The Association Between High Mortgage Debt and Financial Well-Being in Old Age

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The Association Between High Mortgage Debt and Financial Well-Being in Old Age: Implications for the Financial Education Field

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Abstract

Over the last few decades the share of older homeowners (age 62 and older) with mortgage debt has doubled, while the typical amount of outstanding debt relative to home values among this group has tripled. Older homeowners still paying off mortgage debt face high rates of housing cost burdens (paying more than 30 percent of income for housing), leaving less income for other necessities. In addition, homeowners with higher mortgage debt have less housing equity to tap for critical needs and face the ongoing risk of foreclosure. For these reasons, higher levels of mortgage debt may be expected to create lower levels of financial well-being among these individuals. Using both descriptive and multivariate approaches, this paper explores two issues related to these trends. First, it examines the relationship of financial well-being with both the incidence of mortgage debt and housing cost burdens based on the CFPB's Financial Well-Being Scale as applied to data from the 2016 National Financial Well-Being Survey. Second, it assesses the association between the use of mortgage debt among older adults and measures of financial skill, knowledge, planning, and saving habits. The results indicate that both higher monthly housing costs and the presence of high levels of mortgage debt are associated with lower financial well-being scores and increased likelihood of having a score below 50, which is associated with greater likelihood of material hardship. The results also indicate that older adults with higher financial skill scores and a greater propensity to save are less likely to have higher levels of mortgage debt. The findings suggest that reductions in mortgage debt among older homeowners can improve financial well-being and that efforts to improve financial skill and encourage savings could potentially help bring about such reductions.

1. Background

1.1. Introduction

Housing represents the single largest budget item for most families and, given the importance of maintaining a roof over one's head, it often takes precedence over other important bills. As a result, excessive spending on shelter requires households to spend less on healthcare, food, childcare, transportation, or education (Herbert, Hermann, and McCue, 2018).

The incidence of housing cost burdens—defined as paying more than 30 percent of income for housing—is strongly associated with housing tenure and the use of mortgage debt. In 2017, 54 percent of households age 62 and older who rented had housing cost burdens, more than twice the 26 percent share among homeowners in this age group. However, among older homeowners with a mortgage, the share with housing cost burdens was much higher, at 40 percent. In comparison, only 16 percent of those who owned their homes free and clear were cost-burdened (JCHS, 2018a).

Moreover, a growing share of older adult homeowners are carrying mortgage debt into their retirement years. According to data from the Survey of Consumer Finances, the share of homeowners age 65 and older with a mortgage more than doubled between 1989 and 2016, from 20 to 41 percent. And among those with a mortgage the outstanding loan-to-value ratio tripled, from 13 to 39 percent (**Figure 1**) (JCHS, 2018b). Similarly, according to data from the American Community Survey, the share of homeowners age 62 and over with a mortgage grew from 30 percent to 41 percent between 2001 and 2017.

Beyond potential affordability concerns, the existence and level of mortgage debt might inhibit older adult homeowners from tapping home equity during an emergency or for other

spending needs (Gupta et al., 2018). The home is the largest source of wealth for many homeowners, providing a potential source of financial security in retirement (JCHS, 2014; Lusardi and Mitchell, 2007). While in practice most older adults do not tap their home equity to any great degree, they are most likely to draw on this wealth late in life in response to a health crisis or loss of a spouse, and so this equity can be an important source of financial security at these times of crisis (Poterba, Venti and Wise, 2015). Furthermore, having unmanageable mortgage debt raises the risk of losing the home and some share of accrued equity in foreclosure, which may be a further source of financial insecurity (Trawinski, 2012).

Thus, a high level of mortgage debt late in life might be expected to have a deleterious effect on the financial well-being of older adults both by increasing the incidence of housing cost burdens and by reducing housing equity and the security this wealth can provide.

Figure 1. Older Adult Homeowners Are More Likely to Carry Mortgage Debt, and Carry More Debt As a Share of Home Value
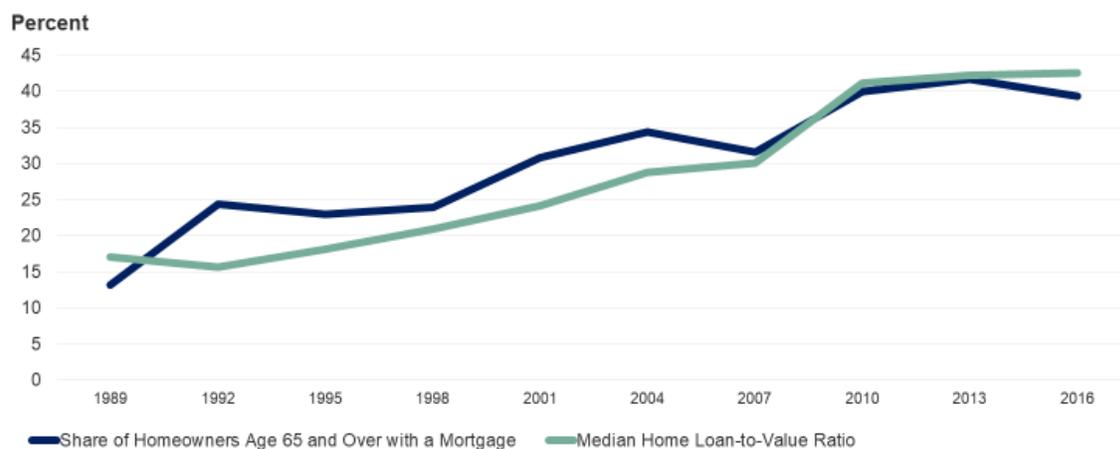
Note: The loan-to-value ratio is calculated for homeowners age 65 and over with mortgage debt, including home equity loans and HELOCs secured by primary residence.
Source: JCHS tabulations of Federal Reserve Board, Surveys of Consumer Finance.

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High levels of mortgage debt late in life may arise out of financial demands in the years before retirement that made the payment of debt more difficult. Or owners may have made

decisions during their younger years about how much mortgage debt to incur without considering the consequences in later years. Indeed, given the long-run decline in mortgage interest rates over the last three decades and the reduced time and cost needed to refinance a mortgage, the current generation of retirees has had opportunities to refinance into lower-rate mortgages every few years continuously since the late 1980s (JCHS, 2018a). Thus, it is not unreasonable to assume that many homeowners may have made decisions to reduce mortgage payments in the short run without adequate regard to the implications for later life.

Of course, households might make a conscious choice to take on mortgage debt to have larger, higher-quality homes or to access particular neighborhoods, social networks, or amenities. Similarly, older adults might carry mortgage debt later into life as part of a broader financial strategy to balance a portfolio of financial assets or to even out housing payments over time in order to smooth consumption of other goods. In these cases, higher shares of income spent on housing or higher amounts of mortgage debt among older households may represent a rational choice made by consumers and would not necessarily decrease overall financial well-being.

To better understand the implications of the increase in mortgage debt later in life and whether the use of this debt reflects reasonable financial choices about spending and investment patterns, this paper investigates the association of financial well-being with the incidence of both high levels of mortgage debt and housing cost burdens. As the discussion above suggests, high levels of mortgage debt may impair financial well-being by increasing housing cost burdens, but also by limiting housing equity and increasing the prospect of facing foreclosure should mortgage payments become unsustainable.

As noted, while the use of high levels of mortgage debt may represent a well-grounded financial choice, it is possible that some owners failed to anticipate the financial burden

associated with mortgage debt late in life. To explore this issue, the paper also examines the relationship between the incidence of high levels of mortgage debt later in life and measures of financial skill, knowledge, planning, and saving habits. This analysis is intended to shed light on whether efforts at improving financial knowledge and habits might reduce the incidence of mortgage debt in retirement, contributing to improved well-being among older homeowners.

1.2.   Background and Literature Review

Assessing Financial Well-Being Among Older Adults

The central concern of this paper is whether the increase in mortgage debt late in life is associated with lower levels of financial well-being. To investigate this issue we will rely on the Financial Well-Being Scale (FWBScale) developed by the Consumer Financial Protection Bureau (CFPB). Financial well-being, according to the CFPB, is the "state of being wherein a person can fully meet current and ongoing financial obligation, can feel secure in their financial future and is able to make choices that allow them to enjoy life" (CFPB, 2015). The scale was developed by the CFPB using an Item Response Theory analysis applied to ten survey questions and is a validated, continuous measure of well-being on a 0-100 scale meant to be normally distributed across the population.

In an analysis of this measure based on the National Financial Well-Being Survey (NFWBS) conducted in 2016, the CFPB found that across the adult population the score averaged 54, with roughly a third of the population scoring below 51, a third between 51 and 60, and a third at 61 or higher (CFPB, 2017). Notably, this analysis also showed that a majority of those with scores below 50 were much more likely than those who scored higher to experience material hardship, including running out of food (or being afraid of running out of food), not being able to afford a place to live or medical treatment, or having utilities shut off.

