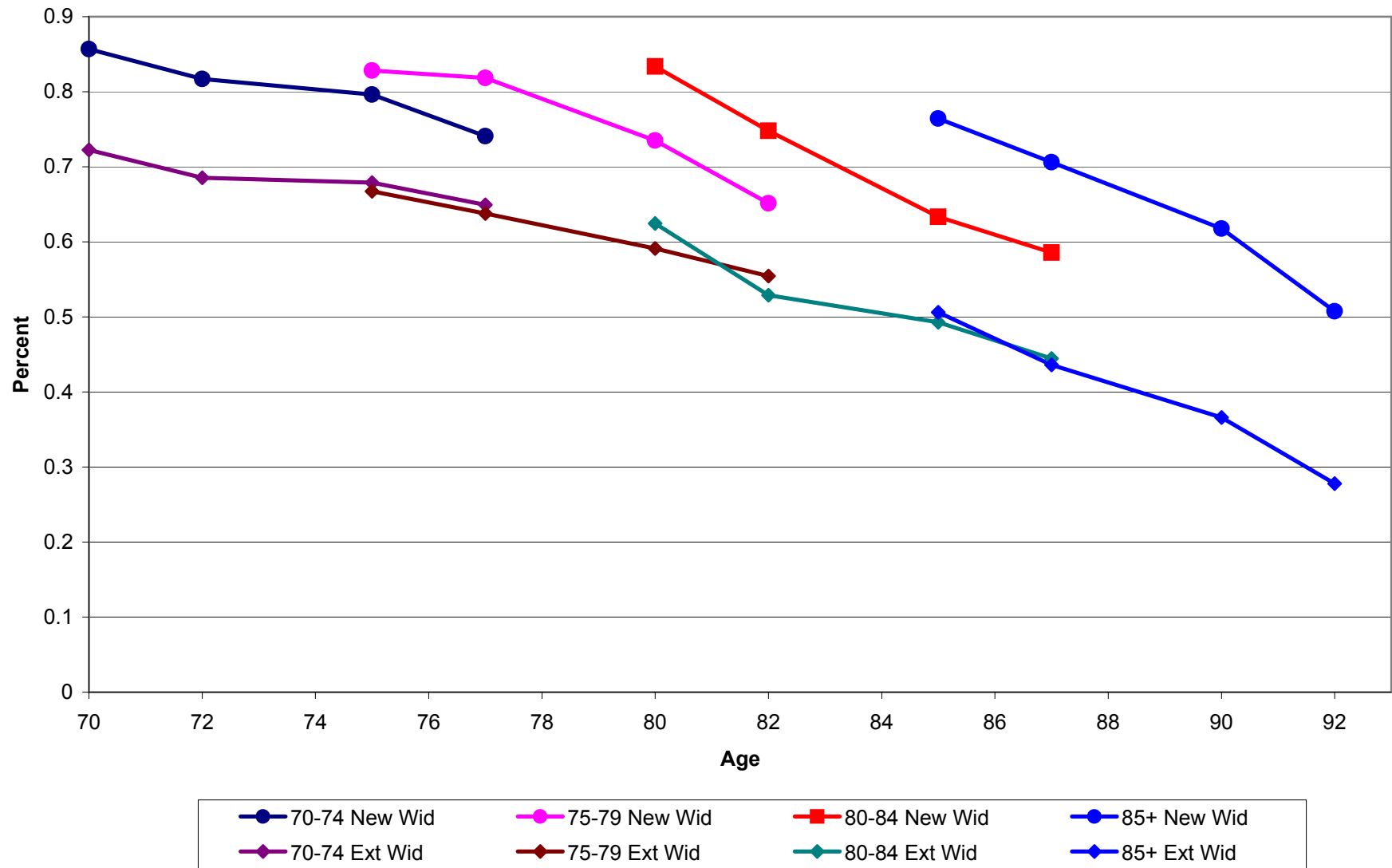
Figure 5: Percent Owning by Time of Spouse Death
