

# WHAT IS THE IMPACT OF FORECLOSURES ON RETIREMENT SECURITY?

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## **Abstract**

Using data from several sources, we show that households nearing retirement have lower rates of housing distress than younger households, as measured by arrears and foreclosure rates.

However, almost all of the housing wealth gains observed for cohorts aged 51-56 between 1992 and 2004 were erased by 2010, while their mortgages have grown throughout. As a consequence, their loan-to-value ratios are considerably higher, though the percentage paying more than 30 percent of their household income towards their mortgage remains flat.

Worrisomely, their financial wealth also declined between 2004 and 2010. Declines in house prices will adversely affect households that need to liquidate housing wealth, and rising mortgage obligations will increase pressure on retirement resources. We develop an econometric model to show factors associated with housing distress and then use the results to forecast housing distress among older households through 2012. We project that the risk of arrears will increase to 3.4 percent in 2010 and 4.4 percent by 2012. We also find that 6.7 percent of HRS households have children or other relatives who are facing housing distress, potentially putting further pressure on their retirement preparedness.

## 1. Introduction

The current economic crisis has been unmatched in severity by any since the Great Depression, with employment falling 4.3% between 2008 and 2009.<sup>1</sup> Older households in the 1930s had little in the way of retirement assets, and heavy job losses caused grave economic distress, disproportionately affecting older households and ultimately inducing the passage of the Social Security Act. Today, many households have multiple assets to draw on to smooth consumption in case of job loss or retirement asset losses. Yet, the crash of housing markets, occurring simultaneously with massive job and asset market losses, has undercut the ability of households to ride out the recession, perhaps having disproportionately severe effects on households nearing retirement.<sup>2</sup>

Recessions undermine the ability of households to prepare for retirement; these effects are exacerbated when combined with housing shocks. Some workers may be forced into early retirement by premature job loss, just at a time when many wish to work longer because both their retirement accounts and housing equity have shrunk and, in some cases, their mortgage payments have jumped. Other workers who retain their jobs may take real pay or hours cuts and may have to drain their retirement accounts to meet mortgage payments. As these possibilities suggest, several features cause older households to experience the triple hit of job, asset, and housing market losses differently than prime-age households. Some of these factors have also changed in important ways from earlier recessions.

One factor that has distinguished the experience of older workers in recessions, and that has changed in recent years, involves the nature of their retirement saving. Obviously, older households have accumulated more life-cycle saving than prime-age workers. Although these assets can be used to smooth consumption during recessions, such appropriation simultaneously undermines retirement preparedness. As a result, the form that this saving takes is critical. Over several decades, retiring workers enjoyed increasingly generous annuities deriving from both Social Security and defined benefit (DB) pensions. While these retirement benefits may increase overall wealth and reduce poverty, they come at the cost of reducing liquidity during working years and are unavailable to smooth consumption during recessions.<sup>3</sup> Recent changes have shifted the retirement saving landscape. Real Social Security benefits flattened out for workers retiring in the 1980s and 1990s and began declining in 2000, and DB pension coverage has dropped, sharply for prime-age workers and more gradually for older workers (Friedberg and Owyang 2002). DB plans have largely been replaced by defined contribution (DC) plans, which have three important features for consideration here. First, they are more liquid than DB plans and thus are available to some extent to smooth consumption during recessions.<sup>4</sup> Second, and undercutting this, is that they are vulnerable to asset market fluctuations, eroding in the face of the stock market declines of 2007-09. DC plans lost 20% of their value between 2007 and 2008,

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<sup>1</sup> U.S. Bureau of Labor Statistics.

<sup>2</sup> According to the Flow of Funds, house values declined 34.6% between the fourth quarters of 2006 and 2009, exceeding any drop since at least 1952.

<sup>3</sup> It remains an open question whether public and private pensions raise total retirement wealth. Engelhardt and Gruber (2006) show that Social Security reduced poverty rates, suggesting real wealth increases for at least some.

<sup>4</sup> DC plan assets may be accessed in the event of job exit, with a 10% penalty for people under age 59 ½. An increasing number of employers allow current workers to borrow against their DC plan balances as well. Notably, DB plans are increasingly offering a lump-sum payout upon job separation as well.

regaining some value the next year but sustaining a two-year loss of 7%.<sup>5</sup> Third, participation in them is often voluntary, raising the risk that people have not saved enough for retirement, although potentially facilitating consumption smoothing during recessions by allowing workers to reduce retirement saving temporarily.

A second factor that may distinguish older workers, and that we focus on in our investigation, is their exposure to the massive housing crisis, which is atypical of post-war recessions. Housing constitutes one of the major forms of wealth of retiring households, yet its illiquidity is well documented; older households rarely reduce housing equity until the death or nursing home entry of one spouse (Venti and Wise 2001).<sup>6</sup> To this extent, transitory house price declines may have little effect on the retirement preparedness of many older households, given their long horizon over which to ride out fluctuations. Declines in house prices will adversely affect households that need to liquidate housing wealth by drawing down equity or moving perhaps in response to job loss. Also, the increased access to housing credit associated with the post-2000 housing boom has increased mortgage obligations for many households and exposed them to liquidity problems in meeting housing payments, in response to both rate adjustments on variable-interest loans and income shocks due to job loss. Although older households may be less exposed to such problems, to the extent that they paid off their mortgages and avoided speculating in the housing boom, any increase in mortgage debt will impede their ability to tap housing equity in retirement through, for example, reverse mortgages or downsizing. Little is known about the relative exposure of older households to the housing crisis.

Thus, we investigate the impact of the housing crisis, which differentiates the current recession from previous ones, on the retirement preparedness of older households. To sum up, this impact depends on (1) the extent to which older households liquefied their housing wealth, and (2) the extent to which they then got hit with labor and asset market shocks. The impact of labor market shocks on older workers has been severe, and the impact of asset market shocks is being newly felt, due to the shift from DB to DC pensions. To quantify these effects, we use the Health and Retirement Study and the Panel Study of Income Dynamics, both of which included special housing questions in 2008 and 2009, respectively. We analyze the magnitude of housing distress – mortgage arrears or foreclosure – among households nearing retirement. We then identify socio-economic factors associated with being at risk of arrears and foreclosure. We consider the relative importance of precipitating shocks such as ill health, divorce, and job loss, of high rates of borrowing relative to income and property value, and of local property market conditions. Lastly, we forecast foreclosure rates among older households and calculate the effect of foreclosures on financial preparedness for retirement.

Our analysis results in two main findings. First, we find that households nearing retirement are more exposed to housing market volatility than in the recent past. Their mortgages have risen in value and their participation in the home equity loan market has risen. During the house price

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<sup>5</sup> Investment Company Institute, <http://www.ici.org/pdf/fm-v19n3.pdf>.

