Mortgage debt and retirement transition decisions

by

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B.S., University of Missouri-Columbia, 2001
M.Acc., University of Missouri-Columbia, 2001

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

School of Family Studies and Human Services
College of Human Ecology

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2019

Abstract

In this study, a series of logit models for discrete time were employed to investigate the association between home mortgage debt and the retirement transition decisions of older homeowners. Retirement transitions under investigation were a) the transition from the workforce to full retirement and b) the transition from full-time work to the mutually exclusive competing risks of bridge employment and full retirement. With hypotheses informed by both the STREAM framework and results from previous studies, older homeowners with home mortgage debt were expected to exit the workforce later than those without home mortgage debt. Further, a negative relationship was expected between the loan-to-value ratio and the probability of exiting the workforce in a sample of only homeowners with home mortgage debt. Data were utilized from the 2006, 2008, 2010, 2012, and 2014 waves of the Health and Retirement Study.

Results from this study revealed that, holding all else equal, older homeowners with home mortgage debt are more likely to delay their exit from the workforce. Further, the results indicate that older homeowners who are male, are college graduates, and are at the lower and upper ends of the net worth spectrum are more likely to delay their withdrawal from the workforce when they carry home mortgage debt. However, homeowners with this type of debt are not necessarily more likely to engage in bridge work between periods of full-time work and full retirement. Further, results revealed that the loan-to-value ratio was not a significant contributor to the retirement transition decisions of older homeowners with home mortgage debt.

Because the presence of home mortgage debt was a factor in the retirement transition decisions of older homeowners, but the degree of leverage was not, the results from this study indicate that the psychological impact of mortgage debt might be more important in retirement transition decision-making among older homeowners than the financial impact of mortgage debt.

Results from this study provide the foundation for understanding the association between home mortgage debt and the retirement transition decisions among older homeowners and should be of interest to American policymakers, financial planners and educators, business organizations, and other researchers.

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Chapter 1 - Introduction

The oldest Baby Boomers turned 65 in 2011, marking the beginning of a long-term shift in the United States' population. In the process, the number of Americans in the 65 or older age group (that is, seniors) will almost double between 2012 and 2050 (United States Census Bureau, 2014). As a result of this population shift, more Americans than ever before are entering the retirement phase of their life-cycles. However, retirement is no longer a permanent employment status. Increasingly, retirement-aged workers are delaying retirement by using part-time work as a bridge between full-time work and full-time retirement (Beehr & Bennett, 2015; Cahill, Giandrea, & Quinn, 2013; Wang & Shi, 2014). Moreover, growing numbers of full-time workers are returning to paid employment after transitioning to full-time retirement, in a phenomenon known as "unretiring" (RAND, 2018).

Researchers have conducted numerous studies to explore the antecedents of retirement transitions. Through these studies, researchers have identified several psychological factors and income or savings variables as predictors of a bridge employment period or a return to work (e.g., Kim & DeVaney, 2005; RAND, 2018; Settles, Schafer, & Henkens, 2018; von Bonsdorff, Zhan, Song, & Wang, 2017). However, the role of the debt side of the balance sheet, especially home mortgage debt, in these employment transitions remains unclear. It is important to evaluate mortgage debt separately from other forms of debt: The presence of mortgage debt has been found to result in negative impacts on both the financial (Consumer Financial Protection Bureau, 2014; Lusardi, Mitchell, & Oggero, 2016) and psychological health (Brown, Taylor, & Price, 2005; Seay, Asebedo, Thompson, Stueve, & Russi, 2015) of retirees. Eighty percent of American seniors own their homes. Of these, 30% of those homes are mortgaged (Consumer Financial Protection Bureau, 2014), and home equity often is the largest asset in senior investment

portfolios (United States Census Bureau, 2011). For these reasons, it is crucial that American policy-makers and financial planners begin to gain an understanding of the influence of mortgage debt on retirement transition decisions.

Retirement Transition Decisions

Many studies have been conducted to explore retirement transition decisions (e.g., Settels, Schafer, & Henkens, 2018; Wang, Zhan, Liu, & Shultz, 2008). In the process, researchers have provided evidence that factors influencing retirement transitions fall into four categories: Financial factors, health factors, job-related psychological factors, and demographic characteristics. In the financial realm, evidence suggests that individuals with greater financial resources and fewer out-of-pocket medical expenditures will be less likely to seek bridge employment in retirement (Adams & Rau, 2004; Kerr & Armstrong-Stassen, 2011; van Solinge, 2014; Zissimopoulos & Karoly, 2007). Kim and DeVaney (2005) suggested that overall debt was associated with employment transitions. However, they used an aggregated debt measure, and it is unclear how mortgage debt contributes individually to those transitions. Health status has also been identified as a predominant factor in the decision to retire fully or to seek bridge employment, with those in poor physical and mental health more likely to retire fully compared to those in better health (Feldman, 1994; Kerr & Armstrong-Stassen, 2011; Kim & Feldman, 2000; Shultz & Wang, 2007; Wang, Zhan, Liu, & Shultz, 2008).

Job-related psychological factors, such as job stress, have been found to influence bridge employment and retirement decisions. Individuals who experience high amounts of job stress tend to exit the workforce earlier than those who experience less job stress (van den Berg, Elders, & Burdorf, 2010). Conversely, individuals who have high job satisfaction and greater autonomy in their jobs tend to stay in the workforce longer (Moen, Kojola, Kelly, & Karakaya, 2016). The

type of pre-retirement work has also been found to play a role in retirement timing and bridge employment. Kim and DeVaney (2005) provided evidence that self-employed workers were more likely to transition from full-time work to partial retirement rather than straight to full-time retirement. RAND (2018) researchers suggested that many retirees returned to work because retirement was not as satisfying as they had expected it to be. Finally, in previous studies, researchers have shown a consistent association between individual demographic characteristics and retirement status. Unmarried individuals (Kim & Feldman, 2000), males (Bennet, Beehr, & Lepisto, 2016), and more educated individuals (Kim & DeVaney, 2005; Wang & Shi, 2014) tend to remain in the workforce longer.

Incentives for Mortgage Debt

The use of home mortgage debt has been found to influence retirement planning decisions, such as when to begin claiming Social Security benefits (Lusardi et al., 2016; Butrica & Karamcheva, 2013), how long to remain in the workforce (Palmer, 2004), and the amount of retirement savings that are necessary to ensure that income and assets cover both target consumption needs and debt service costs (Lusardi et al., 2016). Still, the United States economy offers incentives for seniors to carry mortgages into retirement. Although mortgage interest rates have increased in recent years, they have not rebounded from the record lows of 2012 (Yellen, 2017). These lower interest rates provide households with the opportunity to retain mortgage debt at a low-interest rate and invest savings at higher interest rates, creating interest rate arbitrage opportunities that increase net worth. Further, under the United States' (US) income tax code, itemizing households may deduct mortgage interest on their tax returns. Through such deductions, eligible households can reduce the after-tax costs of mortgage interest (Palmer & Lowe, 2006) and build their net worth. Although limits were placed on some taxpayers' ability to

deduct mortgage interest through the Tax Cuts and Jobs Act of 2017, many taxpayers are still eligible for mortgage interest deductions.

Members of the popular press are quick to offer advice on the question of carrying mortgage debt into retirement. Derousseau (2016) advocates that clients pay off debt before retirement so they do not restrict retirement income with debt service. Similarly, popular financial planning personalities such as Suze Orman (2016) and Dave Ramsey (n.d.) promote paying off mortgages early. Their reasoning is that homeowners use pre-payment to reduce their overall interest expenses and enhance their financial peace of mind in retirement. Conversely, Schwab (2017) has argued that using savings and income to pre-pay mortgages before retirement depletes cash reserves and causes a lack of financial liquidity because home equity cannot be tapped unless the home is sold, or the mortgage is refinanced.

This contradictory anecdotal advice is accompanied by inconclusive empirical evidence. Modigliani and Miller (1958) suggested that this topic was irrelevant because financial leverage (that is, financing the purchase of assets with debt) had no impact on long-term net worth. Johnston (2000) and Storms (2000) concluded that mortgage debt could be used to build net worth as long as the after-tax rate of return on invested savings exceeded after-tax interest paid on the loans. Similarly, Amromin, Huang, and Sialm (2007) found that individuals who prepaid their mortgages could have saved between 11 and 17 cents on the dollar had they retained them. Palmer and Lown (2006) suggested caution in using financial leverage in retirement. They found that households tended to overestimate the expected rate of return when making leverage decisions. In addition, leveraged households were not able to achieve higher net worth increases in comparison to unleveraged households. Based on these contradictions, both in the popular press and empirical literature, there may be varying answers to the question of whether one

should pre-pay or retain mortgage debt in retirement. Even if it were clear that carrying mortgage debt into retirement would lead to increased net worth, it would help financial planners to know how the financial and/or psychological costs of that same mortgage contribute to the evolution of the retirement process via delayed retirement, periods of bridge employment, or unretirement.

Theoretical Framework

Previous studies related to retirement transition decisions have been guided by three widely-used theories: a) life course perspective, b) continuity theory, and c) role theory. In these theories, retirement is viewed not as an event, but as a longitudinal adjustment process that involves both the reduction or elimination of paid working hours and a psychological commitment to withdrawing from work and work-related activities (Shultz & Wang, 2011; Wang & Shi, 2014). In these three theories, the retirement transition is conceptualized as being influenced by either a decision or an adjustment process. However, previous empirical literature has provided evidence that employment transitions are influenced by both decision and adjustment processes along with several demographic and socioeconomic factors (e.g., de Wind, van der Pas, Blatter, & van der Beek, 2016; Sewdas et al., 2016).