The well-being score was also found to vary significantly across a number of demographic characteristics. Perhaps not surprisingly, swings in average scores of 10 points or more were found between those at the lowest and highest income and education categories and between those with liquid savings under $1,000 and those with more than $5,000. With regard to housing conditions, renters scored on average 10 points lower than owners; the same gap separated those who spent more than 50 percent of income on housing from those who spent less than 30 percent. Finally, a range of measures of financial skills and behaviors also had a strong association with FWBScale scores, with those with above-median scores on financial skill, effective day-to-day money management behaviors, and a habit of savings all scoring at least 10 points higher on average.

Of note for this study, older adults generally were found to have higher measures of financial well-being, with those age 62 and over averaging a score of 60 while those under age 45 averaged only 51. Still, scores varied widely among older adults across the demographic and financial dimensions described above (CFPB, 2018). In an analysis of financial well-being among adults age 62 or higher, the CFPB also found that those with mortgage debt exceeding annual income had average well-being scores of 56, compared to an average of 68 among those where this debt was less than half of annual income. This finding lends support to the hypothesis that high levels of mortgage debt can undermine financial well-being, although given the strong correlation with many other personal and household characteristics it is not clear how much of this difference to attribute to the use of mortgage debt alone.

Factors Contributing to the Rise in Mortgage Debt Among Older Adults

A number of recent studies have documented the increase in both the incidence and amount of mortgage debt held by older households over the last few decades (CFPB, 2014; Brown et al.,

2016; Mayer, 2017; Lusardi, Mitchell, and Oggero, 2017; Collins, Hembre, and Urban, 2018). Collins, Hembre and Urban is perhaps the most comprehensive, assessing these trends using the American Housing Survey, the Survey of Consumer Finances, and the Decennial Census and American Community Survey (which they jointly refer to as Census data). Based on the Census data, they find that those over age 60 were three times more likely to have mortgage debt in 2015 compared to 1980, with increases evident across the income distribution.

Collins and his colleagues also examine several possible factors that might explain this significant increase in mortgage debt. One perhaps unsurprising finding is that the increase in homeownership rates explains only a small share of the increase in mortgage debt, as the use of mortgages has increased substantially among homeowners. Changes in household characteristics, including income and education levels and motivation to leave bequests for heirs, are not found to have much association with the rise in debt. Consistent with the concern that rising debt may be associated with financial constraints, households with below-median assets and without pensions were found to account for a large share of the increase in mortgage debt.

Lusardi, Mitchell, and Oggero (2017) also examine the factors associated with the expansion of mortgage debt among the elderly. They find that much of the increase can be attributed to the ownership of higher-valued homes with higher levels of debt.[1] In a related study, these same authors also examine the demographic factors associated with having a high level of mortgage debt, defined as debt with a loan-to-value ratio exceeding 50 percent (Lusardi, Mitchell, and Oggero, 2018). While the analysis confirms that recent cohorts of older homeowners have higher

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[1] The authors speculate that this is the result of these households buying higher-priced homes with smaller down payments, but the result is also consistent with a pattern of equity extraction through refinancing of homes that experienced high rates of appreciation.

levels of debt, it found few demographic characteristics to have a statistically significant and positive relationship with these higher levels; the only exceptions were having a college degree or an additional child.

Ramifications of Rising Debt for Older Adult Well-Being

Holding mortgage debt has implications for financial well-being in older ages. In general, prior research has found that those with higher overall debt levels are more sensitive to shocks, such as a decline in income or rise in interest rates, and therefore have a greater likelihood of defaulting than those with less debt (Lusardi, Mitchell, and Oggero, 2017). Older people with mortgage and other debt experience financial strains such as being underwater on their home or engaging in high-cost financial strategies (such as paying only credit card minimums) (Lusardi and Mitchell, 2013).

Compared to owners who possess their homes free and clear, older owners with mortgages have higher housing costs (JCHS, 2019) and must service their mortgages into retirement, requiring calculations about income and asset drawdowns (Lusardi and Mitchell, 2013). Indeed, holding mortgage debt is likely to affect decisions about when to retire and financial strategies in retirement. Butrica and Karamcheva (2013) found that debt affects the financial calculations of those aged 62-69, including age of retirement and the claiming of Social Security. The authors noted that mortgage debt had a stronger effect on behavior than credit card or other forms of debt. Yet as Mayer (2017) notes, those who anticipate working at older ages may not be able to do so, particularly those lower- and middle-income owners who have seen the largest increases in housing debt in recent years. As a result, those needing to work to service their housing debt may not be able to do so.

Owners with mortgages are also more likely to be housing cost-burdened, paying more than a third of their income on housing, which can crowd out other necessities like food, out-of-pocket healthcare, and transportation, particularly among those with low incomes (JCHS, 2018b). These budgetary cutbacks may affect physical and mental well-being.

Difficulty making mortgage payments is also associated with ill effects on mental and physical health. In studies of homeowners of all ages, mortgage delinquency and foreclosure have been associated with poor self-reported health, poor health-related behavior, and psychological distress (Pollack et al., 2010; Turunen and Hiilamo, 2014; Tsai, 2015). The same appears true for older adults as a group. In a study of nearly 2,500 US homeowners age 50 and over, Alley et al. (2011) found mortgage delinquency to be associated with increased incidence of mental health impairments over the course of the delinquency, as well as increased non-adherence to prescription medication and higher levels of food insecurity (which themselves could have contributed to depressive symptoms). As the authors note, mental health impairments can in turn lead to poorer outcomes for physical health, including incidence of major illness and limitations in mobility.

As some have noted (Alley et al., 2011; Leung and Lau, 2017), the direction of causation between increased debt and poorer health is not well understood. Increased housing debt can cause stress that results in physical or mental illness or it can result in fewer investments made in health (such as food, prescription drugs, or healthcare). However, poor health itself might also lead to an owner increasing housing debt to pay medical bills or make up for lost income (Pollack and Lynch, 2009). Should foreclosure occur, involuntary moves can also have negative effects; for example, forced relocations may disrupt social ties (Evans, 2002; Tsai, 2015).

Relationship Between Financial Knowledge and Household Financial Conditions

There have been several studies that have examined the relationship between financial knowledge and behaviors and household financial conditions. Lusardi and Mitchell (2007) examine the relationship between financial planning, as self-reported by respondents to the Health and Retirement Study, and levels of net worth, non-housing wealth, and home equity. They find that those who report engaging in financial planning for retirement have higher levels of all types of wealth even after controlling for a variety of socioeconomic and demographic characteristics. While not a direct measure of the use of mortgage debt, having higher levels of home equity can result from having lower levels of mortgage debt.

Lusardi, Michaud, and Mitchell (2017) examine the relationship between financial knowledge and wealth inequality, finding that 30-40 percent of US wealth inequality can be attributed to the distribution of financial knowledge, although the paper does not assess how the use of debt affects net wealth. Lusardi and Tufano (2009) found that those with lower levels of financial literacy incurred higher borrowing fees and used higher-cost methods of financing.

Perhaps of most interest for the present study, Gerardi, Goette, and Meier (2010) found that homeowners with low levels of financial literacy (based on a measure of numeracy) were more likely to be delinquent and default on subprime mortgages, although the study does not shed light on the choice of how much mortgage debt to incur.

1.3.   Research Questions

As the literature review above illustrates, much has been written over the past several decades about the growing use of mortgage debt among older adult homeowners. But little is understood about its direct effect on financial well-being. Moreover, at the same time, housing affordability has increasingly become a problem for this group. Housing cost burdens result in well-known trade-offs with spending for other critical needs, but little attention has been paid specifically to the impact of these burdens on financial well-being. While the CFPB has documented these associations, to date there has not been any multivariate analysis to investigate these relationships while controlling for other determinants of well-being. Lastly, there is a growing literature examining the relationship between financial knowledge and behaviors and a variety of indicators of financial outcomes, but to date no studies have examined the relationship between these factors and the incidence of high levels of mortgage debt. This study attempts to fill these gaps in the literature by answering the following research questions:

- How do high levels of mortgage debt relate to financial well-being among older homeowners? (RQ1)

- Is housing affordability associated with the financial well-being of older adult homeowners? (RQ2)

- To what extent do the incidence of high levels of mortgage debt and the resulting affordability challenges result in financial insecurity for older adult homeowners? (RQ3)

- Do older homeowners with high amounts of mortgage debt exhibit lower levels of financial knowledge, skill, or planning relative to homeowners with low levels of mortgage debt? (RQ4)

The authors hypothesize that both the existence and level of mortgage debt, and housing affordability measures, will be negatively associated with financial well-being. That is, higher

levels of mortgage debt, higher housing costs, and a higher share of income spent on housing are likely associated with lower scores on the measure of well-being. All of these measures would be expected to reduce financial well-being by commanding a higher share of income for housing and so leaving less financial capability to address other expenses. Moreover, the effect of mortgage debt on well-being may operate independently of its direct effect on housing costs due to the association with a risk of foreclosure and reduced home equity to tap in the event of a change in health or loss of a spouse. The authors also hypothesize that older adult homeowners with greater financial knowledge and better financial management practices will be less likely to have higher levels of mortgage debt.