<sup>6</sup> Banks et al (2006) find new evidence that older American households downsize in the form of reducing the number of rooms in their residences independent of household demographic changes, by one-tenth of a room between ages 65-69 and 70-74 and again between ages 70-74 and 75-79 and then by about two-tenths of a room between ages 75-79 and ages 80+. They do not further examine whether this downsizing is associated with reduced housing equity.

boom, their house values rose by more than their mortgages, but since 2004 their mortgages have continued to grow, while their gains in housing wealth in comparison to earlier cohorts has been erased. As a consequence, their loan-to-value ratios are considerably higher, though the percentage paying more than 30% of their household income towards their mortgage remains flat. Troublingly, their financial wealth also declined between 2004 and 2010. Our second finding is that the incidence of housing distress among older households, while perhaps higher than in the past, is nonetheless relatively low. It was lower for older households in the 2008 HRS, compared to the national average, and had increased in the 2009 PSID but remained lower than among prime-age households in the PSID.<sup>7</sup> In 2008, 3.0% of HRS households with a mortgage were two months or more in arrears on their mortgage payments, and 0.75% were in foreclosure, compared to national averages of 4.8% in arrears and 3.3% in foreclosure.<sup>8</sup> The probit model we estimate reveals that housing distress was significantly affected by layoffs and health shocks, as well as high loan-to-value ratios observed in 2006. Moreover, the incidence of housing distress was greater among black and Hispanic households, even after controlling for income and education, possibly reflecting unfavorable mortgage terms offered to ethnic minorities. We use our econometric model to forecast the risk of mortgage arrears and foreclosures among older households through 2012. We project that the risk of arrears will increase to 4.2 percent in 2010, declining to 3.6 percent by 2012.

## 2. Background

Households approaching retirement have not experienced a sudden collapse of housing prices of the current magnitude in several decades. Combined with job losses and a tightening of credit, this has led to a spike in foreclosures. Mortgage delinquency and foreclosure rates, as reported by the Mortgage Bankers Association National Delinquency Survey were 7.9 and 3.3 percent respectively in the fourth quarter of 2008, up from 5.8 and 2.0 percent in the same quarter of 2007, and 5.0 and 1.2 percent in 2006. The above data shows further substantial increases in delinquencies and foreclosures subsequent to 2008. In contrast, Hurd and Rohwedder (2010), using data from the internet-based American Life Panel, report somewhat lower delinquency rates, with rates peaking towards the end of 2009.

Historically, home-owners accumulated significant housing equity during their working lives and entered retirement with little or no mortgage debt. In the 1992 HRS, the median mortgage among households with a member aged 51-61 was \$15,600. One might therefore expect the housing crisis to affect older households only to the extent that it reduced the amount of housing wealth available for consumption in retirement or to pass as a bequest, an important issue as the house represents the single most valuable asset of households in retirement, after Social Security. Yet, the AARP Public Policy Institute (2008) finds that those over age 50 represent 28 percent of all households in arrears or foreclosure. Among older households, the highest rates are among traditionally disadvantaged groups. The effects of foreclosure are also arguably more serious for older households who have less time to recover from any resulting financial loss.

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<sup>7</sup> We do not know from these data sources how the incidence of housing distress differs for older households currently compared to past cohorts, but we expect that it is worse now, given the trend in loan-to-value ratios.

<sup>8</sup> A potential concern is that households experiencing mortgage arrears might be less likely to be re-interviewed. We found no evidence of a correlation between being re-interviewed and socio-economic characteristics that we identified were associated with experiencing arrears and foreclosure.

The housing crisis has been accompanied by severe job loss and a relatively large correction to the stock market. Older workers are much more exposed to stock market fluctuations than in the past. The reasons are the use of tax incentives to promote retirement saving in the form of Individual Retirement Accounts and 401(k) accounts, and the shift in pension coverage from DB to DC, which shifts financial risk from employers to employees. These factors have led to a substantial increase in stock market participation. Among full-time employees with a pension in the Survey of Consumer Finances, 69% had a DB plan and 45% had a DC plan in 1983, while 39% had a DB plan and 80% had a DC plan in 2001 (Friedberg and Owyang 2005). Nevertheless, older workers have higher rates of DB coverage than others, and evidence shows that the wealthiest are the ones who took the biggest hit to their portfolios.

### **3. Empirical Strategy**

We employ several approaches in order to analyze housing distress among retiring cohorts. First, we compare cohorts aged 51-56 across different waves of the Health and Retirement Study, focusing on 1992, 1998, and 2004. We examine non-housing retirement assets, housing wealth, and exposure to house price fluctuations. We then follow up on the same cohorts six years later, when they are aged 57-62, adding 2010 data to examine the impact of the housing crisis. Second, we use extra questions on housing asked in the 2008 HRS and the 2009 Panel Study of Income Dynamics to analyze socio-economic factors associated with being at risk of arrears and foreclosure. We consider the relative importance of precipitating shocks such as ill health, divorce, and job loss, of high rates of borrowing relative to income and property value, of local property market conditions, and of demographic variables such as education and ethnicity. Third, we forecast foreclosure rates among older households, based on their 2006 assets, 2008 levels of housing distress, and predicted rates of job loss and house price changes. Fourth, we analyze reports of respondents about family members of HRS households who have experienced housing distress and the assistance they provided to those family members.

#### **3.1. The Health and Retirement Study**

The HRS is a detailed longitudinal survey that takes place every two years. It has repeatedly added new cohorts aged 51 and over. It began in 1992 with over 7,600 households that had a member born between 1931-1941 and then added households born between 1942-1947 in 1998 and households born between 1948-1953 in 2004.<sup>9</sup> Thus, as of 2004, the sample was once again representative of all Americans aged 51 and over, with an oversample of minority and Florida households.

We use the HRS in two ways. First, we analyze household assets and debts across different cohorts entering the HRS. We focus on households aged 51-56 in 1992, 1998, and 2004 and again six years later, when they are aged 57-62. We further extrapolate to households aged 57-62 in 2010, based on house price changes in Metropolitan Statistical Areas between 2008 and 2010. Financial respondents were asked detailed questions about different types of assets and

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<sup>9</sup> Older cohorts were also included in 1992 and 1998, but we do not analyze them as our focus is on preparedness for retirement, not the impact of shocks during retirements. Where possible, we make use of the RAND HRS data file, a cleaned version of the original.

debt. Non-response rates are known to be high in survey questions about wealth; when HRS respondents refused to answer questions about exact asset balances, for example, they were invited to provide ranges in which their asset balances fell. The HRS used hot-deck imputation, taking exact information from a respondent who answered the question and had similar characteristics as a respondent who refused. We use these imputed values as part of our analysis. Also, we use sample weights in our analysis to make the samples nationally representative.

Second, we focus on a series of questions asked in the 2008 wave about housing distress.<sup>10</sup> These questions were asked of anyone with a mortgage in 2008 or anyone who ceased being a homeowner between 2006 and 2008. Of the 17,217 respondents in 11,897 households in the 2008 HRS, respondents in 2,870 households were asked whether they had fallen into arrears on their mortgage or believed they were at risk of falling into arrears, were facing possible foreclosure, had gone through foreclosure, or had lost their home as a result of foreclosure.

A sample of HRS respondents participated in an internet survey in 2009, the survey instrument containing many questions relating to housing distress. Our analysis of this data reveals that respondents are disproportionately of high socio-economic status. They also have much lower than average levels of housing distress, reflecting both their socio-economic status and the likelihood that loss of one's home likely also results in the loss of one's internet connection. Although the data has the advantage of being more up to date, we decided not to subject it to further analysis.

### **3.2. The Panel Study of Income Dynamics**

The PSID began in 1968 as a longitudinal study of 4,800 families, consisting of a nationally representative sample and a low-income subsample. The offshoots of these families have been added to the survey, growing to more than 7,000 families in 2001. Families were interviewed every year until 1997 and then every two years.