The STREAM framework was developed for the Dutch Longitudinal Study on Transitions in Employment, Ability, and Motivation to provide a model for studying the influences of employment transitions among individuals aged 45 to 64 (Ybema et al., 2014). This framework was designed to highlight that employment transition decisions are not driven by one factor. Instead, they are influenced by many determinants related to an individual's health conditions, pre-retirement work environment, skills and knowledge, social context, financial situation, and demographic characteristics. Specifically, the researchers who devised the STREAM framework suggest that these determinants influence an individual's ability,

motivation, and opportunity to work. These factors then result in productivity and employment

transitions. Based on results of studies in which the STREAM framework was used as a

theoretical basis (de Wind et al., 2016; de Wind, Scharn, Geuskens, van der Beek, & Boot, 2018;

Sewdas et al., 2017), the framework is a useful tool for guiding independent variable selection,

as well as constructing and interpreting hypotheses for studies that explore retirement transitions.

Research Purpose and Questions

In this study, the association between home mortgage debt and retirement transitions was

investigated. Retirement transitions under investigation were a) the transition from the workforce

to full retirement and b) the transition from full-time work to the mutually exclusive competing

risks of bridge employment and full retirement. A series of logit models for discrete time were

employed to investigate the associations between home mortgage use and employment

transitions over three time periods. Specifically, the following research questions were explored

using the STREAM framework to explain and predict the outcomes.

1. Is home mortgage use associated with the timing of the transition from the workforce to
   full retirement?

2. Among retirement-aged homeowners with home mortgages, is the loan-to-value ratio of
   the mortgage associated with the timing of the transition from the workforce to full
   retirement?

3. In a competing risks model, is home mortgage use associated with the transition from
   full-time work to bridge employment instead of to full retirement?

Based on a review of the literature and the STREAM framework as it relates to the

relationship between home mortgage use and retirement transitions, the following hypotheses

were developed:

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H1   Home mortgage use will be negatively associated with the odds of transitioning from the workforce to full retirement.

H2   In a subsample of only those respondents with home mortgages, the loan-to-value ratio will be negatively associated with the odds of transitioning from the workforce to full retirement.

H3   In a competing risks model predicting the conditional probability of transitioning from full-time work to bridge work or to full retirement, home mortgage use will be negatively associated with the odds of transitioning from full-time work to bridge employment.

H4   In a competing risks model predicting the conditional probability of transitioning from full-time work to bridge work or to full retirement, home mortgage use will be negatively associated with the odds of transitioning from full-time work to full retirement.

H5   In a competing risks model predicting the conditional probability of transitioning from full-time work to bridge work or to full retirement, home mortgage use will be positively associated with the conditional probability of transitioning from full-time work to bridge employment instead of to full retirement.

Population of Interest

In this study, data collected during the 2006 through 2014 biennial data collection waves of the Health and Retirement Study were utilized to investigate the association between home mortgage use and retirement transitions. The Health and Retirement Study is the ideal dataset for studies related to retirement transitions: It is the largest nationally representative longitudinal panel study of Americans over age 50 and includes detailed economic information (Health and

Retirement Study, 2015). The Health and Retirement Study (HRS) is sponsored by the National Institute on Aging (grant number NIA U01AG009740) and is conducted by the University of Michigan.

In this study, factors associated with an individual's retirement transition decisions were investigated, with home mortgage debt the key variable of interest. The period of interest for this analysis was Wave 8 (2006) through Wave 12 (2014) of HRS data collection due to the continuous availability during this time-period of variables necessary to conduct this analysis using the STREAM framework. The sample of interest was homeowners because the key independent variable under investigation was the use of home mortgages. In addition, homeowners would be the only respondents in the position to make the decision to retain or pay off mortgages as they moved toward retirement. Based on the STREAM framework, it has been suggested that some partner characteristics influence retirement transition decisions (Ybema et al., 2014). For this reason, the sample for this study included only respondents who were in partnered relationships to allow for the inclusion of those partner characteristics in the analysis. To prevent left-censoring (i.e., the probability that a respondent could have already transitioned from full-time work to bridge work or retirement and then back again to full-time work before the time-period under analysis), the sample included only individuals who reported working full-time during each wave from the time of cohort entry through the time of the capture of pre-retirement variables (2006 and 2008).

In the STREAM framework, retirement is viewed as a decision. For this reason, any respondent who indicated that they felt they were forced into retirement at any data measurement period was removed from the sample. Observations were listwise deleted within-wave if they were missing responses on variables of interest (Young & Johnson, 2015). Although Wave 13

(2016) data from the HRS is available, this data was considered 'early release' at the time of writing. As such, Wave 13 data could have included uncorrected errors and did not include imputations. Given these limitations, Wave 13 data were not included in this analysis.

Potential Implications

The author's intention in this study was to identify factors associated with retirement transition decisions, particularly the role of mortgage debt on these transitions. Results from this study have implications in several areas. First, policymakers in the US can use these results to better understand increased fluidity in the retirement status of older adults, a trend that could reflect the need for changes to Social Security policies. Results of this study can also be used by financial planners and educators to help older individuals identify their own retirement timing preferences. In this way, financial planners and educators may be able to offer more personalized retirement planning opportunities and develop a variety of strategies regarding retirement planning for older workers, especially as these strategies relate to mortgage prepayment decisions.

Moreover, it is important for financial planners to understand the antecedents of retirement transitions that might include delayed retirement or bridge employment so that planners can consider these plans carefully with their clients. In commonly used retirement calculations for retirement adequacy, an immediate transition from full-time work to full retirement is assumed, with no consideration of bridge employment or return to work. If key factors associated with retirement transitions are identified, these financial models can be modified to include periods of bridge employment and/or return to work after a period of full retirement.

In addition to policymakers and financial professionals in the US, members of business organizations can use the results of this study to offer attractive bridge or return to work options to older workers in order to maintain that talent pool. As Baby Boomers exit the workforce, managers face a potential shortage of critical knowledge and skills that are vital to business operations. By emphasizing that there is no one-size-fits-all approach to retirement planning, this researcher hopes to fuel further research in the area of retirement transitions. Older workers have individual preferences regarding retirement decisions, and these preferences must be taken into account when conducting research in this area. Finally, this study represents the first use of the STREAM framework outside of its original Dutch dataset. In this study, the researcher sought to demonstrate the utility of this framework as a theoretical foundation for future research on retirement transition decision making.

Summary

Retirement transition decisions have been studied before. However, most researchers on this topic have focused on health, psychological, and social factors as antecedents of employment transitions (Rooks, Simonsick, Schulz, Rubin, & Harris, 2017; von Bonsdorff, Schultz, Leskinen, & Tansky, 2009). In existing studies, researchers that included financial factors as predictors of employment transitions used subjective financial indicators or focused only on net worth and investment assets (Kerr & Armstrong-Stassen, 2011; Zissimopoulos & Karoly, 2007). In one study, debt was included as a predictor of employment transitions. However, the authors measured all debt as a single, composite variable (Kim & DeVaney, 2005), rather than examining the influence of specific types of debt on retirement transition decisions. There is no known study in which researchers specifically investigated the association between home mortgage debt and retirement transitions.

Further, there is no theory to guide financial planners, educators, or laypeople in retirement transition decision making. Given this background, this researcher sought to understand the relationship between home mortgage debt and retirement transition decisions using the STREAM framework to guide the development of hypotheses and the interpretation of results. Results from this study should be of interest to policymakers in the US, financial planners and educators, business organizations, and other researchers interested in retirement transition decisions.

Chapter 2 - Review of the Relevant Literature

The review of literature is divided into three main sections. In the first section, trends and empirical research related to the retirement process and retirement transitions are discussed. The next section includes theoretical research concerning retirement transitions. In the third section, trends and empirical research regarding the decision to take on mortgage debt are discussed. Finally, specific research questions used in this study are outlined, along with the conceptual model for the study and hypotheses used to explore the association between home mortgage debt and retirement transition decisions.

Retirement Transition Research

Retirement is an Evolving Process

Traditionally, retirement has been viewed as a systematic process whereby an individual works full-time for many years, reaches retirement age, and then withdraws from the workforce completely (Kantarci & Van Soest, 2008; United States Senate Report 115-191, 2017). However, this traditional view of the retirement process has been upended in recent workforce trends. First, older workers are delaying complete withdrawal from the workforce at an increasing rate (United States Bureau of Labor Statistics, 2017; RAND, 2018). Results from an annual poll conducted by Gallup (2014) showed that the average retirement age for Americans in 2014 was 62, an increase from age 59 in 2002 and the highest average retirement age recorded since the poll began in 1991. Moreover, American workers surveyed in the same poll reported that, on average, they expected to retire at age 66—an increase from age 63 in 2002 (Gallup, 2014).

Aside from annual polls, reviewing workforce participation rates in the US is another means of understanding retirement age trends. As displayed in Figure 2.1, 12% of individuals

aged 65 and older were in the workforce in 1988. However, this number had increased to 19% by 2017 and is projected to grow to 22% by 2026 (United States Bureau of Labor Statistics, 2017). Further, the number of individuals aged 75 and older in the workforce more than doubled between 1988 and 2017 and is projected to grow from four percent in 1988 to 11% in 2026 (United States Bureau of Labor Statistics, 2017).