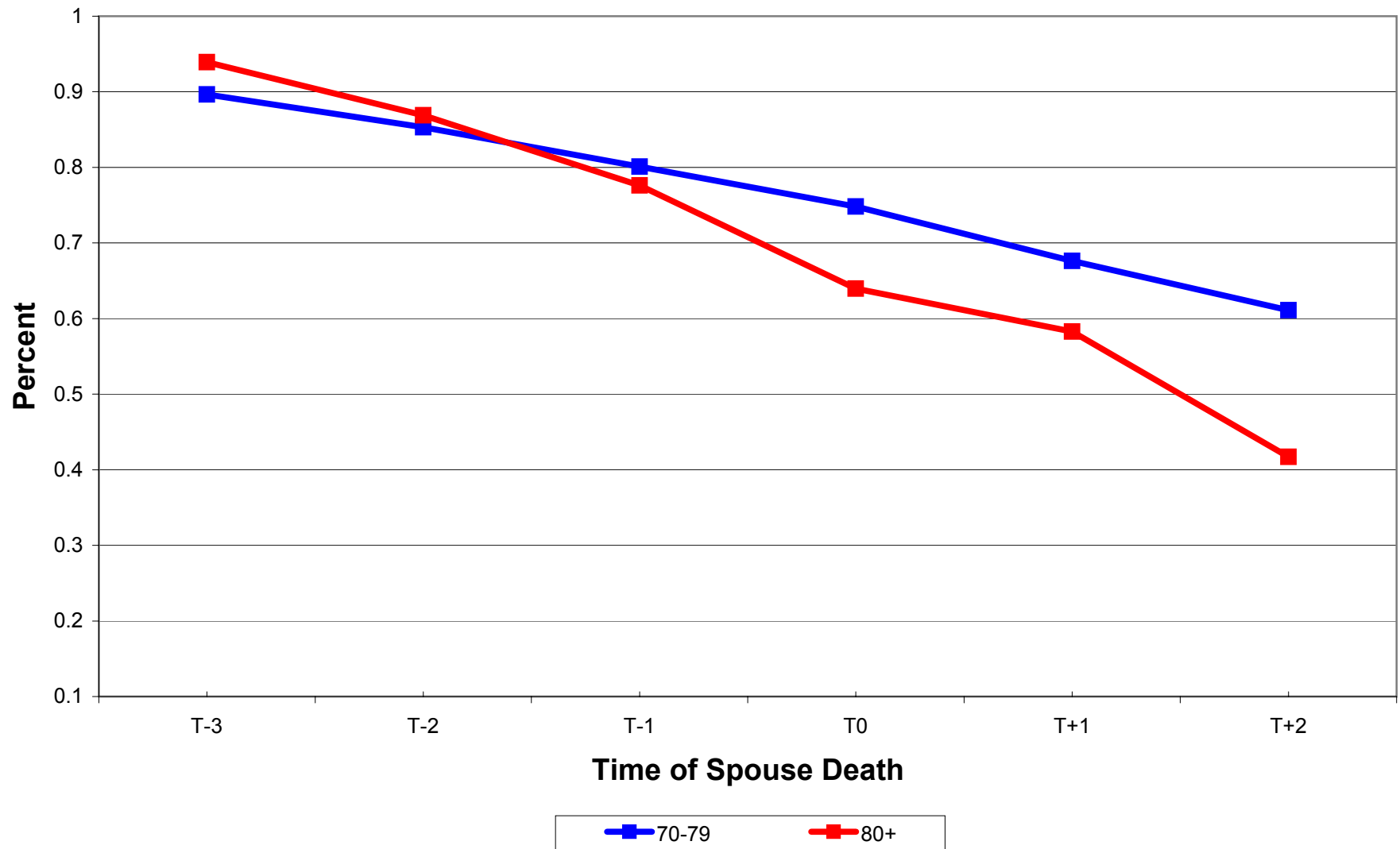
**Figure 6: Home Ownership Rate for Households with Surviving