2. Methodology

2.1. Research Design

This paper is a descriptive outcome study employing the CFPB National Financial Well-Being Survey (NFWBS)—a public use dataset surveying over 6,000 respondents—to assess the relationship between the financial well-being of older adult homeowners and both the use of higher levels of mortgage debt and housing affordability more generally. The study also examines the relationship between financial knowledge, skill, and behavior and having higher levels of debt in order to shed light on whether interventions to improve older adults' knowledge or habits could reduce their reliance on mortgage debt and improve well-being.

2.2. Analysis

Individual respondents to the NFWBS are the unit of analysis for this study, although many explanatory variables are at the household level. For each research question described above, the study provides both descriptive tabulations and multivariate analyses of the outcome of interest.

The first two research questions relate to the relationship between financial well-being and the use of higher levels of mortgage debt and housing affordability generally among homeowners. Given that a variety of individual and household characteristics are associated both with financial well-being and respondents' housing conditions, multivariate analysis is used to isolate the relationship between financial well-being and the variables of interest controlling for these other characteristics (discussed further below). Specifically, we first estimate the relationship between the use of higher levels of mortgage debt and financial well-being (RQ1), expressed in the following ordinary least squares (OLS) equation:

$$FWB_i = \beta_o + \beta HD_i + \beta X_i + \varepsilon_i$$

where FWBi is the financial well-being of homeowners i, HDi a dummy variable indicating whether mortgage debt outstanding is \$50,000 or more (with the left-out category indicating there is less than this amount of mortgage debt), and βXi is a vector of household-level control variables. In this first model, we do not control for housing costs. Instead, the coefficient on HD can be interpreted as the association between the incidence of high debt and financial well-being, inclusive of the accompanying increase in housing costs.

The use of higher levels of mortgage debt might reduce financial well-being either indirectly, by raising monthly housing costs which produce greater financial insecurity, or more directly, by increasing the risk of foreclosure due to an inability to meet monthly mortgage obligations and reducing the amount of housing equity available to tap in the event of a crisis. To assess whether the use of high levels of mortgage debt affects financial well-being through one or both of these mechanisms, the relationship specified in the second research question (RQ2) assesses the association between financial well-being and both housing affordability measures and the use of higher levels of mortgage debt and is expressed in a similar OLS equation:

$$FWBi = \beta o + \beta HDi + \beta HCi + \beta Xi + \varepsilon i$$

where FWBi is the financial well-being of homeowner i, HCi are a series of variables assessing housing cost burdens affecting the household, and Xi is a vector of household-level control variables. Specifically, four different measures of housing costs (HC) are assessed one at a time in four separate models. These measures include: a categorical variable of monthly housing costs; a continuous variable measuring the ratio of monthly housing costs to income; and dummy indicators for whether the ratio of costs to income exceeds either 25 or 30 percent. These indicators of affordability are discussed in more detail below.

We also estimate whether the incidence of high levels of mortgage debt and the corresponding affordability challenges increase the probability that a respondent is likely to experience financial insecurity (RQ3). This alternative specification includes a dummy dependent variable which indicates whether or not the respondent's financial well-being score falls at or below 49, an indicator of low financial well-being which is indicative of financial insecurity (CFPB, 2019). For these specifications, two probit models are estimated in the following form:

$$FI_i = \beta_0 + \beta HD_i + \beta X_i + \varepsilon_i$$

$$FI_i = \beta_0 + \beta HD_i + \beta HC_i + \beta X_i + \varepsilon_i$$

where FI_i is an indicator of financial insecurity for homeowner i, and the other variables are as defined above. The first model shows the combined effects, inclusive of the effects on housing costs, of holding high levels of mortgage debt on financial well-being. The second model looks separately at housing costs and the other means by which high levels of mortgage debt might affect the likelihood of being financially insecure.

The regression underpinning the fourth and final research question (RQ4) can be expressed by the following probit model:

$$HD_i = \beta_0 + \beta FS_i + \beta X_i + \varepsilon_i$$

where HD_i is an indicator of the use of high levels of mortgage debt for homeowner i, FS_i are a series of measures of financial skill, knowledge, saving habits, and planning (all described in more detail below), and X_i is the vector of household-level control variables used in previous models.

Both the descriptive and multivariate analyses throughout the study will employ survey weights to account for population over- and under-representation among respondents. Survey weights are used so that the sample better represents the national population of older adult homeowners.[2] All analyses are conducted using the statistical software Stata, version 15.1.

2.3. Data

This analysis primarily uses the CFPB National Financial Well-Being Survey (NFWBS), a survey conducted in 2016 of 6,394 adults meant to be representative of the general population, including a nearly one-thousand-observation oversample of adults age 62 and older.

2.4. Sample

This study's primary sample of interest is the population of older adult homeowners age 62 and over. Thus, for questions related to financial well-being, the study is concerned with the question of how the level of mortgage debt and housing affordability affect well-being conditional on being a homeowner.[3] In the NFWBS, there are 2,253 respondents age 62 and over. Moreover, 1,909 of these respondents owned their home, while only 1,511 homeowners answered questions about the amount they owed on their home, from which we infer the amount of mortgage debt.[4] After respondents with missing information on other key measures have been

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[2] In the NFWBS, the weight used is the finalwt variable.

[3] Since individuals have the additional choice of deciding whether to own or rent as well as the amount of mortgage debt to hold, renters could also have been included in the sample. However, since relatively few older households transition from owning to renting aside from those experiencing a health crisis or the loss of a spouse, we have chosen to exclude renters from the sample (Painter and Lee, 2009). This choice has the additional advantage of maintaining consistency in the study sample across all four research questions.

[4] Among the 1,511 older adult homeowners, 37 stated they did not know how much they owed on their home, 317 indicated they preferred not to say, and an additional 44 simply did not answer the question.

dropped, 1,035 older adult homeowners form the primary sample of interest in our study.[5,6]

Unless otherwise indicated, all statistics below are reported for this primary sample.

2.5.   Measures

The primary dependent variable of interest in this study is the CFPB Financial Well-Being Scale

(**Table 1**). Financial well-being, according to the CFPB, is the "state of being wherein a person

can fully meet current and ongoing financial obligations, can feel secure in their financial future

and is able to make choices that allow them to enjoy life" (CFPB, 2015). The well-being scale

was developed by the CFPB using an Item Response Theory analysis applied to ten survey

questions and is a validated, continuous measure of well-being. Scores on the scale range from 0

to 100 and are meant to be normally distributed across the population. Higher scores indicate

greater financial well-being. A dummy indicator of financial insecurity is derived from this scale

and is used as the dependent variable in some model specifications. We identify respondents as

financially insecure when they scored 49 or lower on the test of well-being.[7]

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[5] Respondents included in our sample give substantive answers to the questions asking about the following items: financial well-being, homeownership and level of mortgage debt, household income, housing costs and affordability, savings, home value, region and metro area status of the home, employment status, level of education, marital status, whether or not they financially support their children, self-assessments of health, and the financial skill score.

[6] The final sample and the homeowners omitted due to nonresponse were broadly similar. Both groups averaged 62 points on the scale of financial well-being and had similar savings. However, older adult homeowners in our sample were more likely to have household incomes over $100,000 (32 percent versus 27 percent) and were more likely to have a bachelor's degree (39 percent versus 32 percent).

[7] This coincides with financial well-being score ranges produced by CFPB (2019) and includes respondents who score very low (0–29), low (30–37), and medium low (38–49) on the test of well-being.