Figure 2.1. Labor Force Participation Rates, 1998 to 2015, and Projections for 2026.
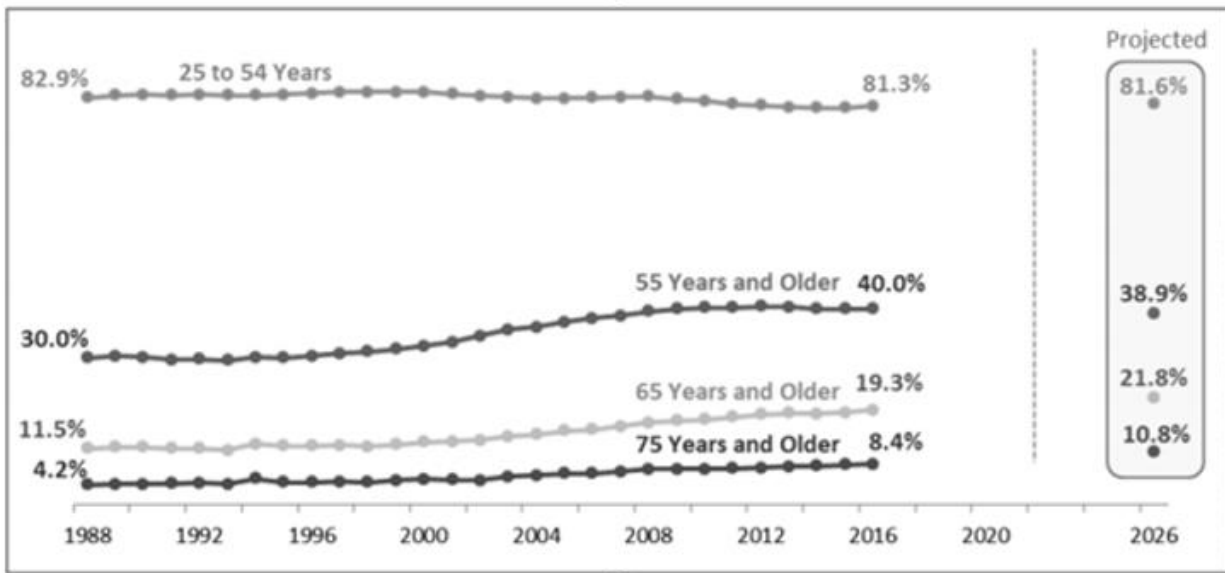
Source: United States Senate Report 115-191 (2017).

In addition to Americans working longer, the increasingly fluid concept of retirement is another trend causing disruption to the traditional retirement process in the US, as retirement-age workers transition in and out of the workforce (Beehr & Bennett, 2015; RAND, 2018; Wang and Shi, 2014). One such transition, "bridge employment," typically is defined as an employment status that begins when an individual begins to collect retirement benefits but before the individual withdraws from the workforce completely (Dingemans, Henkens, & van Solinge, 2016; Feldman, 1994; Shultz, Taylor, & Morrison, 2003; Wang and Shultz, 2010). Stated more simply, the term "bridge employment" is used to describe an individual working for pay after

retiring from a career job (Beehr & Bennett, 2015; Zhan, Wang, Liu, & Shultz, 2009). This type of employment is known as "bridge employment" because it spans the period between full-time work at a career job and full retirement (Beehr & Bennett, 2014). Typically, researchers have categorized bridge employment into two types: (a) Where a retirement-aged individual transitions from a career job to a job in the same industry or field; and (b) where a retirement-aged individual transitions to employment in a different field (Feldman, 1994; Shultz, Taylor, & Morrison, 2003; Wang et al., 2008). Bridge employment could take the form of full or part-time work, self-employment, or temporary employment between full-time employment and full retirement (Feldman, 1994; Wang et al., 2008).

Americans are using bridge employment to delay the transition between full-time work and full retirement. In addition, when Americans transition to full-time retirement, they are "unretiring," or returning to paid employment, at an increasing rate (RAND, 2018). According to RAND's 2015 American Working Conditions Survey, 56% of retirees aged 50 and older said they would return to work after retirement, and 40% of currently employed workers aged 65 and older said they had been fully retired at some point (RAND, 2018). Similarly, Maestas (2010) found that up to 40% of retirees may return to work at some point in their first six years of retirement. Quinn (2010) suggested that up to 70% of retirees reported that they planned to work for pay after retiring.

The idea of retirement is evolving constantly. Currently, half of retiring individuals follow a new retirement path that includes bridge retirement and/or one or more returns to the workforce after a stint in retirement (Maestas, 2010). It appears that this redefinition of the retirement process will continue for many years, and might be the new standard (Brown, Aumann, Pitt-Catsouphes, Galinsky, & Bond, 2010; Maestas, 2010). Consequently, it is

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important to gain an understanding of the factors associated with this new retirement process in order to inform workforce expectations, employer practices, and the direction of public policy regarding retirement.

Retirement has Many Meanings

There is no common definition of retirement (Beer & Bennett, 2015; Denton & Specer, 2009; Ekerdt, 2010). Individuals can be considered retired according to the definition used in one study but not retired according to the definition used in other studies. Denton and Spencer (2009) identified eight different measurements that researchers have used to measure retirement status: (a) Nonparticipation in the labor force, (b) reduction in hours worked and/or earnings, (c) hours worked or earnings below some minimum cutoff, (d) receipt of retirement/pension income, (e) exit from one's main employer, (f) change of career or employment later in life, and (g) self-assessed retirement status.

Wang and Shi (2014) supported the necessity of these various definitions. They suggested that retirement status should be measured subjectively when studying decisions related to the retirement process and objectively when studying the results of those decisions. Conversely, other researchers have argued that self-reported retirement status is an unreliable measurement because respondents might have different internal standards under the newer, more fluid retirement process (Kim & DeVaney, 2005; Gustman & Steinmeir, 2000). Recently, researchers appear to have moved in the direction of using a combination of objective and subjective factors, such as self-reported retirement status combined with hours of paid work, to define retirement status (e.g., von Bonsdorff et al., 2017; Dingemans et al., 2016).

Empirical Research related to Retirement Transitions

Numerous studies have been conducted to explore retirement transition decisions (e.g., Settels et al., 2018; Wang et al., 2008; Kim and DeVaney, 2005). Based on these studies, it appears that factors associated with retirement transitions fall into four categories: (a) Financial factors, (b) health factors, (c) job-related psychological factors, and (d) demographic characteristics.

Financial Factors

Given ongoing changes to Social Security benefits (Munnell, 2011; Social Security, 2012), a reduction in usage of employer-sponsored pension plans (Department of Labor, 2010), and concerns about the personal retirement savings levels of Americans (e.g., Gonyea, 2007; Lusardi & Mitchell, 2011), many researchers have investigated the association between financial factors and retirement transitions. Laitner and Sonnege (2013) associated retirement transition decisions with financial status. They suggested that retirement is a rational choice made by individuals who feel that their accumulated financial resources will allow them to meet their consumption needs in retirement. However, other literature suggests a more complicated relationship between wealth and retirement transition decisions (Wang, Adams, Beehr, & Shultz, 2009). Evidence supports the idea that individuals with more accumulated financial resources and a higher perception that those resources would be adequate to fund retirement are more likely to retire (Gruber & Wise, 1999). However, there is no consistent evidence that individuals are driven by financial needs in their decision to transition from full-time work to bridge employment (Wang et al., 2008).

The conceptualization of financial status in previous studies could play a role in this inconsistency. Most researchers to date have used income as the only measure of financial status

(e.g., von Bonsdorff et al., 2017; Dingemans, 2012; Griffin & Hesketh, 2008). Sometimes, pension income was the only income considered, with no consideration of a spouse or partner's income (Dingemans et al., 2016). In other studies, self-assessment questions were used to measure financial status, such as, "what is the financial situation of your household now?" or, "could you financially afford to stop working before the official retirement age?" (de Wind, van der Pas, Blatter, & van der Beek, 2016; de Wind, Geuskens, Ybema, Blatter, Bongers, & van der Beek, 2014). In one study, household assets were used to measure financial status. However, the authors did not consider debt the household was carrying to finance those assets (Rooks et al., 2017).

In fact, few researchers have investigated the association between debt and retirement transition decisions. In one study, researchers divided components of wealth into investment assets, liquid and real assets, debt, and income. Of those factors, they found that only investment assets and debt predicted participation in bridge employment (Kim and DeVaney, 2005). This approach marked a step toward a more comprehensive measure of financial status. However, all debt was combined into a single measure in this study, making it difficult to understand how different types of debt influenced the retirement transition decisions.

Retirement benefits packages have been found to play a role in retirement transition decisions. Kim and Feldman (2000) found that higher pension benefits and lower salary were both related to the decision to retire early. Munnell et al. (2004) found that the presence of a pension increased the probability of retirement. This effect was even more pronounced for employees with a defined benefit plan versus those with defined contribution plans. According to Mermin et al. (2007), employer-sponsored health coverage in retirement also played a role in the retirement decision. Employees with employer-sponsored health coverage in retirement expected

to retire earlier (and actually retired earlier) than those who did not have employer-sponsored health coverage in retirement. There is some evidence that individuals with greater financial resources and fewer out-of-pocket medical expenditures will retire fully after career employment, making them less likely to seek bridge employment in retirement (Adams & Rau, 2004; Kerr & Armstrong-Stassen, 2011; van Solinge, 2014; Zissimopoulos & Karoly, 2007).