As in the HRS, additional questions to gauge housing distress were asked in 2009. We use these questions, along with information from some of the previous waves, to compare levels of and characteristics associated with housing distress for HRS households with both older and prime-age households in the PSID. To facilitate this comparison, we divide the PSID sample into households whose head was born in or before 1953, and so generally comparable to the age cohorts covered in the HRS from 2004 on, and households whose head was born in or after 1954.

### **4. Comparisons of Housing Wealth Across HRS Cohorts**

We begin by analyzing household assets and debts across different cohorts entering the HRS. We focus on households aged 51-56 in 1992, 1998, and 2004, and the same households aged 57-62 six years later (along with those aged 57-62 in 1992 for the sake of comparison).<sup>11</sup> We focus

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<sup>10</sup> Almost 50% of respondents were surveyed between March and May 2008, and almost 45% more were surveyed between June and October.

<sup>11</sup> The composition of the sample changes slightly over time due to attrition and the inclusion of new participants in the panel.



on both housing and non-housing wealth, as housing wealth is relatively illiquid and therefore unavailable to support consumption during retirement.

Table 1 shows that housing wealth of cohorts aged 51-56 rose between 1992 and 2004, with housing values rising and mortgages also rising but by less. The house value gains were concentrated in the later period, while debt increased throughout but more so later on. The increase in debt did not, interestingly, involve a jump in the percentage of homeowners with a mortgage, so it was entirely on the intensive margin of mortgage size among existing mortgage holders. The median value of the primary residence rose from \$140,400 in 1992 and \$144,000 in 1998 to \$203,000 in 2004. Meanwhile, the median value of mortgages for the entire sample rose from \$15,600 in 1992 to \$28,800 in 1998 to \$46,400 in 2004 and for mortgage holders rose from \$45,240 in 1992 to \$69,120 in 1998 and \$90,480 in 2004. The percentage of the sample with a mortgage was 63% in 1992 and 66% in 2004, though the percentage with a home equity loan rose from 15% in 1992 and 1998 to 21% in 2004. As a consequence of these changes, home equity rose from a median of \$93,600 in 1992 and 1998 to \$116,000 in 2004, while the mean loan balance rose steadily from 26% of home value in 1992 to 30% in 1998 and 32% in 2004. As another measure of exposure to housing fluctuations, the percentage of households with a mortgage that spent over 30% of their household income on mortgage payments went from 7% in 1992 to 9% in 2004.

At the same time, non-housing financial wealth exhibited small changes at the median, while retirement account balances (DC plans and IRAs) rose. Median net financial wealth (not including housing or business wealth or retirement accounts) stayed almost the same over time, in the range of \$12,000-\$17,000 throughout. Median retirement account balances rose from \$15,600 in 1992 to \$26,400 in 1998 and \$34,800 in 2004, possibly reflecting a combination of asset market gains and increases in contributions.

Table 2 shows statistics for the same households six years later, when they were aged 57-62. We project housing and financial wealth from 2008 (the latest available HRS data) to 2010, assuming that households experienced the average change in house prices for their Metropolitan Statistical Area (MSA) and stock and bond returns equaling the returns on the S&P 500 and long-dated corporate bonds. The trends in housing values and mortgages diverged sharply between 2004 and 2010. The median housing value, which increased from \$144,000 in 1998 to \$175,160 in 2004, then dropped to \$153,360 in 2010 – erasing much of the gain from the previous six years. Meanwhile, mortgages continued to grow, with the median among mortgage holders hitting \$69,600 in 2004 and \$87,567 in 2010. This contributed to a drop in home equity and a sharp jump in the loan-to-value ratio, which had been risen more gradually until 2004. The mean loan-to-value ratio reached 26% in 2004 and then jumped to 42% in 2010.

Lastly, and distressingly, financial wealth shows a drop-off between 2004 and 2010 for households aged 57-62, after staying steady in earlier periods. Median financial wealth net of non-mortgage debt dropped from \$24,000 in 2004 to \$20,400 in 2010, with the decline concentrated among mortgage-holders.

## 5. Housing Distress in the HRS and PSID

Now, we focus on detailed questions asked about housing distress in the 2008 HRS and the 2009 PSID. The HRS questions were asked of anyone with a mortgage in 2008 or anyone who ceased being a homeowner between 2006 and 2008, resulting in a sample of 2,847 households. The PSID questions were asked of 3,092 households.

### 5.1. Incidence of Housing Distress

Table 3 shows summary statistics for the HRS sample of 2,847.<sup>12</sup> In this group, 98 households (a weighted proportion of .030) were in arrears by two or more months in 2008 or had lost their home to foreclosure. Of these 98, 30 were actually in foreclosure, a weighted 0.75% foreclosure rate, and an additional 14 had lost their home to foreclosure. These rates of housing distress are well below the national averages of 4.8% in arrears and 3.3% in foreclosure. Of those who were not in arrears by two or more months, 120 anticipated that arrears were somewhat or very likely within the next six months – so an additional 4.7% reported themselves to be at risk of arrears. We do not know from this data whether a report of being likely to face arrears ultimately is borne out.

We first compare the housing characteristics of households that were in arrears in 2008 and those that were not, using weights to make the sample nationally representative. Households in arrears had higher mortgage payments as a percentage of income in 2006 (19% at the median, versus 10% for households not in arrears), bigger mortgages (\$108,000 at the median, versus \$64,800), and lower house values (\$162,000 at the median, versus \$216,000), leading to significantly lower home equity (\$44,280 at the median, versus \$123,120 for households not in arrears). Households in arrears were, however, less likely to hold a home equity loan (11%, versus 18% for those not in arrears) and had similar levels of non-housing debt (\$7,416 at the mean, versus \$6,331). Lastly, households in arrears were much less likely to report that local housing conditions were good or excellent (14%, versus 42% for those not in arrears).

In comparing the characteristics of households that were in arrears and those that were not, it is apparent that the distressed group has worse socioeconomic characteristics. Among households in arrears, the financial respondent in the household was substantially less likely to have completed college (13% for those in arrears, versus 33% for those who were not) and more likely to be black (26% versus 8%) or Hispanic (13% versus 6%). Households in arrears reported 35% lower income in 2006 than households not in arrears and 21% lower Social Security wealth expected at age 62, indicating lower permanent income. Yet, financial respondents of households in arrears were in fact slightly more likely to be working in 2006 (59%, versus 55%). In spite of the small sample of those in arrears, all of these differences between the samples are statistically significant, with the exception of working status; similar patterns are observed when comparing households that anticipated arrears and households that did not, among those not currently in arrears. Our regression analysis later will provide information about whether household income alone explains arrears, or whether factors like education and minority status

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<sup>12</sup> We exclude from columns 2 and 3, 694 respondents who were not asked whether they anticipated arrears and 17 who either refused to answer or did not know.

play an independent role. Some differences are not statistically significant but go in the expected direction, as those in arrears were more likely to have been laid off in the last four years (20%, versus 11%), to divorce in the last four years (26%, versus 14%), to have a member experiencing fair or poor health two years ago (38%, versus 28%), to report a decline in health for the household head in the last two years (37%, versus 33%), and possess lower median financial wealth in 2006 (\$800, versus \$15,000).