Table 1. List of Dependent and Primary Independent Variables

Variable in Study	NFWBS Variable(s)	Type	Definition	Dependent or Primary Independent Variable
FWB Scale Score	fwbscore	Continuous	Financial well-being scale score of the respondent, created by CFPB.	Dependent
Financial Insecurity	fwbscore <= 49	Dummy	Respondent's financial well-being score is equal to or less than 49.	Dependent
High Debt	mortgage >= 2	Dummy	Respondent is a homeowner with mortgage debt of $50,000 or more.	Both
Monthly Housing Costs	houseranges	Categorical	The amount the respondent paid for housing each month. The survey asked respondents "about how much do you pay for your home each month?" As a result, costs likely include any mortgage payments, utilities, and others incurred monthly, but likely exclude some costs paid less regularly such as property taxes.	Independent
Cost-to-Income Ratio	houseranges, ppincimp	Continuous	Respondent's ratio of housing costs (annualized) to household income. This measure is derived from the NFWBS internal use file and was provided by Abt Assoicates. The measure takes the implied midpoint of a respondent's monthly housing costs (houseranges) and the midpoint of its household income (ppincimp) and expresses those midpoints as a ratio which is capped at 100.	Independent
Housing Cost Burden (30 Percent)	houseranges, ppincimp	Dummy	The above cost-to-income ratio recategorized to indicate housing cost burdens if the respondent spends 30 percent or more of theirincome on housing, the standard measure of being housing cost burdened.	Independent
Housing Cost Burden (25 Percent)	houseranges, ppincimp	Dummy	The above cost-to-income ratio recategorized to indicate housing cost burdens if the respondent spends 25 percent or more of its income on housing, a more conservative measure of housing cost burdens.	Independent
Financial Skill Scale Score	fsscore	Continuous	Financial skill scale score of the respondent, created by CFPB.	Independent
High Financial Knowledge	subknowl1 >= 6	Dummy	Respondent assessed financial knowledge as high (6 or 7) on a 7-point scale.	Independent
Lusardi-Mitchell Financial Knowledge Score	lmscore = 3	Dummy	Respondent correctly answered all 3 questions on the Lusardi-Mitchell Financial Knowledge scale.	Independent
Saving Is a Habit	savehabit >= 5	Dummy	Respondent agrees or strongly agrees with the statement that putting money into savings is a habit.	Independent
5-Year Financial Planning Horizon	scfhorizon >= 4	Dummy	Respondent claims their financial planning time horizon is the next 5 to 10 years or longer.	Independent

The primary independent variables of interest for this study include the level of mortgage debt held by survey respondents. Using categories for mortgage debt captured by the NFWBS, we consider homeowners to have low levels of mortgage debt if they report falling into the lowest category of mortgage debt available in the survey, which is having under $50,000 in such debt (including no mortgage at all), and to have high levels of mortgage debt if they owe $50,000 or more. The level of mortgage debt is also used as a dependent variable in modeling of the relationship between mortgage debt and financial knowledge, skill, habits, and planning.

A second primary independent variable of interest is housing affordability, which is captured by several different available measures. The first measure is simply the amount paid each month for the home divided into four categories: less than $500, $500-999, $1,000-1,499 and $1,500 or higher. Three other measures of affordability are defined based on the ratio of this housing cost measure to household income, based on internal NFWBS data provided by Abt Associates staff. Since both of these variables are reported in ranges, the affordability variable creates a ratio of housing costs to income based on the midpoints of the reported income and annualized housing costs. One specification of housing affordability is this estimated ratio, capped at 100 percent. In addition, to align with common measures of housing cost burdens used in the field, we also identify households who have estimated ratios that are equal to or exceed either 25 or 30 percent.

The final explanatory variables of interest are different measures of financial skill, knowledge, planning, and saving habits. These include the CFPB's financial skill scale score, and dummy indicators derived from self-assessments of financial knowledge, the Lusardi-Mitchell financial knowledge scale score, and the saving habits and financial-planning time horizons of the respondent.

Lastly, this study includes several independent control variables used in the various models testing the relationships between financial well-being (and financial skill) and the use of mortgage debt/housing affordability. Inclusion of these variables is based on the observed associations between these factors and the variables of interest. These control variables include household income, the amount of savings, home value, and region of the respondent, plus dummy indicators for education level, labor force attachment, health status, marital status, gender, racial/ethnic minorities, whether they financially support children, live in a metropolitan area, and report having good or great health.

2.6.   Limitations

The authors recognize that this study will have both causal inference and measurement limitations associated with the analysis. While our regression models will attempt to control for numerous factors that influence both financial well-being and the amount of mortgage debt/housing affordability, this analysis will undoubtedly suffer from omitted variable bias given the many correlations between the financial status and personal characteristics of the respondent that will affect both their housing choices and their financial well-being. Moreover, all public datasets incorporating the CFPB Financial Well-Being Scale to date are cross-sectional in nature and for a single time period. The lack of time-series data will further inhibit our ability to infer causal relationships as the identified associations may reflect current macroeconomic conditions in a way our analysis cannot control for.

Moreover, our independent variables of interest have some limitations. The NFWBS does not distinguish between households without mortgage debt and those with up to $50,000 in mortgage

debt.[8] Moreover, our measure of housing affordability suffers from some amount of imprecision, as it considers only the midpoints of reported ranges for a household's housing costs and income, rather than continuous measures of both. This leads to a significant undercounting of households with housing cost burdens.[9]

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[8] Although not testable in the NFWBS, preliminary investigations of data from the Understanding America Study allow us to distinguish between homeowners without mortgage debt and those with higher levels of mortgage debt. These investigations provide some preliminary evidence that the key distinction for older adult homeowners with respect to financial well-being is between those with high levels of mortgage debt, possibly $50,000 or some other threshold, and those with no or very minimal ($0 or near $0) amounts of mortgage debt. Overall, tabulations of UAS data support the key finding of this paper that holding higher levels of mortgage debt is associated with a corresponding decrease in financial well-being for older adult homeowners.

[9] In the NFWBS, only 21 percent of respondents are housing cost-burdened by this measure, including 21 percent of older adults. In contrast, 31 percent of households in the 2017 American Community Survey spent more than 30 percent of their incomes on housing, including 32 percent of older adults.

3. Findings

The following section will present and discuss descriptive statistics followed by regression models for each of the study's main research questions. First, this section discusses the relationship between the incidence of high levels of mortgage debt and financial well-being for older adult homeowners. This section then discusses the association between housing affordability and financial well-being for this same group of older adult homeowners. At the same time, we consider the interrelated nature of housing costs and the amount of mortgage debt, and attempt to show the extent to which high levels of mortgage debt are a risk factor for financial well-being independent of housing costs. Then, we assess whether the incidence of high levels of mortgage debt increases the probability that older adult homeowners are financially insecure. Lastly, this section discusses the incidence of high levels of mortgage debt and its association with different measures of financial knowledge and behaviors.

High Incidence of Mortgage Debt

How do high levels of mortgage debt relate to financial well-being among older adults? (RQ1)

Among older adults, tenure and the amount of mortgage debt a household takes on correlate with financial well-being. Older adult homeowners scored 62 points, on average, on the test of financial well-being, about 4 points higher than homeowners at all age ranges and 12 points higher than older adult renters (**Table 2**). Older adult homeowners with low levels (less than $50,000) of mortgage debt scored 64 points on the well-being scale, while those with higher debt burdens scored 59 points on average.

However, the relatively high financial well-being of older adult homeowners masks considerable variation within the group. A large share of older adult homeowners—one-quarter

of those with high debt and over one-third with low debt levels—had very high financial well-being (scores between 68 and 100). However, a not insignificant share had low well-being scores. Indeed, 18 percent of older adult homeowners, including 22 percent of homeowners with high levels of mortgage debt and 16 percent with smaller debt loads, scored below 50 on the test of well-being, (**Table 3**). These financial well-being scores correspond to the ranges CFPB considers to be very low (0–29), low (30–37), or medium low (38–49). This study identifies respondents in any of these three categories as financially insecure as even in the medium low category, 80 percent of respondents find it at least somewhat difficult to make ends meet (CFPB, 2019). Similarly, older adults with financial well-being scores of 50 and below are more likely to struggle to "pay for basic needs, obtain credit, and pay for an unexpected expense of $2,000 or more" (CFPB, 2018).

Table 2. Average Financial Well-Being by Tenure for Adults Age 62 and Over

Age Group, Tenure, and Mortgage Debt Amount	Financial Well-Being Score				
	n	Mean	p25	p50	p75
Total	1196	59.7	50	59	69
Renters	161	49.7	41	49	56
Homeowners	1,035	62.1	53	61	71
Low Debt	639	63.8	55	63	73
High Debt	396	59.2	50	58	67

Notes: Homeowners with low debt have under $50,000 in mortgage debt. Homeowners with high debt have at least $50,000 in mortgage debt. Restrictions on the sample of homeowners are described in Section 2.4. Where applicable, comparable restrictions are applied to renters.
Source: JCHS tabulations of Consumer Financial Protection Bureau, National Financial Well-Being Survey.

Table 3. Distribution of the Financial Well-Being Score by Tenure for Adults Age 62 and Over

Financial Well-Being Score	Total	Renters	Homeowners		
			All	Low Debt	High Debt
Very Low (0–29)	2	4	1	1	2
Low (30–37)	5	11	3	3	3
Medium Low (38–49)	18	38	13	12	16
Medium High (50–57)	21	24	20	16	26
High (58–67)	27	13	30	31	28
Very High (68–100)	28	9	32	36	24
Financially Insecure (0–49)	**25**	**53**	**18**	**16**	**22**

Notes: Homeowners with low debt have under $50,000 in mortgage debt. Homeowners with high debt have at least $50,000 in mortgage debt. Restrictions on the sample of homeowners are described in Section 2.4. Where applicable, comparable restrictions are applied to renters.
Source: JCHS tabulations of Consumer Financial Protection Bureau, National Financial Well-Being Survey.

Differences in average financial well-being between older adults based on tenure are partially the result of other differences between these groups. Relative to older adult renters, older adult homeowners report higher levels of income, savings, and educational attainment, all things that correlate positively with financial well-being (CFPB, 2018). Indeed, **Table 4** shows that only 13 percent of older adult renters in our sample had a household income above $60,000, compared with over half (57 percent) of homeowners.