Health Factors

It has been established in the existing literature that health status is a consistent predictor of retirement, with healthy employees more likely to continue being employed and unhealthy employees more likely to retire (e.g., Shultz & Wang, 2007; Szubert & Sobala, 2005). Health status has been identified as a predominant factor in the decision to either retire fully or to seek bridge employment. Those in poor physical and mental health are more likely to retire and those in better health are more likely to engage in bridge employment (Feldman, 1994; Kerr & Armstrong-Stassen, 2011; Kim & Feldman, 2000; Shultz & Wang, 2007; Wang et al., 2008). Moreover, Griffin and Hesketh (2008) found that each unit of increase in health status was associated with a 43% increase in the odds of retirees engaging in paid post-retirement work, in the form of bridge employment or unretirement, as opposed to full retirement.

Job-Related Psychological Factors

Job-related psychological factors, such as job stress, have been found to influence retirement decisions. Individuals who experience high amounts of job stress tend to exit the workforce earlier than those who experience less job stress (Elovainio et al., 2005; Lin & Hsieh, 2001; van den Berg et al., 2010). Conversely, individuals who experience high job satisfaction and greater autonomy in their jobs tend to stay in the workforce longer (Moen et al., 2016).

In regard to bridge employment, Kim and Feldman (2000) found that those with longer job tenure were more likely to engage in bridge employment than in full retirement. The type of pre-retirement work has also been found to play a role in retirement timing and bridge employment. Kim and DeVaney (2005) provided evidence that self-employed workers were more likely to transition from full-time work to partial retirement rather than straight to full retirement. Moreover, employers who targeted older workers with human resources practices such as scheduling flexibility and equal employment opportunities increased retirees' desire for bridge employment (Rau & Adams, 2005). RAND (2018) researchers suggested that many retirees return to work because retirement was not as satisfying as they had expected it to be. Further, Adams and Rau (2004) found that retirees with negative attitudes toward retirement were more likely to search for bridge employment opportunities.

Demographic Characteristics

Researchers have shown a consistent association between individual demographic characteristics and retirement transition decisions. As would be expected under the traditional retirement model, age has been found repeatedly to be one of the strongest predictors of retirement. The older an individual is, the more likely they are to retire (e.g., Adams & Rau, 2004; Kim & Feldman, 2000; Wang et al., 2008). Further, the younger an individual is when he or she retires, the greater the likelihood that they will engage in bridge employment (Adams & Rau, 2004; Davis, 2003; Kim & Feldman, 2000; Maestas, 2000; Wang et al., 2008). Moreover, younger retirees were found to be more motivated to seek bridge employment for financial reasons. In contrast, older retirees were more motivated to seek bridge employment when flexible schedules were offered (Loi & Shultz, 2007).

Gender also has strong associations with retirement transition decisions. Males are more likely to remain in the workforce longer (Bennet et al., 2016) and more likely than females to engage in bridge employment than full retirement (Davis, 2003). According to Moen, Plassmann, and Sweet (2001), men were more likely to plan for bridge employment after full-time work. In contrast, women were likely to plan for volunteer work after full-time work. These gender preferences for retirement transition decisions could be attributed to the discontinuous nature of women's work histories, or the historical nature of education trends (Ruhm, 1994; Talaga & Beehr, 1995) which could result in limited opportunities for women to engage in bridge employment. Further research is required to understand the relationship between gender and retirement decisions such as bridge employment: In most studies to date, researchers have reported only the main effects of gender on retirement transition decisions. However, interaction effects should be examined to understand the relationship between gender and retirement decisions (Kerr & Armstrong-Stassen, 2011; Talaga & Beehr, 1995).

Education has also been associated with retirement decisions. Individuals with a higher level of education tend to remain in the workforce longer (Kim & DeVaney, 2005; Wang & Shi, 2014) and to engage in bridge employment versus full retirement (Kim and DeVaney, 2005; Wang et al. 2008). Further, Pleau and Shauman (2013) found that education was associated with participation in postretirement employment. However, they did not find that education differentiated between part-time and full-time bridge employment. Wang et al. (2009) cautioned that this association may be related to the availability of jobs for those who are more highly educated more than individual retirement transition preferences.

Several family factors have been found to affect retirement decisions. There is consistent evidence that marital status is associated with retirement decisions. Unmarried individuals tend

to remain in the workforce longer compared to those who are married (Henkens & van Solinge, 2002; Kim & Feldman, 2000) and are more likely to engage in bridge employment (Davis, 2003). For individuals who are married, spouses tend to influence each other's retirement transition decisions (Bernasek & Shwiff, 2001; Henkens & van Solinge, 2002; Shuey, 2004). There is evidence that spouses time their retirement in relation to their partner's retirement (Curl & Townsend, 2008; Henkens, 1999; Pienta, 2003). Moreover, older workers whose spouses were working were less likely to retire early (Kim & Feldman, 2000) and spent longer working in bridge employment (Kim & Feldman, 2000). Other considerations in the retirement timing decision are the illness of a spouse or parent, which might result in a decision to retire earlier than planned (Szinovacz & Davey, 2004, 2005), or the postponement of retirement or engagement in bridge employment to provide for dependent children or grandchildren (Brown & Warner, 2008; Kim & Feldman, 2000).

Theoretical Research related to Retirement Transitions

Previous studies related to retirement transition decisions have been guided by three widely-used theories: a) Life course perspective, b) continuity theory, and c) role theory. In these theories, retirement is viewed not as an event, but as a longitudinal process that involves both the reduction or elimination of paid working hours and a psychological commitment to withdrawing from work and work-related activities (Shultz & Wang, 2011; Wang & Shi, 2014). In the first widely-used theory, life course perspective (Elder, 1995), retirement is treated as an ongoing life transition with multiple pathways that are influenced by individual personal attributes, previous work-related experiences, and social contexts. Under this theory, the decision to delay retirement, seek bridge employment, or return to work after retirement is influenced heavily by individual attributes and experiences as well as the context of the retirement transition.

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In another widely-used theory, continuity theory (Atchley, 1989, 1999), retirement transition decisions are attributed to the ability to maintain existing lifestyles and social networks, and the sustainability of daily routines. Using this theory, an individual would delay retirement, engage in bridge employment, or return to work if they were unable to keep their social contacts in retirement. However, they might decide to retire fully if they could maintain social continuity through other activities, such as volunteer work, that were similar in form to pre-retirement employment. The third and final widely-used theory used in studies related to retirement transitions is role theory (Ashforth & Fugate, 2001; Moen, Dempster-McClain, & Williams, 1992). In role theory, the influence of job-related psychological factors in retirement transition decisions is emphasized. Individuals may transition to bridge employment or full-time retirement as a means of exiting an unpleasant job, or transition back to paid work if they miss the role they previously served while working.

In life course perspective, continuity theory, and role theory, the retirement transition is conceptualized as being influenced by either a decision or an adjustment process. However, there is evidence in the previous empirical literature that employment transitions are affected by both decision and adjustment processes along with several demographic and socioeconomic factors. Thus, a new framework might be useful for research into retirement transition decisions. The STREAM framework, depicted in Figure 2.2, was developed for the Dutch Longitudinal Study on Transitions in Employment, Ability, and Motivation (STREAM) to provide a model for studying the influences of employment transitions among individuals aged 45 to 64 (Ybema et al., 2014). In this framework, it is understood that decision making around employment transitions is not driven by any one factor. Instead, decisions are affected by many determinants related to an individual's health conditions, pre-retirement work environment, skills and

knowledge, social context, financial situation, and demographic characteristics. Specifically, in the STREAM framework, these determinants are understood to affect an individual's ability, motivation, and opportunity to work. In turn, these factors result in work productivity and employment transitions.

Figure 2.2. STREAM Framework.

STREAM Framework

| Health
Job characteristics
Skills and knowledge
Social factors
Financial factors | → | Ability to work
Motivation to work
Opportunity to work | → | Productivity
Employment transitions |

Moderated by:
Age, Gender, Education, Work Status
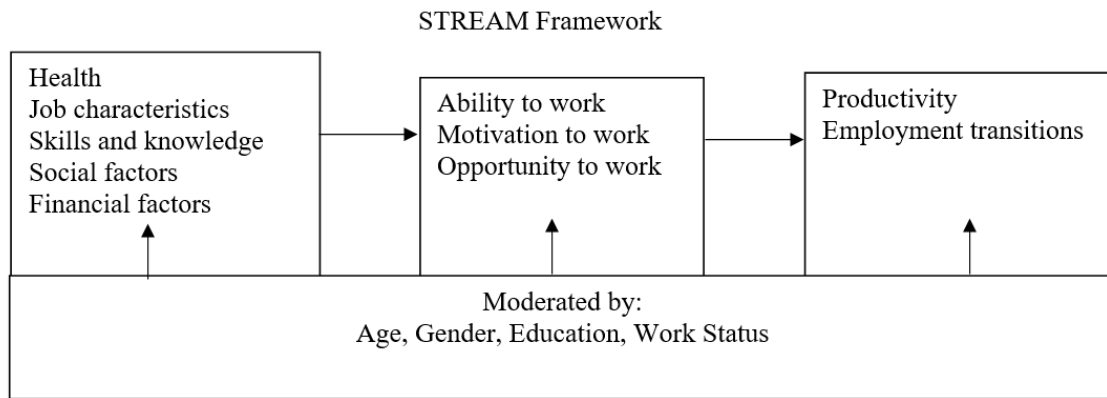
Source: Ybema et al. (2014).