Thus, all three conditions that lead to housing distress – declining home values, high mortgage payments, and interrupted income – appear among the HRS households in arrears or foreclosure in 2008, though not always significantly so. The sample size is too small to draw sharp conclusions about the role of each of these contributing factors, however.

We find similar patterns among older households in the 2009 PSID, as shown in Table 4. Rates of housing distress are higher among the older households than in the 2008 HRS, but they are lower than for the younger sample in the PSID. Among older households, with the head born in 1953 or before, 27 are currently in arrears (defined as two months or more) or foreclosure, amounting to 3.0% of the sample. In comparison, 4.2% of prime-age households are in arrears or foreclosure. 11.9% of the older sample anticipate arrears, and 15.4% of the younger sample do. The PSID also reveals that households experiencing housing distress are more likely to have a variable-rate mortgage, information that was not available in the HRS. Among older households, 20% of those not anticipating arrears have a variable-rate mortgage, and 42% of those in arrears (but not in foreclosure) do. By contrast, for prime-age households, the figures are 14% for those not anticipating arrears and 33% for those in arrears but not in foreclosure.

## **5.2. Factors Associated with Housing Distress**

We analyze socioeconomic conditions that are associated with being at risk of arrears. To do so, we estimate weighted probit models using the HRS sample. In order to deal with the small sample size when analyzing factors contributing to housing distress, we will include the group that reports that arrears are somewhat or very likely within the next six months together with the group that are in arrears or have experienced foreclosure. As the group anticipating arrears has worse socioeconomic characteristics than the group not anticipating arrears, the subgroups considered together are relatively similar. This results in a sample of 178 households at risk of arrears and 1748 not at risk. The number of households not at risk of arrears has shrunk from the 1,918 that appear in Table 3 to 1,748 because of missing data. The left-hand side variable in our probit model takes a value of one if the household is at risk of housing distress (already in arrears or foreclosure, or anticipating arrears within the next six months) and zero if not. The weights make the estimates nationally representative, and the weighted mean risk of housing distress in the sample is 9.4%.

The estimation results, reported in terms of estimated marginal effects, appear in Table 5. We find that higher income has a significant but small effect on the likelihood of being at risk of arrears. A 10% increase in log household income reduces this likelihood by about a tenth of a percentage point.<sup>13</sup> Experiencing a layoff between 2004 and 2008 significantly raises the risk of

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<sup>13</sup> In another set of estimates, we tried including Social Security wealth computed at age 62 as a measure of permanent income not directly influenced by current work status. This reduces the sample size from 1926 to 1712,

being in arrears, by 6.2 percentage points. Experiencing a worsening of health between 2006 and 2008 also raises this risk significantly (at the 10% level), by 2.8 percentage points. Local housing conditions matter, as reporting that the local housing market is good significantly reduces the likelihood of arrears, by 4.8 percentage points. The average report of local housing market conditions in one's MSA does not have a statistically significant effect that is independent of one's own report.<sup>14</sup>

Even after controlling for economic status, education and race affect the risk of arrears. Being a college graduate significantly reduces the risk of arrears by 4.5 percentage points, relative to having a high school degree. Being black raises the risk by 14.9 percentage points and being of another race raises it by 12 percentage points. Meanwhile, being Hispanic raises it by 5.0 percentage points. This is somewhat surprising and may reflect poor mortgage terms offered to ethnic minorities, as suggested anecdotally in some media reports.

We do not include other measures of household wealth as right-hand side variables, as these are correlated with housing wealth. We would be hesitant to attribute a causal interpretation to a variable like financial wealth, as households that are diligent in saving for retirement may also be careful about drawing down housing equity, so that it is not high financial wealth that causes households to avoid financial distress, but rather an innate sense of caution. We have some similar concerns about measures of housing obligations, which reflect housing markets (that can be viewed as exogenous) and housing choices (that may be endogenously determined with choosing not to keep up with current mortgage payments). Nevertheless, we have included the household's loan-to-value ratio from 2006 as an explanatory variable in the current set of results in order to capture the effects of exposure to housing market volatility, and it is statistically significant and positive. When the loan-to-value ratio rises by ten percentage points, then the likelihood of being at risk of arrears rises by 0.77 percentage points.<sup>15</sup>

Stafford and Gouskova (2010) estimate a similar probit model using households of all ages in the PSID. They find a similar relationship between mortgage distress and education and ethnicity across ages, but in contrast to our analysis of HRS data, they find a significant and substantial relationship between mortgage distress and debt service ratios. This likely reflects the much higher debt service ratios of the younger households included in the PSID.<sup>16</sup>

We then use our econometric model to forecast mortgage arrears and foreclosures among older households through 2012. Based on predicted changes in house values and employment, we project that the risk of mortgage arrears will increase to 3.4 percent in 2010 and 4.4 percent by 2012.<sup>17</sup> These findings are consistent with the Mortgage Bankers Association delinquency rates

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so we do not report the results here. Nevertheless, Social Security wealth has a negative effect that is statistically significant at the 10% level, and 2006 household income becomes marginally insignificant.

<sup>14</sup> This may also reflect a kind of justification bias, whereby people who formed more mistaken judgments about the future of housing markets blame a worse market for their mistakes.

<sup>15</sup> Few of the other coefficients are sensitive to including this variable.

<sup>16</sup> The number of older households in the PSID is too small to replicate our HRS analysis or the Stafford-Gouskova model for older households alone.

<sup>17</sup> Our probit model estimates 2008 arrears as a function of 2006 loan to value ratios and layoffs 2004-2008. We use our model to forecast 2010 and 2012 arrears as a function of 2008 and 2010 loan to value ratios and 2006-2010 and 2008-2012 layoffs. This requires that we project house prices to 2010 and layoff rates to 2012 and impute layoffs

which, in contrast to the American Life Panel data (Hurd and Rohwedder 2010), show no sign of having peaked.

### **5.3 Housing Distress of Family Members**

The 2008 HRS asked all respondents whether they had family members (children or others) who were experiencing mortgage arrears and foreclosure. Thus, while older households have relatively low rates of housing distress, they may help other family members in trouble, and, in doing so, reduce their preparedness for retirement; their ability to offer such assistance may have risen as illiquid DB pensions have been replaced by more liquid DC accounts.

Table 6 reports the incidence of housing distress among family members of HRS respondents. Of 10,494 respondents, 6.7% reported having a family member who fell behind on their mortgage payments. Among the ones with a family member experiencing such trouble, 42% reported giving help to this family member, and 58% did not. Respondents with family members in distress had lower household income (\$46,656 at the median versus \$52,294) and lower financial wealth in 2006 (\$7,000 at the median versus \$18,000) in comparison to respondents with no family members experiencing housing distress. However, within this group, those that gave help had considerably better finances than those who did not.

Table 7 reports the results of a probit model in which the dependent variable takes the value one if the respondent provided financial assistance to family members, zero otherwise. Younger, college educated individuals still in employment are more likely to provide assistance. However, the coefficients on variables measuring liquid financial wealth are not statistically significant. Thus, we cannot conclude from the evidence that older households are raiding their retirement nest eggs to assist family members in housing-related financial difficulty.