Spouse**
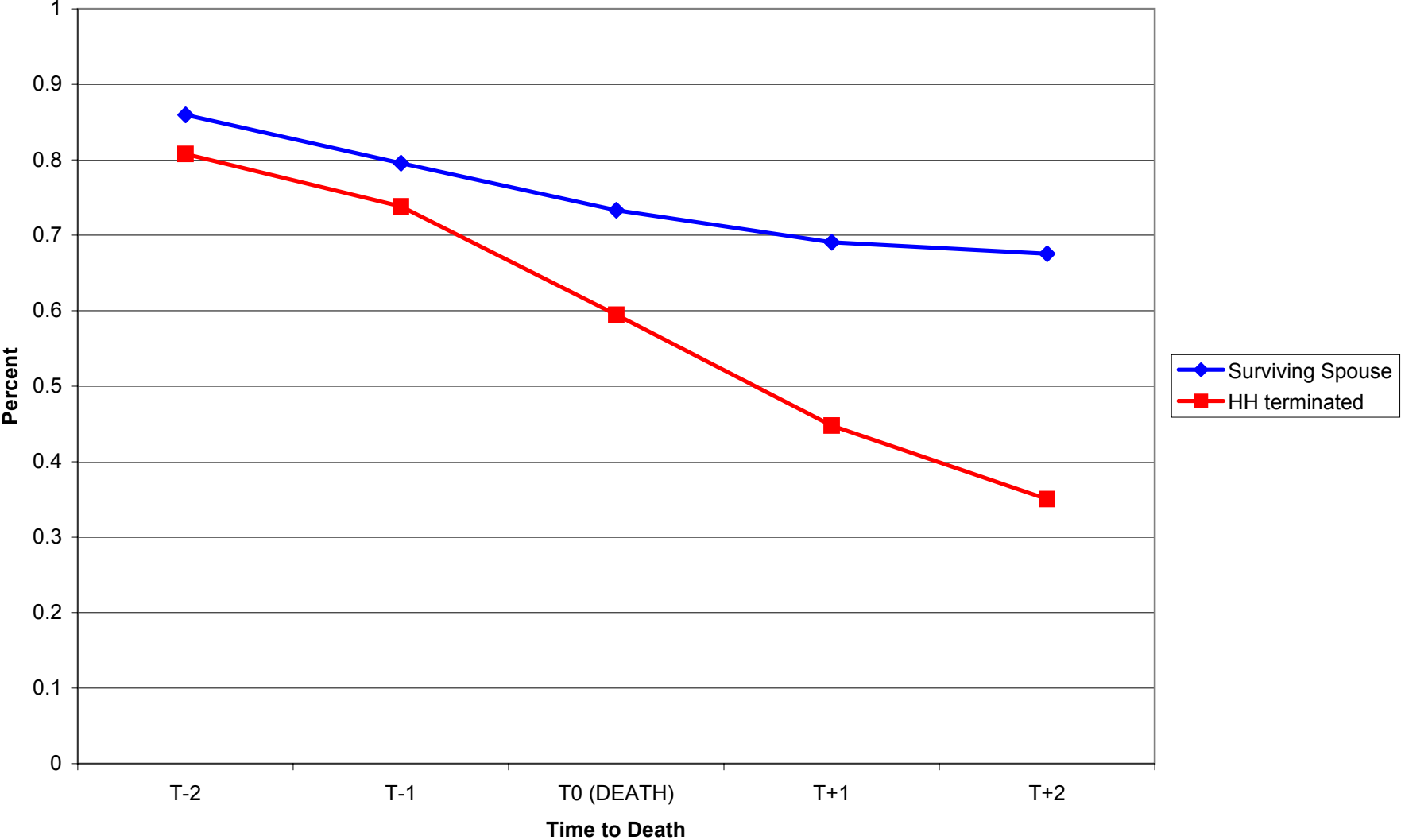
Figure 7: Median Household Wealth By Time of Sale