The determinants of employment transitions in the STREAM framework were developed from widely used conceptualizations. Specifically, the health determinant in STREAM is based on the World Health Organization's (1946) definition of health as including subjective and mental health as well as the presence or absence of a disease (Ybema et al., 2014). In the STREAM questionnaire, the health determinant is measured through questions related to disease and work handicaps, quality of life, vitality, musculoskeletal complaints, depression, and recovery/relaxation (Ybema et al., 2014). Under the STREAM framework, less healthy employees would be expected to retire fully at retirement age. In contrast, healthier employees would be expected to continue working, seek bridge employment, or return to work after a period of retirement.

The job characteristics determinant was conceptualized based on the Job Demands-Resources Model (Bakker & Demerouti, 2007). Under this model, job demands refer to the "physical, psychological, social, and organizational aspects of a job that require sustained efforts or skills" (Ybema et al., 2014, p. 1388), such as shift work, manual labor, or time and emotional demands. Job resources include "all physical, psychological, social and organizational aspects of the job" (Ybema et al., 2014, p. 1388) that result in achievement of work goals, decreased job demands, or enhanced growth or development for an employee.

In the STREAM questionnaire, these job characteristics are measured through questions related to respondents' profession and industry; their working hours, including overtime and shift work; job restructuring; workload; autonomy; physical, emotional, and mental demand; social support; bullying and intimidation; and organizational justice (Ybema et al., 2014). Under the STREAM framework, there is an expectation that negatively-viewed job characteristics would influence retirement-aged employees to retire fully. Retirement-aged employees who incurred more positive job characteristics would be expected to continue working, seek bridge employment, or return to work after a period of retirement.

The skills and knowledge determinant in STREAM was developed based on the Demands-Abilities Fit Model (Piasentin & Chapman, 2006). It is used to measure the skills and knowledge that an individual must possess to fit into a job or organization, along with the investments one could make to improve this fit. In the STREAM questionnaire, these characteristics are measured through questions related to the extent that an employee searched actively for activities that would allow for expansion of skills and knowledge, and/or to adapt their current skills and knowledge to future changes in their jobs (de Wind et al., 2014; Ybema et al., 2014). Under the STREAM framework, a retirement-aged employee would be expected to

retire fully if they did not seek to fit into their organization. In contrast, an employee would be expected to continue working, seek bridge employment instead of retiring fully, or return to work if they tried actively to increase their fit within the organization.

Social factor determinants are included in STREAM in recognition that a partner's work status and level of support for working or not working can influence one's decision to continue working (Ybema et al., 2014). Additionally, this determinant reflects that one might require social participation in society once they leave the workforce. In the STREAM questionnaire, these social factors were measured through questions related to employment status and social support of a partner, work-family balance, unpaid work, and life events (Ybema et al., 2014). Under the STREAM framework, a retirement-aged employee would be expected to retire if their partner was not working and/or was not supportive of their continuing to work. The employee would be expected to continue working, seek bridge employment, or return to work after a period of retirement if their partner was supportive of the person working or was working themselves. Moreover, a retirement-aged worker would be expected to retire if they felt able to meet their social needs outside of work. They would be expected to keep working, seek bridge employment, or return to work after a period of retirement if they did not feel they could fulfill their social needs outside of work.

Financial factors are included in STREAM to measure the opportunity for one to retire from a financial point of view. The STREAM questionnaire measured these factors through questions related to the contribution to household income and the financial situation of the household and company (Ybema et al., 2014). Under the STREAM framework, one would be expected to retire if they were either objectively, subjectively, or a combination of the two, in a financial situation to provide for their retirement with current retirement resources. They would

be expected to continue working, seek bridge employment, or return to work after a period of retirement if they were neither objectively nor subjectively in a financial situation to fully retire.

In the STREAM framework, it is proposed that each of these determinants works together to influence one's ability, motivation, or opportunity to work. In turn, these factors are understood to influence one's work productivity or employment transitions depending upon the outcome of interest (Ybema et al., 2014). This idea is based on the Ability, Motivation, and Opportunity model, which is used in human resources management to improve employee performance (Applebaum, Bailey, Berg, & Kalleberg, 2000), as well as the Motivation, Opportunity, and Ability model, which is applied to public health and social behavior (Rothschild, 1999). Finally, in the STREAM framework, it is acknowledged that interrelations between any variable in the framework and several demographic characteristics can moderate the effect on work productivity and/or employment transitions. These demographic characteristics include gender, age, education level, and initial employment status (Ybema et al., 2014).

Empirical Studies in which the STREAM Framework was Used

The STREAM framework has been used in many empirical studies in which researchers utilized data from STREAM study cohorts (de Wind et al., 2016; de Wind, Scharn, Gueskins, van der Beek, & Boot, 2018; de Wind et al., 2016; Leijten et al., 2014; Sewdas et al., 2017; Ybema et al., 2014). Of these studies, three were directly relevant to this research. Sewdas et al. (2017) used the framework to guide a study related to working beyond retirement age. They found that several determinants from the STREAM framework were important predictors of working beyond retirement age: Financial benefits, good health, and flexible work arrangements. Sewdas et al.'s study (2017) also revealed an additional determinant of employment transitions: Purpose in life, via maintenance of daily routines that were in place while working.

De Wind et al. (2016) used the STREAM framework to explore factors related to a person's decision to work while retired. They found that high work engagement, good physical health, poor financial situations, and voluntary work predicted working beyond retirement. In another study on delayed retirement, de Wind et al. (2018) used the STREAM framework as a guide and found that workers without a chronic disease were more likely to work beyond retirement compared to workers with a chronic disease. Moreover, when comparing workers with and without chronic diseases, work and health factors predicted working beyond retirement in both groups. However, social factors predicted working beyond retirement in retirees without a chronic disease. Demographic and socioeconomic characteristics did not predict working beyond retirement in any group.

The results of these studies suggest that the STREAM framework is a useful tool for guiding independent variable selection, as well as for the construction and interpretation of hypotheses for studies of retirement transitions. Through these studies, researchers have provided evidence that variables from each of the five determinants in the framework (health factors, work characteristics, skills and knowledge, social factors, and financial factors) have been associated with employment transitions. In addition, researchers have shown that these variables should be included in future studies of employment transitions. Moreover, Sewdas et al. (2017) have suggested that the inclusion of a sixth determinant, purpose in life, is necessary to capture all known determinants of employment transitions.

Forced Retirement

In the literature discussed above, retirement is viewed as a motivated decision. However, many workers do not have the luxury of making the transition to retirement on their own terms (van Solinge & Henkens, 2007; Wang & Shultz, 2010). In investigating factors associated with

forced retirement, some researchers have defined "forced" as reflecting an individual's perception of whether their retirement was voluntary or involuntary (Beehr, 1986; Szinovacz & Davey, 2005). According to Szinovacz and Davey (2004), a person's perception of involuntary retirement derives from either choice or motivation. That is, individual circumstances (such as disability or labor-market conditions) can eliminate the option for a person to continue working in career jobs (Quinn & Burkhauser, 1990; Szinovacz & Davey, 2004). Similarly, workers may feel forced into retirement if they feel that the costs of working outweigh the benefits (Quinn & Burkhauser, 1990; Szinovacz & Davey, 2004). Szinovacz and Davey (2004) found that almost one-third of retirees surveyed had been forced into retirement, with individuals citing health limitations, job displacement, and family care obligations as the reason for retirement. Forced retirement is relatively unexplored as an area of research. However, based on results of previous studies, it may be important to distinguish between individuals who felt their retirement was voluntary and those who felt they were forced out of work when using any theoretical lens to explore retirement transitions.

Mortgage Debt Research

Based on the literature reviewed in the previous section, retirement transitions appear to be driven by health, job, skills and knowledge, social, and financial characteristics. Several financial characteristics have been examined in previous studies in which antecedents of retirement transitions were investigated. However, the role of debt in retirement transition decisions remains largely unexplored to date.

Debt Trends

American households had $12.58 trillion in debt at the end of 2016. Although household debt has not yet reached the great recession peak of $12.68 trillion, it grew by $460 billion in 2016. At this growth rate, household debt is projected to return to its recession-era peak in 2019 (Federal Reserve Bank of New York, 2016). Part of the increase in household debt can be attributed to the growth in home mortgages. There were $617 billion in newly originated mortgages in the US during the last quarter of 2016. This level is the highest since the third quarter of 2007, immediately prior to the real estate market crash of 2008 (Federal Reserve Bank of New York, 2016).

One concerning aspect of this growth in household debt is that older individuals, aged 55 and above, are experiencing the largest relative increases. According to the Consumer Financial Protection Bureau (CFPB) (2014), older individuals are carrying more mortgage debt into retirement than in previous decades. Between 2001 and 2011, the number of households carrying mortgages increased from 22% to 30% for homeowners aged 65 and older; and more than doubled from roughly eight percent to 21% during that same period (CFPB, 2014). In addition, the dollar amounts of mortgages for the older population increased over this period, with median mortgage debt growing from $43,300 to $79,000 (CFPB, 2014).