## **6. Conclusions**

We find that households nearing retirement are more exposed to housing market volatility than in the recent past, and their retirement income may have to be stretched farther. Their mortgages have risen in value and their participation in the home equity loan market has risen. They gained housing wealth between 1992 and 2004, but these gains were almost entirely negated by 2010. Nevertheless, the incidence of mortgage arrears and foreclosure among older households is relatively low, in comparison to the national average. Housing distress, when it does occur, is significantly related to layoffs and health shocks, as well as high loan-to-value ratios observed in 2006. Moreover, the incidence of housing distress is greater among ethnic minorities, even after controlling for income and education, possibly reflecting unfavorable mortgage terms. Our projections suggest that the risk of arrears will increase to 3.4 percent among older households in 2010, and 4.4 percent by 2012.

The change in the nature of life cycle wealth portfolios may have important consequences as these households enter retirement. Housing wealth is illiquid, in comparison to financial wealth, and most households in retirement have traditionally shown great reluctance to downsize their

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2008-2012 to households in our sample. We assume that layoffs peak in 2009 and decline to the 2006 level by 2012. We project each household's house price from 2008 to 2010, assuming that it tracks the relevant Metropolitan or Micropolitan house price index to the fourth quarter of 2009, and national house price movements thereafter.

houses in the absence of major shocks to the health status of household members. This may change in the near future as increasing demands on retirement income may require tapping into housing equity. This may either raise demand for reverse mortgages as a tool to smooth consumption in later years, or lead to more rapid consumption of pension wealth, which is growing increasingly liquid as annuities from DB plans have been replaced by lump-sum payouts from DB or DC plans. The changing portfolio of retirement wealth will bear further study as households enter retirement and begin to spend down their wealth.

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**Table 1. Household wealth among cohorts ages 51-56 in 1992, 1998, and 2004**

	Ages 51-56 in 1992				Ages 51-56 in 1998				Ages 51-56 in 2004			
	All homeowners		With mortgage		All homeowners		With mortgage		All homeowners		With mortgage	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Value of primary residence	190,417	140,400	207,082	156,000	197,262	144,000	217,002	180,000	283,658	203,000	314,371	232,000
Mortgage Debt	49,952	15,600	73,248	45,240	61,374	28,800	91,253	69,120	80,596	46,400	112,589	90,480
Other loans	9,380	0	13,745	0	5,465	0	8,125	0	9,355	0	13,069	0
Housing equity <sup>1</sup>	131,086	93,600	120,080	88,920	130,422	93,600	117,624	86,400	193,707	116,000	188,714	113,680
Other debt	6,270	0	6,991	0	7,004	0	8,272	0	6,472	0	7,560	0
2nd home mortgage	4,523	0	5,739	0	3,746	0	4,684	0	5,742	0	7,577	0
Total debt <sup>2</sup>	70,123	31,200	99,732	60,510	77,589	43,200	112,335	83,520	102,165	68,440	140,794	104,400
Non-pension non-housing financial wealth <sup>3</sup>	61,262	13,000	55,337	12,000	93,497	15,000	86,739	15,000	115,974	16,800	107,220	17,000
Total HH income	92,555	72,696	100,550	80,184	114,351	85,127	123,223	93,623	120,563	82,824	131,846	92,800
Social Security wealth at age 62	137,867	139,932	142,559	145,704	121,259	124,212	126,360	128,964	149,973	148,944	156,251	155,324
DB wealth at age 62	317,462	183,207	328,515	196,278	386,388	306,398	398,784	323,414	240,752	187,927	248,198	190,634
IRA balance+DC wealth in the current job	71,865	15,600	74,864	15,600	134,271	26,400	149,502	33,000	130,412	34,800	134,272	42,874
Has credit card debt	0.41		0.46		0.40		0.44		0.43		0.48	
Has home equity loan	0.15		0.22		0.15		0.22		0.21		0.29	
Has mortgage debt	0.63		0.92		0.62		0.92		0.66		0.91	
% of HH with mortgage payments exceeding 30% of income		0.04		0.07		0.00		0.01		0.05		0.09
Mortgage to home value ratio	0.26	0.13	0.39	0.33	0.30	0.20	0.45	0.42	0.32	0.25	0.44	0.43
N of Obs.	4,359		2,961		2,798		1,842		2,673		1,915	

Notes : Authors calculations using data from Health and Retirement Study . Estaimtes are weighted using household weights. All monetary values are in 2009 dollars.

<sup>1</sup> Housing equity equals the value of the primary residence minus of all mortgages and other loans.

<sup>2</sup> Total debt is the sum of all mortgages, other loans, 2nd home mortgages, and the value of other debt.

<sup>3</sup> This measure of financial wealth does not include IRA, business, or transportation wealth.



**Table 2. Household wealth among cohorts ages 57-62 in 1992, 1998, 2004, and 2010**

	Ages 57-62 in 1992				Ages 57-62 in 1998				Ages 57-62 in 2004				Ages 57-62 in 2010			
	All homeowners		With mortgage		All homeowners		With mortgage		All homeowners		With mortgage		All homeowners		With mortgage	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Value of primary residence	175,617	132,600	200,187	148,200	220,786	144,000	263,530	180,000	268,417	175,160	298,535	207,640	213,407	153,360	235,666	176,364
Mortgage debt	29,823	0	56,088	32,760	47,117	0	85,120	57,600	61,084	17,400	97,956	69,600	82,953	41,208	121,595	87,567
Other loans	5,661	0	10,646	0	4,773	0	8,624	0	7,017	0	11,253	0	8,644	0	12,671	0
Housing equity <sup>1</sup>	140,133	107,640	133,452	93,600	168,895	112,320	169,787	100,800	200,315	116,000	189,326	110,200	121,810	76,680	101,399	62,340
Other debt	3,502	0	5,033	0	5,257	0	7,113	0	5,282	0	6,448	0	8,395	0	9,125	0
2nd home mortgage	3,616	0	4,148	0	4,093	0	6,183	0	4,058	0	5,365	0	6,090	0	8,149	0
Total debt <sup>2</sup>	42,602	11,700	75,916	46,800	61,240	20,880	107,040	73,440	77,442	38,280	121,022	87,000	106,082	60,782	151,540	103,020
Non-pension non-housing financial wealth <sup>3</sup>	72,696	18,000	61,054	13,950	131,174	20,000	103,723	15,000	216,850	24,000	105,497	20,000	131,204	20,400	108,050	17,240
Total HH income	76,941	59,592	87,137	68,640	102,536	68,256	116,734	80,150	99,476	70,296	107,001	80,091	n.a	n.a	n.a	n.a
Social Security wealth at age 62	145,318	148,356	149,392	151,944	139,793	142,428	146,699	152,196	168,306	169,128	174,608	178,988	176,506	176,543	182,157	182,463
DB wealth at age 62	210,118	97,486	196,411	98,182	235,606	161,839	257,259	168,634	240,995	175,546	249,922	176,044	283,573	217,995	270,372	210,621
IRA balance+ DC wealth in the current job <sup>4</sup>	76,798	187,200	87,910	18,720	128,034	21,120	143,732	22,440	148,478	27,840	154,592	32,480	161,886	38,124	149,313	47,003
Has credit card debt	0.35		0.43		0.32		0.39		0.37		0.44		0.44		0.50	
Has home equity loan	0.13		0.24		0.14		0.25		0.17		0.27		0.21		0.30	
Has mortgage debt	0.47		0.88		0.48		0.87		0.55		0.88		0.61		0.89	
% of HH with mortgage payments exceeding 30% of income		0.00		0.07		0.00		0.01		0.03		0.10		0.06		0.11
Mortgage to home value ratio	0.17	0.00	0.32	0.25	0.22	0.00	0.39	0.35	0.26	0.10	0.42	0.38	0.42	0.33	0.57	0.52
N of Obs.	3,534		1,900		3,886		2,138		2,534		1,506		2,394		1,605	

Notes : Authors calculations using data from Health and Retirement Study. Estaimtes are weighted using household weights. All monetary values are in 2009 dollars.