Homeowners with high and low levels of mortgage debt also differed from one another. Owners who owed more than $50,000 on their homes had higher incomes, slightly lower savings, and owned more expensive homes. Homeowners with high levels of mortgage debt also had higher housing costs and spent higher shares of their income on housing. Fully 59 percent of homeowners with high levels of mortgage debt assessed their homes to be worth at least $250,000, while over half (56 percent) had monthly housing costs exceeding $1,000. Only 39

Table 4. Share of Households Age 62 and Over (Percent)

| | All Households | Renters | Homeowners (Mortgage Debt Amount) | | |
			All	Under $50,000	$50,000 and Over
Household Income					
Under $30,000	25	61	17	21	10
$30,000–59,999	26	26	27	26	28
$60,000–99,999	22	8	25	24	26
$100,000 and Over	27	5	32	29	36
Savings					
Under $5,000	37	72	29	24	36
$5,000–19,999	22	14	23	22	26
$20,000 and Over	41	14	48	54	37
Region					
Northeast	18	18	18	19	16
Midwest	23	25	22	23	21
South	35	28	36	38	32
West	25	28	24	20	31
Home Value					
Under $150,000	28		28	34	18
$150,000–249,999	25		25	27	23
$250,000 and Over	47		47	39	59
Monthly Housing Costs					
Under $500	47	30	51	76	8
$500–1,000	26	37	23	15	36
$1,000–1,500	15	20	14	5	28
$1,500 and Over	13	14	12	3	27
Share of Income on Housing					
Under 10 Percent	42	3	51	71	17
10–19	24	14	26	16	42
20–29	15	24	12	6	24
30–39	8	22	5	2	11
40–49	4	10	2	1	4
50 and Over	8	27	4	4	3
Other Characteristics					
In Labor Force	22	18	23	18	31
Bachelor's Degree	35	17	39	38	41
Minority	21	50	14	11	18
Female	49	53	48	49	47
MSA Status	84	87	84	80	90
Married	65	32	72	70	76
Support Own Children	16	14	17	15	20
Good Health	78	58	83	81	86

Source: JCHS tabulations of Consumer Financial Protection Bureau, National Financial Well-Being Survey.

percent of homeowners with low mortgage debt levels, on the other hand, had homes valued so highly, and only 8 percent had such high monthly housing costs.

To control for potential confounders in assessing the relationship between the level of mortgage debt and financial well-being, we employ a set of multivariate OLS regressions shown in **Table 5**.[10] Model 1 regresses the CFPB financial well-being score on the amount of mortgage debt absent any controls. Homeowners with under $50,000 in mortgage debt are the omitted group. Coefficients on the variables can be interpreted as the mean difference in financial well-being between homeowners with high levels of mortgage debt relative to those with low levels of debt. In other words, homeowners with high levels of debt scored about 4.5 points lower on average on the scale of financial well-being than homeowners with low debt levels. This difference is statistically significant at the 99 percent confidence level.

Model 2 introduces income as a control. The coefficient on our primary independent variable of interest widens somewhat: older adult homeowners with higher mortgage debt level scored about 6 points lower on the well-being scale, controlling for income. Again, this difference is statistically significant. The coefficients on the indicators for income, where households with income below $30,000 are omitted, operate as expected. Older adult homeowners with higher incomes score higher on the test of well-being than households with low incomes, controlling for the amount of mortgage debt.

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[10] As noted earlier, renters were excluded from the sample since few households transition from owning to renting late in life and so the analysis is intended to isolate choices made by homeowners about the level of mortgage debt incurred. Alternative models including renters are consistent with the findings shown here.

Table 5. Association Between Financial Well-Being and the Use of Mortgage Debt (Homeowners Age 62 and Over)

	Model 1		Model 2		Model 3		Model 4	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Mortgage Debt $50,000 and Over	-4.54**	(1.03)	-6.37**	(0.83)	-4.53**	(0.82)	-4.58**	(0.80)
Household Income								
$30,000–59,999			9.57**	(1.52)	6.02**	(1.39)	5.50**	(1.36)
$60,000–99,999			14.93**	(1.43)	8.75**	(1.41)	8.04**	(1.44)
$100,000 and Over			20.22**	(1.43)	11.78**	(1.48)	11.43**	(1.57)
Savings								
$5,000–19,999					5.23**	(1.17)	4.77**	(1.09)
$20,000 and Over					11.77**	(1.11)	10.27**	(1.08)
Home Value								
$150,000–249,999					1.03	(1.10)	0.59	(1.09)
$250,000 and Over					3.42**	(1.04)	3.01**	(1.05)
Region								
Midwest							1.88	(1.12)
South							2.32*	(1.08)
West							1.38	(1.10)
In Labor Force							-3.23**	(0.90)
Bachelor's Degree							1.00	(0.85)
Minority							0.29	(1.14)
Female							-0.71	(0.76)
MSA Status							1.24	(1.00)
Married							0.48	(0.98)
Support Own Children							-3.37**	(0.99)
Good Health							6.31**	(1.10)
Constant	63.78**	(0.68)	51.77**	(1.27)	47.55**	(1.32)	42.11**	(1.84)
Observations	1,035		1,035		1,035		1,035	
R-squared	0.023		0.257		0.374		0.422	

Note: The dependent variable in all models is the scale of consumer financial well-being for the subsample of homeowners age 62 and over. The omitted group are homeowners with low levels of debt (below $50,000).
* p < 0.05 ** p < 0.01
Source: JCHS tabulations of Consumer Financial Protection Bureau, National Financial Well-Being Survey.

Model 3 incorporates additional control variables: the amount of savings and the value of each respondent's home. Household savings correlates strongly with financial well-being in older adulthood, and the amount of mortgage debt a homeowner takes on is often related to the home value. Indeed, 57 percent of homeowners with high levels of mortgage debt have a home valued at $250,000 or more, much higher than the 38 percent of homeowners with low levels of mortgage debt. The coefficient on our primary variable of interest remains largely unchanged. Homeowners with over $50,000 in mortgage debt scored about 4.5 points lower on the test of well-being that homeowners with less debt, controlling for income, savings, and home value.

Model 4 utilizes a more complete set of demographic and economic control variables. In addition to those included in Model 3, Model 4 controls for: the Census region the household resides in; whether or not the participant is in the labor force; has a bachelor's degree; is a racial/ethnic minority; is female; lives within a metropolitan statistical area; is married; whether the respondent financially supports his or her children; and rates their health as good, very good, or excellent. The coefficient of interest is essentially unchanged and remains statistically significant. Controlling for these factors, homeowners with high debt scored 4.6 points lower on the test of well-being than those with lower debt levels. About 42 percent of the variation in the financial well-being of older adult homeowners is explained by the independent variables.

Other coefficients in Model 4 are also worth some discussion. Homeowners with over $20,000 in savings scored nearly 12 points higher on the scale of financial well-being compared with households that have under $5,000 in savings, controlling for other factors. Similarly, homeowners with over $100,000 in household income scored 11 points higher relative to those earning under $30,000. Self-reporting good, very good, or excellent health was also associated with a 6-point increase in well-being relative to homeowners who reported having poor or fair

health. Homeowners who remained in the labor force, either employed or unemployed, scored 3 points less on the test of well-being relative to those outside the labor force, mostly retired older adults. These differences are all statistically significant at the 95 percent confidence threshold. The relationship between educational attainment and well-being, however, appears to be less clear, as there is no significant difference in well-being between older adults with a bachelor's degree and those who did not complete college once other factors are controlled for.

In sum, homeowners with high levels of mortgage debt have lower levels of financial well-being than homeowners with low levels of mortgage debt, when controlling for income, the amount of savings, and other baseline characteristics. There are several possible explanations for this. Increased housing costs associated with higher levels of mortgage debt might create affordability challenges for these homeowners. Moreover, carrying larger amounts of mortgage debt might be psychologically burdensome, especially in older adulthood. In the next section, we test whether housing affordability drives the relationship between mortgage debt and well-being.

Housing Affordability

Is housing affordability associated with the financial well-being of older adult homeowners? (RQ2)

One mechanism by which the incidence of high levels of mortgage debt is associated with financial well-being is the relative difference in housing affordability associated with large mortgage debts. Indeed, housing costs and affordability are also correlated with financial well-being. Homeowners with housing costs under $500 averaged 64 on the measure of financial well-being, 7 points higher than those with housing costs of $500 to $1,000, 4 points higher than those with costs of $1,000 to $1,500 dollars, and a mere 1 point higher than those with costs of $1,500 or more (**Table 6**). These differences are statistically significant in the first case, but

insignificant in the latter two cases. The non-linear relationships between housing costs and financial well-being no doubt reflect the correlation of high housing costs with other household characteristics, such as income and wealth, that are also related to financial well-being.