Financial and Psychological Costs of Debt

Policymakers, financial planners, and other stakeholders have expressed concern over these trends in mortgage debt among older Americans (Lusardi, et al., 2016). In response, Lusardi et al. (2016) performed an extensive empirical investigation into debt patterns and financial vulnerability among pre-retirees in the US aged 56 to 61. The authors utilized data from the 1992, 2004, and 2010 cohorts of the Health and Retirement Study and the 2012 National

Financial Capability Study. Using the HRS cohorts, the researchers analyzed debt patterns by cohort. They found that recent (that is, younger) cohorts had taken on significantly more debt and owned significantly more expensive homes than previous cohorts.

In addition, Lusardi et al. (2016) found that recent HRS cohorts were in more financial distress than their predecessors, with higher overall debt in relation to home equity, higher mortgage loan to value ratios, and a greater number of individuals with savings less than $25,000. Being unmarried, non-white, less educated, having a lower income, having more children, and being in poor health were also significantly associated with higher likelihood of financial distress among pre-retirees. The researchers then used the National Financial Capability Study data to run a multivariate regression analysis on debt and financial distress indicators. They found that being African-American and having more children were associated with excessive amounts of debt. In contrast, being Asian and having a higher income were associated with less debt. Additionally, respondents who reported that they had incurred income shocks over the previous year acknowledged that they were in financial distress due to over-indebtedness.

In addition to the financial implications of home mortgage use, researchers have proposed the psychological costs of carrying debt. For example, researchers have provided evidence that debt is negatively related to financial satisfaction in retirement (Brown et al., 2005; Seay et al., 2015). Moreover, it appears that being comfortable with debt also plays a role in the impact of mortgage-holding on the financial satisfaction of retirees. According to Seay et al. (2015), retirees with mortgage debt were less financially satisfied than those without mortgage debt. However, mortgage debt was not a significant predictor of financial satisfaction when debt comfort was added to the model. Conversely, other researchers have found that carrying debt

could increase financial wellbeing when that debt is used appropriately (Lown & Ju, 1992; Michelangeli, 2012). It is possible that, in addition to the use or non-use of a home mortgage, the degree of leverage and ability to pay off a mortgage might influence financial satisfaction and wellbeing in retirement.

Motivation for Mortgage Debt

Given these rapid changes in debt patterns for older Americans, researchers have started to explore reasons for increased debt among this population. According to Christelis, Ehrmann, and Goergarakos (2015), the rise in housing prices in the US combined with growth in mortgages have been to blame for the rapid increase in debt among American adults. Mortgage sales tactics, including persuasive advertising and lenders steering borrowers into expensive loan products, have contributed to increases in both the number and dollar amount of mortgages (Agarwal, Amromin, Ben-David, & Evanoff, 2016; Gurun, Matvos, & Seru, 2016). Researchers have also started to explore the dynamics of increased financial distress among older Americans due to increased amounts of debt. Butrica and Karamcheva (2013) have suggested that increased levels of debt affect when individuals retire or begin to claim Social Security benefits. Pottow (2012) found that individuals aged 65 or older were the fastest growing age group in terms of bankruptcy filings.

Based on the existing literature, carrying mortgage debt into retirement might negatively impact both the financial and psychological health of retirees. However, some researchers have suggested that the trend of Americans retiring with mortgage debt should not be cause for alarm. These researchers reason that retiring with mortgage debt could be a complex financial tradeoff strategy employed by financially sophisticated households who are trying to build wealth through housing leverage, or using mortgage debt to finance potential investment returns. In a

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seminal article, Amromin et al. (2007) presented tradeoff theory as an arbitrage strategy whereby households build wealth by purposefully retaining their low-interest mortgages to take advantage of the mortgage interest tax deduction (Internal Revenue Service, 26 USC § 163), using their savings to invest in higher-yielding assets. Although the Tax Cuts and Jobs Act of 2017 could limit the ability of some taxpayers to take advantage of the mortgage interest deduction, this opportunity will still exist for many taxpayers.

Smith, Finke, and Huston (2012) sought to explore whether financially sophisticated older adults were using the tradeoff theory to build wealth. They used pooled data from 1995, 1998, 2001, 2004, and 2007 administrations of the Survey of Consumer Finances to understand the association between financial sophistication and the use of housing leverage. Their sample was restricted to households where the head of household or partner was at least 55 years of age and owned at least one residence. The financial sophistication construct was built from a measure created and utilized by Huston, Finke, and Smith (2012) specifically for use in the Survey of Consumer Finances. Using a regression model that took into account income taxes, the authors found evidence that financially sophisticated older adults were using the tradeoff strategy. Specifically, households that itemized deductions on their tax returns were more likely to be housing leveraged. Further, households with riskier asset portfolios were more likely to be highly leveraged than not leveraged at all. Through additional results from a multivariate analysis, the authors showed that respondents in the highest quintile for financial sophistication were more than twice as likely to have high leverage and 90% more likely to have low as opposed to no leverage.

Smith et al. (2012) found that financially sophisticated households, households that itemized tax returns, and households with riskier asset portfolios were leveraged, suggesting that

households were attempting to build wealth through the tradeoff theory. However, the authors also found that marginal tax rates were not statistically significant to the use of financial leverage. It would be expected that households in higher marginal tax brackets would be more likely to use tradeoff strategies to build wealth because they would realize greater benefit from the tax deduction due to the progressive tax structure used in the US. Regarding the characteristics of highly leveraged households, the authors showed that households with liquidity constraints, low financial net worth, and children in the home were more likely to be highly leveraged.

In another exploration of the idea that households use increased housing leverage as a wealth-building tradeoff strategy, Kim, Seay, and Smith (2016) used pooled data from the 2010 and 2013 Survey of Consumer Finances (SCF) to investigate the relationship between loan-to-value ratios and financial sophistication after the Great Recession. The authors limited their sample to respondents between 30 and 60 years of age. Like Smith et al. (2012), Kim et al. (2016) used Huston et al.'s (2012) financial sophistication measure and found that financially sophisticated households were more likely to hold mortgages. Additional support for the argument that households were choosing to use leverage as a wealth-building strategy came from the study's findings that financially sophisticated adults were more likely to have middle or high leverage as compared to low leverage. In addition, individuals who itemized deductions on their tax return were more likely to carry higher housing leverage. Like Smith et al.'s (2012) finding that liquidity constrained households were more likely to be highly leveraged, Kim et al. (2016) found that income constrained households (defined as households with a mortgage payment to income ratio greater than 28%) were more likely to carry higher housing leverage.

Based on these contradictions in the empirical literature on this topic, a person's decision to pre-pay mortgage debt or carry it into retirement involves complex dynamics and may result in varying outcomes. A household that uses its available investable assets to pre-pay a mortgage before retirement will save the after-tax cost of future interest expense. However, that household will also forgo any after-tax investment income opportunities that those savings could have generated. Conversely, if the household chooses to carry the mortgage into retirement, investable assets will be free to generate investment income, but at the additional cost of after-tax interest on outstanding debt.

Further, households can reach points of financial distress that could include, for example, reaching a leverage limit that would make lenders unwilling to offer additional debt financing or only willing to offer new debt at an interest rate that would make leveraging cost-prohibitive. Even if it were clear that carrying mortgage debt into retirement would lead to increased net worth, it would help financial planners to know how the financial and/or psychological costs of that same mortgage contribute to the evolution of the retirement process via delayed retirement, periods of bridge employment, or unretirement.

Summary and Purpose of Current Study

Previous researchers have studied retirement transition decisions. However, most researchers on this topic have focused on health, psychological, and social factors as antecedents of employment transitions (Rooks et al., 2017; von Bonsdorff et al., 2009). To date, researchers have not explored the potential influence of well-defined financial factors—especially where debt, and more specifically home mortgage use, is concerned. In studies in which financial factors have been included as predictors of employment transitions, researchers have used either subjective financial indicators or focused only on net worth and investment assets (Kerr &

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Armstrong-Stassen, 2011; Zissimopoulos & Karoly, 2007). In one study, in which debt was included as a predictor of employment transitions, researchers measured debt as a composite variable (Kim & DeVaney, 2005). The researchers did not identify the specific influence of mortgage debt on retirement transition decisions. There is no known study in which researchers have investigated the association between mortgage debt and retirement transitions. Further, no one theory can be used to explain the retirement transition phenomenon.

Each year, retirement-aged Americans who are working full-time have three options: a) Remain in full-time employment, b) transition to bridge employment, or c) transition to full retirement. In this study, the researcher investigated how retirement-aged homeowners navigate these retirement transition decisions and what factors are associated with individuals choosing one option over another. Specifically, the relationship between home mortgage debt and retirement transition decisions was investigated using the STREAM framework to guide the hypotheses and interpretation of results. Results from this study should be of interest to American policymakers, financial planners and educators, business organizations, and other researchers.

Research Questions

Through this study, the researcher sought to investigate the association between home mortgage debt and retirement transitions. Under investigation were the transitions from a) the workforce to full retirement and b) full-time work to the mutually exclusive competing risks of bridge employment and full retirement. Specifically, the following research questions were explored using the STREAM framework to explain and predict the outcomes.

1. Is home mortgage use associated with the timing of the transition from the workforce to full retirement?

2. Among retirement-aged homeowners with home mortgages, is the loan-to-value ratio of the mortgage associated with the timing of the transition from the workforce to full retirement?

3. In a competing risks model, is home mortgage use associated with the transition from full-time work to bridge employment instead of to full retirement?