<sup>1</sup> Housing equity equals the value of the primary residence minus all mortgages and other loans.

<sup>2</sup> Total debt is the sum of all mortgages, other loans, 2nd home mortgages, and other debt.

<sup>3</sup> This measure of financial wealth does not include IRA , business, or transportation wealth.

<sup>4</sup> The projected values of DC and IRA wealth are calculated based on respondents report of account balances in 2008, their own contributions and employer contributions, and their investment allocation, as well as performance of the overall stock and bond markets during this period.

**Table 3: 2006 Characteristics of households with mortgages in 2006 by whether facing foreclosure in 2008**

Explanatory variables	No past arrears			Two or more months' arrears			
	All	Does not anticipate arrears	Arrears somewhat or very likely in the next 6 months <sup>1</sup>	All <sup>2</sup>	No foreclosure	Foreclosure <sup>3</sup>	Foreclosure and lost home <sup>4</sup>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Race/ethnicity</i>							
White	0.83	0.84	0.65 <sup>a</sup>	0.55 <sup>a</sup>	0.55	0.56	0.73
Black	0.08	0.07	0.17 <sup>b</sup>	0.26 <sup>a</sup>	0.28	0.22	0.27
Other	0.03	0.03	0.07	0.06	0.06	0.08	0
Hispanic	0.06	0.06	0.11 <sup>c</sup>	0.13 <sup>c</sup>	0.12	0.14	0
<i>Education</i>							
Less than High School	0.11	0.07	0.17 <sup>a</sup>	0.18	0.17	0.20	0.11
High school	0.30	0.28	0.34	0.38	0.42	0.28	0.30
Some College	0.27	0.27	0.31	0.31	0.27	0.41	0.34
College graduate	0.33	0.38	0.18 <sup>a</sup>	0.13 <sup>a</sup>	0.14	0.11	0.25
Married in 2006	0.69	0.73	0.79	0.61	0.67	0.44	0.29 <sup>c</sup>
Log of HH income in 2006	10.95	11.13	10.7 <sup>a</sup>	10.6 <sup>b</sup>	10.8	10.1 <sup>c</sup>	10.4 <sup>c</sup>
Age 60 or less in 2006	0.54	0.59	0.73 <sup>a</sup>	0.71 <sup>a</sup>	0.72	0.68	0.82
Laid off between 2004-2008	0.11	0.10	0.24	0.20	0.21	0.15	0.19
Working in 2006	0.55	0.63	0.61	0.59	0.60	0.58	0.68
Has health insurance in 2006	0.96	0.97	0.91 <sup>c</sup>	0.94	0.96	0.89	0.76
Household member in fair/poor health in 2006	0.28	0.24	0.39 <sup>a</sup>	0.38	0.35	0.47	0.60
HH report health change for worse between 2006-2008	0.33	0.30	0.42 <sup>b</sup>	0.37	0.38	0.35	0.61
Health expenditures above 75th percentile in 2006	0.33	0.35	0.30	0.40	0.40	0.40	0.60
Reports local housing market as good or above in 2006	0.42	0.44	0.27 <sup>a</sup>	0.14 <sup>a</sup>	0.16	0.08	0.04 <sup>c</sup>
% of people in same MSA in 2006 rating local housing market as good or excellent	0.39	0.40	0.34 <sup>b</sup>	0.34	0.35	0.33	0.39
Loan to value ratio in 2006	0.34	0.39	0.50 <sup>b</sup>	0.62 <sup>a</sup>	0.65	0.51	0.60
<b>Variables not included in the probit model</b>							
Median mortgage payments as % of HH income in 2006	0.10	0.12	0.17	0.19	0.15	0.28	0.36
Median mortgage debt in 2006	64,800	86,400	91,800	108,000	91,800	140,400	131,562
Median house value in 2006	216,000	237,600	183,600	162,000	135,819	253,800	118,800
Median housing equity in 2006	123,120	129,600	91,800	44,280	43,200	72,036	64,800
% with home equity loan in 2006	0.18	0.20	0.18	0.11	0.05	0.31 <sup>c</sup>	0.60 <sup>a</sup>
Mean Value of other debt (credit card, medical debts etc) in 2006	6,331	6,888	9,872	7416	7,604	6,841	14,497 <sup>c</sup>
Mean Social Security wealth at age 62	156,518	161,034	138,995 <sup>a</sup>	124,249 <sup>a</sup>	123,622	126,198	128,224
Divorced between 2004-2008	0.14	0.14	0.12	0.26 <sup>c</sup>	0.24	0.32	0.53
Median HH non-pension non-housing financial wealth in 2006 <sup>5</sup>	15,000	15,000	3,800	800	1,000	500	3
N	2749	1918	120	98	68	30	14
<i>Notes</i> : Authors calculations using data from Health and Retirement Study. Estimates are weighted using household weights. All monetary values are in 2009 dollars.							
<sup>1</sup> Significance test between column (1) and (4) are reported in this column							
<sup>2</sup> Significance test between column (2) and (3) are reported in this column							
<sup>3</sup> Significance test between column (5) and (6) are reported in this column							
<sup>4</sup> Significance test between column (5) and (7) are reported in this column							
<sup>5</sup> This measure of financial wealth does not include IRA , business, or transportation wealth.							
<sup>a, b</sup> and <sup>c</sup> denote significance at 1, 5, and 10 percent level.							

**Table 4: 2006 Characteristics of homeowner households in 2007 in PSID by whether anticipating arrears or facing foreclosure in 2009**