Table 6. Mean Financial Well-Being Score by the Amount of Mortgage Debt and Housing Affordability Measures (Homeowners Age 62 and Over)

Housing Cost and Affordability Measure	Average FWB Score by Mortgage Debt Amount			Sample Size by Mortgage Debt Amount		
	Under $50,000	$50,000 and Over	All	Under $50,000	$50,000 and Over	All
Monthly Housing Costs						
Under $500	65	59	64	489	31	520
$500–1,000	61	55	57	94	130	224
$1,000–1,500	62	61	61	34	120	154
$1,500 and Over	61	63	63	22	115	137
Share of Income on Housing						
Under 25	65	62	64	600	298	898
25 and Over	54	53	53	39	98	137
Under 30	65	61	63	611	340	951
30 and Over	53	50	51	28	56	84

Source: JCHS tabulations of Consumer Financial Protection Bureau, National Financial Well-Being Survey.

Traditional measures of housing affordability, which consider the ratio of housing costs to income, show a clearer pattern. For example, homeowners who spent less than 30 percent of their income on housing had a financial well-being score of 63, on average, 12 points higher than those who spent 30 percent or more of their income on housing. Similarly, those cost-burdened at the 25 percent threshold scored 11 points higher on average than those without burdens. However, cost-burdened households themselves tend to have lower incomes. Indeed, over half (52 percent) of older adult homeowners who spent more than 30 percent of their income on

housing had a household income under $30,000, compared with just 13 percent of homeowners without cost burdens.

To account for these and other differences, we model the relationship between financial well-being and housing affordability, controlling for income, the incidence of high mortgage debt, and other possible confounders. **Table 7** applies the same set of controls from Model 4 in Table 5 above and incorporates our measures of housing affordability to test simultaneously: (1) whether housing affordability is associated with financial well-being for older adult homeowners and (2) whether the amount of mortgage debt has an effect on financial well-being independent of the more direct effect on housing costs. Put more simply, are higher levels of mortgage debt associated with financial well-being via channels outside of the related costs? Recall, older adult homeowners with high levels of mortgage debt tend to have higher housing costs than those with low levels of debt, and even higher housing costs than renters. The table reports only the coefficients on mortgage debt and the various housing affordability measures.

Model 1 incorporates the measure of monthly housing costs where the omitted group is households with housing costs below $500. In Model 1, homeowners with higher costs have significantly lower financial well-being scores than those with housing costs under $500. Likewise, those with more moderate housing costs (between $500 and $1,000, and 1,000 and $1,500) also have significantly lower financial well-being scores than those with housing costs under $500. However, there is no statistically significant difference in financial well-being between homeowners with more moderate costs and those with higher costs. Notably in Model 1, the coefficient on the indicator for having high mortgage debt remains negative and statistically significant, indicating that the corresponding increase in housing costs alone is not responsible for the negative association between mortgage debt and lower financial well-being.

Table 7. Association Between Financial Well-Being and the Use of Mortgage Debt and Housing Affordability (Homeowners Age 62 and Over)

	Model 1		Model 2		Model 3		Model 4	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Mortgage Debt $50,000 and Over	-2.29*	(1.03)	-3.65**	(0.88)	-4.31**	(0.81)	-4.21**	(0.83)
Monthly Housing Costs								
$500–1,000	-3.07**	(1.07)						
$1,000–1,500	-3.30*	(1.33)						
$1,500 and Over	-4.30**	(1.28)						
Cost-to-Income Ratio			-0.08**	(0.03)				
Cost Burden Dummy (30 Percent)					-2.42	(1.27)		
Cost Burden Dummy (25 Percent)							-1.84	(1.06)
Demographic Control Variables	Y		Y		Y		Y	
Constant	42.84**	(1.87)	44.40**	(2.01)	42.96**	(1.88)	42.93**	(1.96)
Observations	1,035		1,035		1,035		1,035	
R-squared	0.429		0.427		0.424		0.423	

Note: The dependent variable in all models is the scale of consumer financial well-being for the subsample of householders age 62 and over. The omitted group is homeowners with low levels of mortgage debt (below $50,000). Demographic control variables included in the model but not shown are those from Table 5, Model 4.
* $p < 0.05$ ** $p < 0.01$
Source: JCHS tabulations of Consumer Financial Protection Bureau, National Financial Well-Being Survey.

The remaining models test alternative measures of housing affordability in much the same way. Model 2 tests the ratio of the percent of income spent on housing costs, capped at 100. According to this model, a 1 percentage point increase in the ratio of housing costs to income is associated with a miniscule (less than one-tenth of one point) but statistically significant decline in financial well-being. Model 3 and Model 4 include a different measure of affordability derived from the cost-to-income ratio, setting thresholds for the cost-burden status of homeowners at 30

percent and 25 percent of income, respectively. In both models, there is no statistically significant difference in financial well-being between cost-burdened and unburdened households, controlling for other factors.[11] Thus, of these measures of affordability, the strongest association is found with the absolute level of housing costs, although this may reflect the difficulty of measuring costs as a percent of income due to the categorical nature of both variables.

Of note in all four models, even after controlling for affordability, is a substantive and statistically significant association between carrying high levels of mortgage debt and lower levels of financial well-being, although the association is generally smaller than in models excluding measures of affordability. This varies depending on the exact specification, from a 2.3-point decline in well-being in Model 1 and a 4.3-point decline in Model 3, compared to a 4.6-point decline in the model without housing costs shown in Table 5.

Combined, these models might indicate that the increased housing costs associated with the level of mortgage debt alone do not drive the differences in well-being. Instead, other factors, including the potential psychological burdens of carrying high levels of housing debt, the risk of foreclosure, or the more limited ability to tap home equity in the future, independently play a role in financial well-being. Alternative explanations, however, should also be considered. For example, older adult homeowners with lower levels of financial well-being might be more inclined to tap their home equity (or be less willing to pay off housing debt) to meet other near-term financial needs.

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[11] Alternative measures, including 35 percent, 40 percent, and 50 percent thresholds, produced similar results.

Financial Insecurity

To what extent do the incidence of high levels of mortgage debt and the resulting affordability challenges result in financial insecurity for older adult homeowners? (RQ3)

Whether through its indirect effect on affordability or other factors, having a high incidence of mortgage debt is associated with a decrease in financial well-being for older adult homeowners. But given that older adult homeowners tend to score highly on the test of well-being, to what extent does the fall off in well-being associated with the incidence of high levels of mortgage debt represent a genuine problem? One way to assess this question is to analyze whether the use of high levels of mortgage debt is associated with an increased likelihood of financial insecurity rather than simply a decline in financial well-being

The CFPB categorizes scores of 49 or below on the Financial Well-Being Scale as having very low (0–29), low (30–37), or medium low (38–49) well-being. Fully 86 percent of those scoring below 50 find it somewhat or very difficult to cover their monthly expenses, compared with just 14 percent among those who score 50 or above. Thus, we define financial insecurity as having a score of less than 50. Using this categorization, under 18 percent of older adult homeowners are "financially insecure" in our sample, including 22 percent of those with a high incidence of mortgage debt.

To investigate this question (RQ3), we modeled a dummy indicator for financial insecurity (having a financial well-being score between 0 and 49) on the incidence of high mortgage debt, controlling for other factors using probit regressions, which allow us to better assess how the relationship between mortgage debt and the likelihood of insecurity varies with circumstances. **Table 8** shows the results of these regressions. The control variables in both models are the same as those in the fourth model of Table 5. In Model 1, having high levels of mortgage debt is

associated with a higher, statistically significant probability that the respondent is financially insecure. As in previous models, higher incomes, savings, and home values, as well as reporting good health, are associated with a decrease in the probability of insecurity. All relationships are statistically significant at the 95 percent confidence threshold. Introducing monthly housing costs in Model 2 halves the coefficient on mortgage debt and results in a statistically insignificant relationship between the incidence of high debt and the likelihood of financial insecurity.[12]

With a probit model, the effect of mortgage debt on the likelihood of financial insecurity varies with other explanatory variables.[13] We report both predicted probabilities and marginal effects from Model 1, which combines the direct and indirect effects (including affordability) that mortgage debt has on the likelihood of being financially insecure. Holding all independent variables constant at the mean, the incidence of high debt is associated with a 17 percent chance that older adult homeowners in our sample are financially insecure, about 8 percentage points higher than if the homeowner had low debt levels. But the effect of having a high level of mortgage debt on well-being varies with circumstances. For a hypothetical older adult homeowner with under $5,000 in savings, under $30,000 in household income, and a home valued at under $150,000, the predicted probability of being financially insecure rises to 78 percent for homeowners with high debt, compared to 65 percent for those with low levels of debt—a full 13 percentage point difference. In both cases, differences in the probability are statistically significant at the 95 percent confidence level.

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[12] When the other three measures of housing affordability are used, the coefficient on mortgage debt remains statistically significant only for the 30 percent threshold of housing affordability.

[13] Notably, the model results are directionally and statistically consistent with linear probability models not shown.