Conceptual Model and Hypotheses

Conceptual Model

The STREAM framework (Ybema et al., 2014) is a foundation that can be used to investigate factors that influence retirement transitions. This framework was designed based on the idea that retirement transition decisions are not driven by one factor—rather, they are influenced by determinants related to an individual's health conditions, pre-retirement work environment, skills and knowledge, social context, financial situation, and demographic characteristics. Informed by a review of the relevant literature and the STREAM framework (Ybema et al., 2014), a conceptual model was drawn that depicts the relationship between home mortgage use and retirement transitions. In this model, variables that have been associated with retirement transitions in previous empirical research were controlled for.

Figure 2.3. Illustration of the Conceptual Model
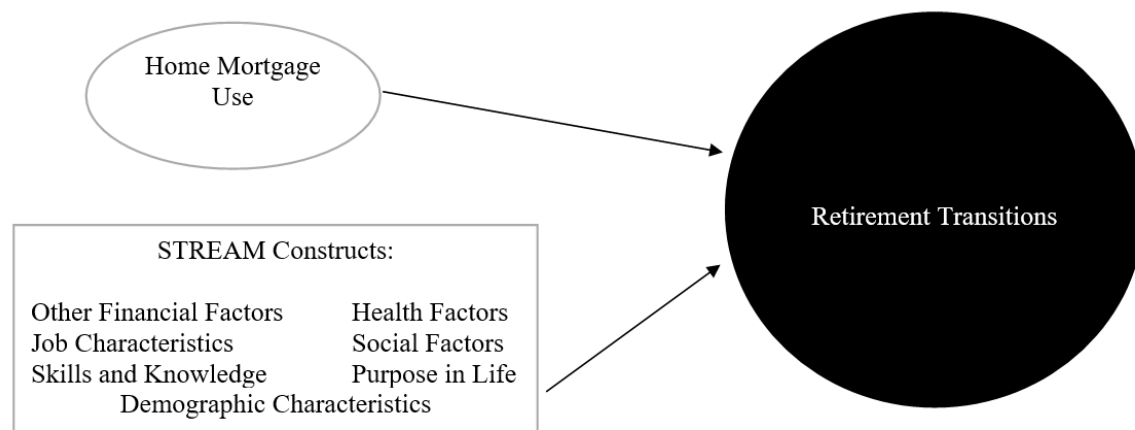
Hypotheses

As shown in Figure 2.3, in the conceptual model used in this research, retirement

transitions were understood to be influenced by home mortgage use, while controlling for the

constructs of the STREAM framework. The retirement transitions under investigation were the

transitions from a) the workforce to full retirement and b) full-time work to bridge employment

instead of to full retirement. The key association under investigation in this study was home

mortgage use. In initial analyses, this association was measured by the presence of a home

mortgage. Next, this association was measured by the loan-to-value ratio of that mortgage in

subsequent analyses limited to a sample of homeowners with home mortgages. Based on a

review of the previous literature (e.g., Brown et al., 2005; Lusardi et al., 2016; Seay et al., 2015),

it was expected that individuals with home mortgages and with higher loan-to-value ratios would

feel less financially and psychologically ready to exit the workforce. As a result, it was expected

that these individuals would delay their transition from the workforce to retirement. The

following hypotheses were devised to be tested through this research:

H1   Home mortgage use will be negatively associated with the odds of transitioning from the workforce to full retirement.

H2   In a subsample of only homeowners with home mortgages, the loan-to-value ratio will be negatively associated with the odds of transitioning from the workforce to full retirement.

H3   In a competing risks model predicting the conditional probability of transitioning from full-time work to bridge work or to full retirement, home mortgage use will be negatively associated with the odds of transitioning from full-time work to bridge employment.

H4   In a competing risks model predicting the conditional probability of transitioning from full-time work to bridge work or to full retirement, home mortgage use will be negatively associated with the odds of transitioning from full-time work to full retirement.

H5   In a competing risks model predicting the conditional probability of transitioning from full-time work to bridge work or to full retirement, home mortgage use will be positively associated with the conditional probability of transitioning from full-time work to bridge employment instead of to full retirement.

Expected Relationships

Financial factors

Based on the existing literature and the STREAM framework, it was expected that other objective indicators of household financial resources would influence retirement transitions (e.g., Gruber & Wise, 1999; Sewdas et al., 2017; Ybema et al., 2013). Specifically, it was expected

that increased net worth, eligibility for retirement income benefits, and access to employer-sponsored health insurance in retirement would encourage a retirement-aged individual to retire fully instead of remaining employed full-time or seeking bridge employment. Conversely, pre-retirement annual household income and the presence of financial dependents in the household were expected to discourage the individual from retiring fully.

Expectations related to financial factors

1.1   Net worth will be positively associated with the transition from the workforce to full retirement and from full-time work to full retirement.

1.2   Annual pre-retirement household income will be negatively associated with the transition from the workforce to full retirement and from full-time work to full retirement.

1.3   Eligibility for retirement benefits and access to employer-sponsored health insurance in retirement will be positively associated with the transition from the workforce to full retirement and from full-time work to full retirement. Conversely, these variables will be negatively associated with the transition from full-time work to bridge work instead of to full retirement.

1.4   The presence of financial dependents in the household will be negatively associated with the transition from the workforce to full retirement and from full-time work to full retirement. Conversely, this variable will be positively associated with the transition from full-time work to bridge work instead of to full retirement.

Health factors

Based on the STREAM framework and review of the existing literature (e.g., de Wind et al., 2018; Shultz & Wang, 2007; Szubert & Sobola, 2005), it was expected that retirement-aged

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individuals in better physical health would remain in the workforce longer than less physically healthy individuals, who would be expected to retire fully as soon as possible.

Expectations related to health factors

1.5 Number of limitations in performing activities of daily living will be positively associated with the transition from the workforce to full retirement, and from full-time work to full retirement. Conversely, this variable will be negatively associated with the transition from full-time work to bridge work, and from full-time work to bridge work instead of full retirement.

1.6 Self-reported health status will be negatively associated with the transition from the workforce to full retirement, and from full-time work to full retirement. Conversely, this variable will be positively associated with the transition from full-time work to bridge work, and from full-time work to bridge work instead of full retirement.

Job characteristics

Based on the STREAM framework and previous empirical results (e.g., de Wind et al., 2016; Ybema et al., 2014) it was expected that several characteristics of a retirement-aged individual's most recent full-time employment would result in a decision to remain in the workforce longer. Specifically, it was expected that being self-employed as opposed to working in a wage and salary job, an increased number of years tenure at one's current job, and being satisfied with one's job would encourage individuals to remain in the workforce. Conversely, finding one's job stressful, along with increased feelings of chronic work discrimination, were expected to increase the likelihood of an individual exiting the workforce.

Expectations related to job characteristics

1.7   Self-employment and job satisfaction will be negatively associated with the

transition from the workforce to full retirement, from rull-time work to bridge

work, and from full-time work to full retirement. Conversely, these characteristics

will be positively related to the transition from full-time work to bridge work

instead of to full retirement.

1.8   Job tenure will be positively associated with the transition from full-time work to

bridge work instead of to full retirement.

1.9   Job stress and chronic work discrimination will be positively associated with the

transition from the workforce to full retirement, from full-time work to bridge

work, and from full-time work to full retirement. Conversely, these variables will

be negatively related to the transition from full-time work to bridge work instead of

to full retirement.

Skills and knowledge

Using the STREAM framework and based on a review of the literature (e.g., de Wind et al., 2014; Ybema et al., 2014), it was expected that retirement-aged individuals seeking to improve their fit within their organization by expanding their skills and knowledge would remain in the workforce longer than those who were not taking advantage of such opportunities.

Expectations related to skills and knowledge factors

1.10   Increased belief in the opportunity to develop new skills at work will be negatively

associated with the transition from the workforce to full retirement, from full-time

work to bridge work, and from full-time work to full retirement. Conversely, this

variable will be positively associated with the transition from full-time work to bridge work instead of full retirement.

Social factors

Based on the STREAM framework and a review of the literature (e.g., Sewdas et al., 2017; Ybema et al., 2014), it was expected that retirement-aged individuals with a retired partner, and who felt strongly that their partner provided positive social support, would be more likely to retire fully instead of continuing to work. This expectation was based on the assumption that these characteristics would contribute to an individual's psychological readiness to retire. Conversely, individuals who felt a need to maintain the social status enjoyed at work and believed that work enhanced their personal life were expected to remain in the workforce.

Expectations related to social factors

1.11 A retired partner and increased positive partner social support will be positively associated with the transition from the workforce to full retirement, from full-time work to bridge work, and from full-time work to full retirement. Conversely, these characteristics will be negatively associated with the transition to bridge work instead of to full retirement.

1.12 Perceived social status and an increased belief that work enhances personal life will be negatively associated with the transition from the workforce to full retirement, from full-time work to bridge work, and from full-time work to full retirement. Conversely, these variables will be positively associated with the transition to bridge work instead of to full retirement.

Purpose in life

Based on evidence from Sewdas et al. (2017), it was expected that individuals with a sense of direction or a purpose in life outside of work would be more likely to exit the workforce permanently.

Expectations related to purpose in life characteristics

1.13 Having a sense of direction or purpose in life will be positively associated with the transition from the workforce to full retirement, from full-time work to bridge work, and from full-time work to full retirement. Conversely, this characteristic will be negatively associated with the transition to bridge work instead of to full retirement.