Explanatory variables	Everyone				HH head born in 1953 or earlier				HH head born 1954 or later			
	Not in areas		Currently in areas		Not in areas		Currently in areas		Not in areas		Currently in areas	
	Anticipate arrears	Does not anticipate arrears	Into foreclosure	Not in foreclosure	Anticipate arrears	Does not anticipate arrears	Into foreclosure	Not in foreclosure	Anticipate arrears <sup>1</sup>	Does not anticipate arrears <sup>2</sup>	Into foreclosure <sup>3</sup>	Not in foreclosure <sup>4</sup>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<i>Race/ethnicity</i>												
White	0.57	0.84	0.67	0.49	0.54	0.86	0.82	0.66	0.58	0.83	0.60	0.43
Black	0.12	0.07	0.19	0.20	0.17	0.08	0.08	0.15	0.10	0.07	0.24 <sup>a</sup>	0.22
Other	0.05	0.03	0.00	0.04	0.07	0.04	0.00	0.01	0.04	0.03	0.00	0.05
Hispanic	0.26	0.05	0.14	0.27	0.22	0.03	0.11	0.17	0.28	0.06 <sup>a</sup>	0.16	0.31
<i>Education</i>												
Less than High School	0.22	0.08	0.21	0.22	0.26	0.10	0.37	0.09	0.21	0.06 <sup>a</sup>	0.14	0.26
High school	0.34	0.26	0.40	0.42	0.35	0.26	0.35	0.26	0.34	0.26	0.42	0.47 <sup>b</sup>
Some College	0.23	0.26	0.32	0.16	0.18	0.23	0.25	0.34	0.25	0.28 <sup>b</sup>	0.35	0.10 <sup>b</sup>
College graduate	0.20	0.40	0.07	0.20	0.20	0.40	0.03	0.30	0.20	0.40	0.10	0.17
Married in 2007	0.67	0.71	0.57	0.62	0.66	0.67	0.62	0.72	0.67	0.73 <sup>b</sup>	0.54	0.58
Mean of Log of HH income 2007	10.99	11.35	10.33	11.03	10.95	11.23	8.81	11.0	11.0	11.4 <sup>a</sup>	11.1	11.1
Median	11.08	11.38	11.01	10.94	11.05	11.24	10.17	10.8	11.1	11.4	11.1	10.9
Working in 2007	0.88	0.84	0.58	0.87	0.81	0.66	0.28	0.87	0.91 <sup>b</sup>	0.95 <sup>a</sup>	0.73 <sup>c</sup>	0.86
Laid off between 2003-07	0.12	0.06	0.07	0.13	0.15	0.04	0.18	0.01	0.11	0.07 <sup>a</sup>	0.02	0.17 <sup>b</sup>
Has health insurance 2007	0.94	0.98	0.92	0.90	0.93	0.98	1.00	0.93	0.94	0.97	0.89	0.90
Household member in fair/poor health 2007	0.24	0.14	0.29	0.23	0.41	0.22	0.51	0.35	0.17 <sup>a</sup>	0.09 <sup>a</sup>	0.18	0.20
HH report health change for worse between 2005-07	0.28	0.30	0.25	0.23	0.35	0.31	0.15	0.37	0.26	0.29	0.30	0.19
Health expenditures above 75th percentile in 2007	0.31	0.39	0.28	0.26	0.45	0.45	0.46	0.38	0.27 <sup>b</sup>	0.36 <sup>a</sup>	0.22	0.22
Mean Loan to value ratio 2007	0.57	0.50	0.67	0.75	0.51	0.39	0.65	0.70	0.59 <sup>c</sup>	0.57 <sup>a</sup>	0.68	0.77
Median	0.62	0.50	0.79	0.80	0.51	0.36	0.80	0.72	0.67	0.59	0.74	0.80
Age of head of household 2007	46.7	48.8	48.8	44.3	61.2	62.4	61.6	57.9	41.1 <sup>a</sup>	40.5 <sup>a</sup>	42.6 <sup>a</sup>	40.0 <sup>a</sup>
Has children under age 18	0.54	0.39	0.54	0.48	0.30	0.08	0.12	0.25	0.63 <sup>a</sup>	0.58 <sup>a</sup>	0.75 <sup>a</sup>	0.55 <sup>c</sup>
Divorced between 2003-07	0.04	0.04	0.06	0.06	0.02	0.03	0.00	0.00	0.05	0.04	0.09	0.07

Table 4 (cont.)												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Mean health expenditure 2007	5,978	7,268	5,012	5,840	8,952	8,611	4,492	8,122	5,059 <sup>b</sup>	6,506 <sup>a</sup>	5,190	5,099
Median	3,842	5,150	3,523	3,811	5,871	5,871	52	6,386	2,987	4,532	3523	3,381
Mean house value 2007	255,492	309,071	255,219	304,254	259,416	329,346	205,404	262,757	253,997	296,809 <sup>b</sup>	279,816	318,130
Median	195,000	225,000	230,000	200,000	200,000	240,000	250,000	150,000	190,000	223,000	230,000	200,000
Mean mortgage debt 2007	132,500	137,159	170,562	216,103	125,101	112,289	124,586	149,141	135,192	152,421 <sup>a</sup>	192,820	236,937
Median	105,000	103,000	146,000	120,000	84,000	72,000	140,000	100,000	110,000	120,000	160,000	131,000
Mean total debt 2007	145,104	154,775	190,215	238,516	138,568	130,421	145,828	170,750	147,497	169,688 <sup>a</sup>	211,703	259,600
Median	114,433	118,450	179,220	133,900	92,700	82,400	149,350	104,030	118,450	134,930	179,220	134,930
Mean Total HH income 2007	77,887	113,651	61,957	74,743	74,559	105,076	39,773	71,311	79,140	118,909 <sup>b</sup>	72,696 <sup>c</sup>	75,811
Median	64,660	87,496	60,632	56,710	63,240	76,320	26,089	48,866	65,296	92,375	68,529	56,710
Mean mortgage payments as % of HH income 2007	0.23	0.18	0.31	0.35	0.24	0.20	0.42	0.58	0.23	0.17	0.26 <sup>b</sup>	0.28
Median	0.18	0.13	0.22	0.21	0.17	0.12	0.42	0.16	0.18	0.14	0.21	0.21
% with home equity loan 2007	0.13	0.18	0.17	0.13	0.16	0.21	0.17	0.09	0.12	0.16 <sup>a</sup>	0.18	0.14
% Has credit card debt 2007	0.63	0.61	0.75	0.78	0.55	0.52	0.94	0.96	0.66	0.67 <sup>a</sup>	0.66 <sup>b</sup>	0.73 <sup>a</sup>
Mean DC + IRA wealth	21,348	83,516	2,549	17,030	36,145	119,928	3,340	13,418	15,693 <sup>b</sup>	61,314 <sup>a</sup>	2,166	18,154
Median	0	7,210	0	0	0	15,450	0	0	0	4,944	0	0
Mean Housing equity 2007	113,994	171,070	79,748	89,236	126,183	216,332	72,318	117,025	109,395	143,491 <sup>a</sup>	83,344	80,590
Median	72,100	103,000	61,800	51,500	94,760	149,350	51,500	51,500	58,710	78,280	61,800	51,500
Mean financial assets 2007	30,717	92,211	87,207	37,454	37,072	123,914	253,080	15,841	28,311	72,887 <sup>a</sup>	6,906	44,179
Median	3,090	14,420	1,030	412	3,090	21,630	515	412	3,090	11,330	1,288	927
Refinanced	0.54	0.55	0.58	0.67	0.58	0.62	0.79	0.89	0.53	0.51 <sup>a</sup>	0.48	0.60 <sup>a</sup>
Interest rate is variable	0.17	0.16	0.67	0.36	0.20	0.20	0.97	0.42	0.16	0.14 <sup>a</sup>	0.52 <sup>a</sup>	0.33
N	446	2,522	35	83	107	762	9	18	338	1,759	26	65

Notes : Data are from PSID. Estimates are weighted using family weights. Unit of analysis is family, and characteristics are for the head of the family unless otherwise noted. All monetary values are in 2009 dollars.

<sup>1</sup> Significance test of the difference in estimates in columns (5) and (9) are reported in this column

<sup>2</sup> Significance test of the difference in estimates in columns (6) and (9) are reported in this column

<sup>3</sup> Significance test of the difference in estimates in columns (7) and (10) are reported in this column

<sup>4</sup> Significance test of the difference in estimates in columns (8) and (12) are reported in this column

<sup>a, b</sup> and <sup>c</sup> denote significance at 1, 5, and 10 percent level.