In general, the marginal effect of carrying high levels of mortgage debt is higher at lower levels of income, savings, and home value, following the results estimated in Table 8, Model 1 (**Table 9**). For example, holding all else constant at the mean, the incidence of high mortgage debt is associated with a 15 percentage point increase in the probability of financial insecurity for homeowners with household incomes under $30,000, and only a 6 percentage point increase for those with over $100,000 in household income. Similarly, for households with savings under $5,000, the marginal effect of having high amounts of mortgage debt is 13 percentage points, three times the effect if savings exceed $20,000. For those with low home values (under $150,000), the marginal effect of high mortgage debt is 10 percentage points, compared with 7 percentage points for those with higher home values ($250,000 and over). The confidence intervals on all of these measures are statistically different from zero (meaning the incidence of high mortgage debt has a statistically significant effect on the probability of financial insecurity for each group); however, the confidence intervals are wide, and both the magnitude and relative differences across groups should be interpreted with some caution.

Taken together, these models indicate that the incidence of high mortgage debt likely heightens the chance of financial insecurity, controlling for other factors. For older adult homeowners with lower incomes, savings, and home values, this result might be especially true, which would only exacerbate the already more tenuous financial circumstances for these groups.

Table 8. The Likelihood of Being Financially Insecure and the Use of Mortgage Debt (Homeowners Age 62 and Over)

	Model 1 (Probit)		Model 2 (Probit)	
	Coef.	Std. Err.	Coef.	Std. Err.
Mortgage Debt $50,000 and Over	0.38**	(0.14)	0.17	(0.18)
Monthly Housing Costs				
$500–1,000			0.41*	(0.18)
$1,000–1,500			0.35	(0.23)
$1,500 and Over			0.22	(0.27)
Household Income				
$30,000–59,999	-0.59**	(0.19)	-0.61**	(0.19)
$60,000–99,999	-0.90**	(0.21)	-0.93**	(0.21)
$100,000 and Over	-1.14**	(0.27)	-1.18**	(0.27)
Savings				
$5,000–19,999	-0.58**	(0.16)	-0.57**	(0.16)
$20,000 and Over	-1.14**	(0.17)	-1.11**	(0.17)
Home Value				
$150,000–249,999	-0.22	(0.18)	-0.21	(0.18)
$250,000 and Over	-0.42*	(0.19)	-0.41*	(0.20)
Region				
Midwest	-0.05	(0.20)	-0.01	(0.20)
South	-0.06	(0.19)	-0.04	(0.19)
West	-0.06	(0.21)	-0.02	(0.21)
In Labor Force	0.26	(0.16)	0.25	(0.16)
Bachelor's Degree	-0.02	(0.15)	-0.00	(0.15)
Minority	0.03	(0.18)	0.02	(0.18)
Female	0.07	(0.13)	0.08	(0.13)
MSA Status	0.04	(0.19)	0.02	(0.19)
Married	-0.11	(0.15)	-0.10	(0.15)
Support Own Children	0.29	(0.16)	0.28	(0.16)
Good Health	-0.74**	(0.16)	-0.76**	(0.16)
Constant	0.79**	(0.28)	0.68*	(0.28)
Observations	1,035		1,035	
Pseudo R-Squared	0.303		0.308	

Notes: The dependent variable in all models is a dummy variable where 1 indicates financial insecurity (a score of 0 to 49 on the test of financial well-being). Both models are probit regressions and are run for the subsample of homeowners age 62 and over. The omitted group are homeowners with low levels of debt (below $50,000). The pseudo r-squared is a McFadden's r-squared, run on separate unweighted estimates, while all other statistics reported are derived from the weighted estimates.
* $p < 0.05$ ** $p < 0.01$
Source: JCHS tabulations of Consumer Financial Protection Bureau, National Financial Well-Being Survey.

Table 9. Marginal Effect of the Incidence of High Debt on Homeowners Age 62 and Over

Household Characteristics	Marginal Effect	Standard Error	95% Confidence Interval	
			Lower	Upper
Household Income				
Under $30,000	14.6	5.6	3.7	25.5
$30,000–59,999	10.5	4.1	2.5	18.5
$60,000–99,999	7.8	3.2	1.5	14.1
$100,000 and Over	5.7	2.4	1.1	10.3
Savings				
Under $5,000	13.0	4.7	3.8	22.3
$5,000–19,999	8.1	3.2	1.9	14.3
$20,000 and Over	3.7	1.8	0.2	7.2
Home Value				
Under $150,000	10.4	4.4	1.8	18.9
$150,000–249,999	8.4	3.3	1.9	14.9
$250,000 and Over	6.6	2.5	1.6	11.6

Notes: Marginal effects can be interpreted as the percentage point change in the likelihood of being financially insecure resulting from having more than $50,000 in mortgage debt (relative to having less debt), holding all other variables constant at the mean. Financial insecurity is defined as scoring 49 or below on the CFPB test of financial well-being. Results are estimated following the probit in Table 8, Model 1. All additional control variables are listed there.
Source: JCHS tabulations of Consumer Financial Protection Bureau, National Financial Well-Being Survey.

Mortgage Debt and Financial Skill

Do older homeowners with high amounts of mortgage debt exhibit lower levels of financial

knowledge, skill, or planning relative to homeowners with low levels of mortgage debt? (RQ4)

Older adult homeowners with low and high levels of mortgage debt have broadly similar

levels of financial acumen, as measured by several tests of financial skill, knowledge, and

planning. On average, homeowners with low levels of debt scored 52 on the CFPB's financial

skill scale, a mere 1 point higher than homeowners with higher levels of debt (**Table 10**).

Similarly, one-quarter of homeowners with both higher mortgage debt (27 percent) and lower

mortgage debt (23 percent) stated they have high levels of financial knowledge.[14] Over three-quarters of respondents in both groups correctly answered all three questions in the Lusardi-Mitchell scale testing financial knowledge.[15]

Table 10. Financial Skill, Knowledge, and Planning Characteristics of Older Adult Homeowners

Measure of Financial Skill, Knowledge, Planning, or Behavior	Homeowners (Mortgage Debt Amount)		
	All	Under $50,000	$50,000 and Over
Financial Skill Score	52	52	51
Financial Knowledge Assessment			
Lower (1–5)	76	77	73
High (6–7)	24	23	27
LM Financial Knowledge Score			
0–2	23	24	23
3	77	76	77
Saving Is A Habit			
Disagree	20	17	25
Agree slightly	21	20	22
Agree or strongly agree	60	64	53
Financial Planning Horizon			
Next year or less	23	22	25
Next few years	29	27	32
Longer than 5 years	48	51	42

Note: The financial skill scale score is the mean, while other variables represent the distribution of homeowners.
Source: JCHS tabulations of Consumer Financial Protection Bureau, National Financial Well-Being Survey.

[14] Respondents marked a 6 or 7 on a 7-point self-assessment of financial knowledge.

[15] The Lusardi-Mitchell Knowledge Scale Score is a three question test of financial knowledge that asks respondents about compound interest, inflation, and investment volatility. For more information, see Lusardi and Mitchell (2008).

While still similar, older adult homeowners with lower and higher levels of mortgage debt reported greater differences in their saving habits and financial planning time horizons. Indeed, 53 percent of homeowners with at least $50,000 in mortgage debt either agreed or strongly agreed that putting money into savings was a habit, about 11 percentage points lower than homeowners with lower debt levels. Similarly, 42 percent of higher-debt homeowners reported a financial planning time horizon of 5 or more years, 9 percentage points lower than lower-debt homeowners. Perhaps the continued costs associated with high mortgage debts inhibited savings and longer-term financial planning for those with onerous debt loads. Conversely, it is possible that saving habits and scrupulous planning—in addition to financial skill and knowledge—lead homeowners to be less reliant on mortgage debt.

While the descriptive statistics suggest a possible relationship between financial knowledge and financial management practices and the incidence of high mortgage debt, these simple tabulations do not account for other respondent characteristics. Thus, to assess these relationships we modeled the incidence of high levels of mortgage debt for older adult homeowners on different measures of financial knowledge and behaviors, controlling for other factors. For these models, the dependent variable is a dummy variable indicating the homeowner has high levels of mortgage debt. We used probit models to examine the marginal effect of financial knowledge, skills, and behaviors on the likelihood of holding higher levels of mortgage debt.

Table 11 displays the results from these models. Model 1 regresses the dummy indicating the respondent has a high amount of mortgage debt on the financial skill score of older adult homeowners, controlling for the income, savings, home value, and region of the respondent, along with all the other controls in Model 4 of Table 5. In this model, an increase in financial

skill is associated with a statistically significant decrease in the likelihood that an older adult homeowner has higher levels of mortgage debt, controlling for many other characteristics.

From a practical standpoint, do increases in financial skill and habitual savings strongly predict a lower likelihood of taking on high levels of mortgage debt in old age? Holding all else constant at the mean, an 11 point increase in the financial skill score from 52 (or a standard deviation increase in financial skill at the mean) results in a 5 percentage point decrease, from about 45 percent to 40 percent, in the probability that an older adult homeowner has high levels of mortgage debt. Effects are similar at different levels of income, savings, and home value.