**Table 5. Probit marginal effects--risk of arrears or foreclosure**

Independent variables	Marginal effect	Std. Err.
<i>Race/ethnicity</i>		
Non Hispanic White (omitted)		
Non Hispanic black	0.149 <sup>a</sup>	0.038
Non Hispanic other	0.120 <sup>b</sup>	0.068
Hispanic	0.050 <sup>b</sup>	0.028
<i>Education</i>		
Less than high school	0.010	0.024
High school graduate (omitted)		
Some college	-0.010	0.015
College Graduate	-0.045 <sup>b</sup>	0.016
Married in 2006	0.013	0.014
Age less than 60 in 2006	0.041 <sup>a</sup>	0.015
Working in 2006	-0.003	0.016
Has health insurance in 2006	-0.048	0.039
HH in Fair/poor health in 2006	0.018	0.017
HH health change for worse between 2006-2008	0.028 <sup>c</sup>	0.016
Laid-off between 2004-2008	0.062 <sup>a</sup>	0.026
Health expenditures in 2006 above the 75 <sup>th</sup> percentile	0.001	0.014
Report local housing market as good/verygood/excellent	-0.048 <sup>a</sup>	0.015
Mean assessment of local market by people in the same MSA	-0.043	0.036
Log of household income in 2006	-0.009 <sup>b</sup>	0.004
Loan to value ratio in 2006	0.077 <sup>a</sup>	0.020
N of Obs.	1926	
Log likelihood	-504.081	
Pseudo R2	0.157	
obs. P	0.093	
pred. P (at x-bar)	0.064	
<i>Notes</i> : Authors calculations using data from Health and Retirement Study. Estaimtes are weighted using household weights. All monetary values are in 2009 dollars.		
<sup>a, b</sup> and <sup>c</sup> denote significance at 1, 5, and 10 percent level.		

**Table 6. Respondent's family (not including the respondent) fell behind in mortgage payment**

Explanatory variables	All		Family did not fall behind		Family fell behind					
	Mean	Median	Mean	Median	All <sup>1</sup>		R gave help		R did not give help <sup>2</sup>	
					Mean	Median	Mean	Median	Mean	Median
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
<i>Race/ethnicity</i>										
White	0.82		0.82		0.77 <sup>a</sup>		0.81		0.74 <sup>c</sup>	
Black	0.07		0.07		0.09		0.08		0.09	
Other	0.03		0.03		0.03		0.03		0.03	
Hispanic	0.08		0.08		0.11 <sup>b</sup>		0.08		0.14 <sup>b</sup>	
<i>Education</i>										
Less than high school	0.16		0.16		0.18		0.13		0.22 <sup>a</sup>	
High school	0.33		0.33		0.39 <sup>a</sup>		0.37		0.42	
Some college	0.25		0.25		0.26		0.27		0.24	
College graduate	0.26		0.27		0.17 <sup>a</sup>		0.23		0.12 <sup>a</sup>	
Married in 2006	0.72		0.72		0.74		0.79		0.70 <sup>b</sup>	
Age 60 or less in 2006	0.44		0.44		0.51 <sup>a</sup>		0.47		0.54	
Working in 2006	0.43		0.43		0.45		0.51		0.38 <sup>a</sup>	
Household member in fair/poor health 06	0.34		0.33		0.37		0.32		0.41 <sup>c</sup>	
Has children under age 18	0.07		0.07		0.10 <sup>c</sup>		0.12		0.09	
Value of primary residence	271,533	162,000	275,375	162,000	216,626 <sup>a</sup>	162,000	229,021	167,400	208,395	140,400
Total mortgage debt	50,965	0	50,563	0	56,717	0	52,968	0	59,488	0
Total HH income	85,941	52,056	87,300	52,294	66,521 <sup>a</sup>	46,656	80,687	58,320	55,266 <sup>a</sup>	34,733
Total debt <sup>3</sup>	66,591	6,480	66,134	5,400	73,123	27,000	72,071	38,880	73,747	21,600
Net value of financial wealth <sup>4</sup>	185,678	16,000	193,118	18,000	79,365 <sup>a</sup>	7,000	84,634	15,000	74,532	3,000
Housing equity <sup>5</sup>	214,584	108,000	218,802	112,320	154,322 <sup>a</sup>	97,200	169,313	108,000	144,197	70,200
Social Security wealth at age 62	144,009	143,956	144,520	144,304	137,448 <sup>b</sup>	137,904	147,685	146,276	128,393 <sup>a</sup>	122,288
DB wealth at age 62	280,231	185,443	281,173	190,278	267,286	138,579	327,994	146,956	201,091 <sup>b</sup>	116,014
Has DB plan	0.26		0.26		0.27		0.32		0.23 <sup>b</sup>	
Has DC plan	0.49		0.48		0.55 <sup>a</sup>		0.60		0.51 <sup>c</sup>	
Has IRA	0.58		0.59		0.51 <sup>a</sup>		0.60		0.44 <sup>a</sup>	
N	10,494		9,791		703		296		399	

*Notes* : Data are from Health and Retirement Study. Estimates are weighted using household weights. All monetary values are in 2009 dollars.

<sup>1</sup> Significance test of the difference in estimates in columns (3) and (5) are reported in this column

<sup>2</sup> Significance test of the difference in estimates in columns (7) and (9) are reported in this column

<sup>3</sup> Total debt is the sum of all mortgages, other loans, 2nd home mortgages, and other debt.

<sup>4</sup> This measure of financial wealth does not include IRA, business, or transportation wealth.

<sup>5</sup> Housing equity equals the value of the primary residence minus all mortgages and other loans.

<sup>a, b</sup> and <sup>c</sup> denote significance at 1, 5, and 10 percent level.

**Table 7. Probit marginal effects of the probability of giving help to family member (not including the respondent) that fell behind in mortgage payment**

Explanatory variables	Marginal effects	Std. Err.
	(1)	(2)
<i>Race/ethnicity</i>		
Non Hispanic White (omitted)		
Non Hispanic Black	-0.003	0.076
Non Hispanic Other	-0.095	0.129
Hispanic	-0.058	0.083
<i>Education</i>		
Less than High School	-0.035	0.072
High school (omitted)		
Some College	0.045	0.065
College graduate	0.151 <sup>b</sup>	0.074
Married in 2006	0.066	0.061
Age 60 or less in 2006	-0.178 <sup>a</sup>	0.058
Working in 2006	0.138	0.061
Household member in fair/poor health in 2006	-0.005	0.056
Has DB plan	0.042	0.078
Has DC plan	-0.024	0.056
Has IRA	0.050	0.071
log(Total HH income)	0.016	0.022
log(db dc ira wealth)	0.004	0.007
N of Obs.	621	
Log likelihood	-399.532	
Pseudo R2	0.065	
obs. P	0.449	
pred. P (at x-bar)	0.444	
<i>Notes</i> : Authors calculations using data from Health and Retirement Study. Estaimtes are weighted using household weights. All monetary values are in 2009 dollars.		
<sup>a</sup> and <sup>b</sup> denote significance at 1 and 5 percent level.		

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