Many of the control variables in this model also have statistically significant relationships with the indicator of high housing debt. For example, having an income above $30,000 (relative to an income below that threshold), living in a home valued above $250,000 (relative to living in a home worth under $150,000), and being in the labor force and having good health are all associated with a higher probability that the older adult homeowner has higher levels of mortgage debt. Likewise, having especially high savings is inversely correlated with higher mortgage debt. The coefficients, directionality, and significance vary only minimally across all five models.

Model 2 and Model 3 test different measure of financial knowledge as the primary independent variable of interest. Unlike the measure of financial skill in Model 1, the measures of financial knowledge are associated with a small increase in the likelihood of having high mortgage debt among older adult homeowners, controlling for other factors. However, the relationship in both cases is not statistically significant. Similarly, Model 5 tests an indicator for whether a respondent has a 5-year financial-planning time horizon. But such long-term planning

Table 11. The Association Between the Incidence of High Mortgage Debt and Financial Skill, Knowledge, and Planning (Homeowners Age 62 and Over)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Financial Skill Score	-0.01*	(0.00)								
Self-Reported High Financial Knowledge			0.09	(0.10)						
Lusardi-Mitchell Score of Financial Knowledge					0.01	(0.12)				
Saving Is a Habit							-0.37**	(0.10)		
Financial Planning Horizon of 5 years or Longer									-0.14	(0.09)
Household Income										
$30,000–59,999	0.62**	(0.20)	0.58**	(0.20)	0.65**	(0.20)	0.58**	(0.20)	0.58**	(0.20)
$60,000–99,999	0.55**	(0.20)	0.50*	(0.20)	0.56**	(0.20)	0.50*	(0.20)	0.49*	(0.20)
$100,000 and Over	0.58**	(0.22)	0.51*	(0.22)	0.60**	(0.22)	0.52*	(0.22)	0.52*	(0.22)
Savings										
$5,000–19,999	-0.42**	(0.13)	-0.44**	(0.13)	-0.38**	(0.13)	-0.45**	(0.13)	-0.43**	(0.13)
$20,000 and Over	-0.87**	(0.13)	-0.93**	(0.13)	-0.82**	(0.13)	-0.93**	(0.13)	-0.90**	(0.13)
Home Value										
$150,000–249,999	0.25	(0.14)	0.24	(0.14)	0.28*	(0.14)	0.25	(0.14)	0.25	(0.14)
$250,000 and Over	0.68**	(0.15)	0.66**	(0.15)	0.70**	(0.15)	0.66**	(0.15)	0.67**	(0.15)
Region										
Midwest	0.17	(0.15)	0.15	(0.15)	0.13	(0.15)	0.15	(0.15)	0.15	(0.15)
South	0.11	(0.14)	0.07	(0.14)	0.10	(0.14)	0.08	(0.14)	0.08	(0.14)
West	0.41**	(0.14)	0.39**	(0.14)	0.41**	(0.15)	0.40**	(0.14)	0.39**	(0.15)
In Labor Force	0.24*	(0.11)	0.26*	(0.11)	0.25*	(0.10)	0.26*	(0.11)	0.24*	(0.11)
Bachelor's Degree	0.03	(0.10)	0.01	(0.10)	0.03	(0.10)	0.01	(0.10)	0.01	(0.10)
Minority	0.18	(0.13)	0.17	(0.13)	0.19	(0.13)	0.17	(0.13)	0.16	(0.13)
Female	0.05	(0.09)	0.05	(0.10)	0.07	(0.09)	0.05	(0.10)	0.04	(0.09)
MSA Status	0.30*	(0.14)	0.29*	(0.14)	0.28*	(0.14)	0.29*	(0.14)	0.29*	(0.14)
Married	0.15	(0.11)	0.15	(0.11)	0.16	(0.11)	0.15	(0.11)	0.16	(0.11)
Support Own Children	0.11	(0.12)	0.12	(0.12)	0.11	(0.12)	0.12	(0.12)	0.12	(0.12)
Good Health	0.32*	(0.14)	0.26	(0.14)	0.32*	(0.14)	0.27	(0.14)	0.28*	(0.14)
Constant	-1.14**	(0.29)	-1.52**	(0.24)	-1.53**	(0.24)	-1.53**	(0.26)	-1.49**	(0.24)
Observations	1,019		1,019		1,019		1,019		1,019	
Pseudo R-squared	0.114		0.111		0.111		0.119		0.113	

Notes: The dependent variable in all models is a dummy indicator where 1 indicates the respondent had higher levels of mortgage debt (at least $50,000). The subsample is homeowners age 62 and over. The financial skill score in Model 1 is a continuous variable, while the remaining independent variables of interest are included in the model as dummy variables. These variables are defined in Table 1.
* $p < 0.05$ ** $p < 0.01$

Source: JCHS tabulations of Consumer Financial Protection Bureau, National Financial Well-Being Survey.

is associated with only a statistically insignificant reduction in the likelihood of carrying high levels of mortgage debt.

Model 4 tests the saving habits of the respondent and has a more meaningful association. Agreeing or strongly agreeing to the statement that putting money into savings is a habit for the respondent is associated with a reduction in the likelihood that a respondent has higher levels of mortgage debt, controlling for other factors including the amount of actual savings. This relationship is statistically significant at the 99 percent confidence threshold. In practice, saving as a habit is associated with a 14 percentage point decrease, from 53 to 39 percent, in the probability an older adult homeowner holds more than $50,000 in mortgage debt, holding all else constant at the mean. This too only varies slightly with household income and home value. Notably, the effect is similar at different levels of savings. For example, an older adult homeowner with savings under $5,000 and habitual saving habits has a 55 percent chance of holding high levels of mortgage debt, 14 points lower than for those with the same level of savings but without those habits.

4. Discussion

The continued rise in the incidence and level of mortgage debt among older adult homeowners over the past several decades is a major concern for housing analysts and policymakers. Older adult homeowners with mortgage debt are more likely to spend a higher share of their income on housing, forcing difficult trade-offs with spending on other necessities such as food and healthcare. Further, higher debt among older adults is associated with an increased sensitivity to financial shocks and lesser mental and physical health. However, little work has been done to test whether high levels of mortgage debt effect financial well-being directly.

This study finds strong evidence for the association between the incidence of high mortgage debt and lower financial well-being, even when holding household income, savings, home value, and other household economic and demographic characteristics constant. Some, but not all, of this relationship is explained by the corresponding increase in housing costs associated with mortgage debt. Still, holding mortgage debt is found to have an independent negative relationship with well-being. Though statistical significance and magnitude of the relationship differ depending on the measure used, housing costs and affordability have a similarly deleterious association with financial well-being controlling for the same characteristics. Of particular concern is that the incidence of high mortgage debt—whether through its direct effects, secondary effects on affordability, or both—is associated with a higher probability of financial insecurity. This is especially true for older adult homeowners with low incomes and less savings, who might be more vulnerable to insecurity in the first place. Financial insecurity

itself is associated with material hardship, including fear of running out of food, not being able to afford medical treatment, or having utilities shut off.

Given the growth in the number and share of older adults with mortgage debt over the past several decades, and the expected growth in the population of older adults forthcoming, this paper also considers potential mechanisms for alleviating the burden of high levels of mortgage debt. Habitual savings, for example, is associated with a statistically significant and meaningful 14 percentage point decrease in the likelihood that older adult homeowners have high levels of mortgage debt, holding all other variables in our preferred model constant at the mean. This effect is as large for homeowners with very little savings as it is for those with considerably more savings, indicating that the willingness and desire to save has some effect on the incidence of high debt independent of the ability to save. Moreover, increased financial skill is also associated with a lower probability of having high levels of mortgage debt. Holding all measures constant at the average, a 14 point increase in financial skill (equivalent to a one-standard deviation increase) results in a 5 percentage point reduction in the likelihood of carrying high levels of mortgage debt. While this effect is more muted, financial skill training might lessen the incidence of high mortgage debt.

This paper will certainly not serve as the last word on this topic. Given the nature of the National Financial Well-Being Survey, this paper does not attempt to make a causal link between the incidence and level of mortgage debt (and affordability) on financial well-being. Instead, this analysis controls for important observable characteristics to identify theoretically and conceptually grounded associations between housing costs and mortgage debt levels and the well-being of older homeowners.

Lastly, additional research is needed to clarify, extend, and fortify the findings of this paper and the existing literature on well-being. The following are just a few, of many, possible examples: (1) Does the mere incidence of mortgage debt matter more than the level of mortgage debt? (2) Does the relationship between mortgage debt and financial well-being vary with age? If so, at what age (and what amount) is mortgage debt most associated with lower levels of financial well-being? (3) By what mechanism(s) does the incidence of high mortgage debt, independent of affordability, most effect well-being?

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