Demographic characteristics

There is consistent evidence in the existing literature that age is among the strongest predictors of full retirement. Further, there is a consensus in the existing literature that men and those with higher levels of education remain in the workforce longer than women or individuals with lower levels of education. Finally, based on the STREAM framework, race was expected to affect retirement transition decisions. However, there was no expectation regarding the direction of that effect. Findings regarding the role of race in retirement have been mixed in empirical studies to date.

Expectations related to demographic characteristics

1.14 Age and time (wave) will be positively associated with the transition from the workforce to full retirement, from full-time work to bridge work, and from full-

time work to full retirement. Conversely, age and time (wave) will be negatively associated with the transition to bridge work instead of to full retirement.

1.15 Being a college graduate and being male will be negatively associated with the transition from the workforce to full retirement, from full-time work to bridge work, and from full-time work to full retirement. Conversely, these characteristics will be positively associated with the transition to bridge work instead of to full retirement.

A summary of the hypothesized and expected relationships that were examined in this study can be found in Table 2.1.

Table 2.1

Summary of Expected Relationships

	Expected Effects				
	Research Question 1	Research Question 2	Research Question 3		
	Transition from Workforce to Full Retirement	Transition from Workforce to Full Retirement	Transition from Full-Time Work to Bridge Work	Transition from Full-Time Work to Full Retirement	Transition from Full-Time Work to Bridge Work Instead of to Full Retirement
Household Financial Factors					
Home Mortgage	-		-	-	+
Loan-to-Value Ratio		-			
Inverse Hyperbolic Sine of Net Worth	+	+	N/E	+	N/E
Natural Logarithm of Annual Income	-	-	N/E	-	N/E
Eligible for Retirement Benefits	+	+	N/E	+	-
Employer-Spons. Health Ins. in Retirement	+	+	N/E	+	-
Financial Dependents	-	-	N/E	-	+
Health Factors					

ADL Limitations	+	+	-	+	-
Self-Reported Health Status	-	-	+	-	+
Pre-Retirement Job Characteristics					
Self-Employed	-	-	-	-	+
Years Tenure at Current Job	N/E	N/E	N/E	N/E	+
Job Stress	+	+	+	+	-
Job Satisfaction	-	-	-	-	+
Chronic Work Discrimination	+	+	+	+	-
Skills and Knowledge					
Opportunity to Develop New Skills	-	-	-	-	+
Social Factors					
Partner Retired	+	+	+	+	-
Positive Partner Social Support	+	+	+	+	-
Perceived Social Status	-	-	-	-	+
Work Enhances Personal Life	-	-	-	-	+
Purpose in Life					

Sense of Direction/Purpose	+	+	+	+	-
Demographic Characteristics					
Age	+	+	+	+	-
Male	-	-	-	-	+
Race White	N/E	N/E	N/E	N/E	N/E
College Graduate	-	-	-	-	+
Time (Wave)	+	+	+	+	-

Chapter 3 - Methodology

Data and Sample

Data

In this study, data collected during the 2006 through 2014 biennial collection waves of the HRS were utilized. The HRS is the ideal dataset for studies of retirement transitions: It is the largest nationally representative longitudinal panel study of Americans over age 50 and includes detailed economic information (Health and Retirement Study, 2015). The HRS is sponsored by the National Institute on Aging (grant number NIA U01AG009740) and is conducted by University of Michigan researchers.

The HRS began in 1992 with a sample of respondents born between 1931 and 1941 and their partners. In 1998, the HRS merged with the Asset and Health Dynamics Among the Oldest Old study of respondents born before 1924. In addition to the merger of the HRS and Asset and Health Dynamics Among the Oldest Old studies, the 1998 wave of data collection added two additional cohorts: Respondents born between 1924 and 1930 (often termed the children of the Great Depression) and respondents born between 1942 and 1947 (often referred to as War Babies). In 2004, the early Baby Boomers born between 1948 and 1953 were added to the HRS, followed by the addition in 2010 of mid-Baby Boomers born between 1954 and 1959, and the 2016 addition of late Baby Boomers born between 1960 and 1965.

When the HRS began in 1992, the study was designed to perform face-to-face interviews in the baseline year and then telephone interviews for subsequent waves of data collection. However, the study changed to a mixed mode design in 2006, with half the respondents answering face-to-face interviews, half answering telephone interviews, and the halves switching for each biennial collection. In the case of respondent death between data collection waves, an

exit interview is conducted with a proxy, usually a relative or another caregiver. Biennial waves

of the HRS have between 18,000 to 23,000 respondents in any given wave. The HRS has a low

attrition rate, with re-interview rates ranging between 86% and 89% for each wave of data

collection (HRS, 2015). In the HRS, Black and Hispanic individuals and Florida residents are

oversampled intentionally (HRS, 2015). Therefore, individual and household sample weights

were used in this study to ensure the analytic sample was nationally representative. Further, the

HRS includes imputed values for some economic information. These values were used in this

study to maintain sample size.

Given the complexity and volume of information available from the HRS, the RAND

Center for the Study of Aging creates and maintains a comprehensive and straight-forward data

file for use by researchers (RAND Center for the Study of Aging, 2016). The RAND HRS file

was used as the data file for this study. In addition to the RAND HRS file, data from the 2006–

2014 Leave-Behind Psychosocial and Lifestyle Questionnaire were used to measure

psychological characteristics relevant to employment. The Leave-Behind Questionnaire is

administered to half of the longitudinal panel during each survey wave after the core interview

and is then returned by mail.

Sample

In this study, the researcher sought to investigate factors associated with an individual's

retirement transition decisions, with home mortgage debt the key variable of interest. The period

of interest for this analysis was Wave 8 (2006) through Wave 12 (2014) of the HRS, due to the

continuous availability during this time-period of variables necessary to conduct this analysis

using the STREAM framework. The sample of interest was homeowners—the key independent

variable under investigation was the use of home mortgages and homeowners would be the only

respondents able to choose to retain or pay off mortgages as they move toward retirement. Based on the STREAM framework, it appears that some partner characteristics affect retirement transition decisions. For this reason, the sample for this study included only respondents in partnered relationships to allow for the inclusion of those partner characteristics in the analyses. To prevent left-censoring (i.e., the probability that a respondent could have already transitioned from full-time work to bridge work or retirement and then back again to full-time work before the time-period under analysis), the sample included only individuals who reported working full-time during each wave from the time of cohort entry through the time of the capture of pre-retirement variables.

In the STREAM framework, retirement is viewed as a decision. For this reason, any respondent who indicated that they felt they were forced into retirement at any data measurement period was removed from the sample. Observations were listwise deleted within-wave if they were missing responses on variables of interest (Young & Johnson, 2015). Wave 13 (2016) data from the HRS was available at the time of writing. However, this data was considered early release at that time, with the potential for uncorrected errors. In addition, the Wave 13 data included no imputations. Given these limitations, Wave 13 was not included in these analyses.

Measurement

Dependent Variables

Each dependent variable associated with the three research questions investigated in this study was a form of employment status. Research Questions 1 and 2 concerned the transition from the workforce to full retirement status. Research Question 3 concerned the transition from full-time work status to the competing risks of either bridge employment or full retirement.

Previous researchers (Gustman & Steinmeir, 2000; Kim & DeVaney, 2005; Wang & Shi, 2014) have noted the importance of measuring employment status from both a subjective and objective perspective because respondents may have different internal standards for their definition of retirement.

In the HRS, these differences are taken into consideration. Respondent answers to subjective questions about labor force status are cross-referenced with responses to other subjective questions, such as, "at this time, do you consider yourself to be completely retired, partly retired, or not retired?", along with any mention of retirement or partial retirement. Moreover, responses to these subjective questions are cross-referenced with responses from objective questions, such as the number of paid working hours and the amount of income earned from employment. Next, all available information is used to sort through discrepancies and make a labor force status determination (RAND, 2015). For analyses in this study, an HRS labor force status of "full-time" was defined as full-time work status; a labor force status of "part-time" or "partly retired" was defined as bridge work status; and a labor force status of "retired" or "not in labor force" was defined as fully retired status.

Independent variables

Independent variables were placed into seven groups, guided by the STREAM framework: Household financial factors, health factors, job characteristics, skills and knowledge, social factors, purpose in life, and demographic characteristics.

Household financial factors

In the STREAM framework (Ybema et al., 2014), it is proposed that an individual's financial situation significantly affects their opportunity to exit the workforce. In this study, the presence of a home mortgage was the key independent variable for Research Questions 1 and 3.

HRS researchers collected information about participants' first and second mortgage amounts in nominal dollars and imputed missing data. Mortgage use was binary coded as 1 if the total amount of the first and second mortgage was greater than zero, and was binary coded as 0 otherwise. Research Question 2 concerned only respondents who used home mortgages. In this study, the loan-to-value ratio of the mortgage was used as the key independent variable. Both mortgage measurements were considered as time-variant variables.

In this study, net worth was captured from the "net value of total wealth" variable in the HRS: That is, the sum of all wealth components less all debt, in nominal dollars, with missing data imputed by the HRS. Net worth was then measured as a continuous variable with an inverse hyperbolic sine transformation to account for the skewness of net worth data. This approach is preferred to the natural log method because the inverse hyperbolic sine transformation allows for the use of negative and zero values (Friedline, Masa, & Chowa, 2014). For one set of analyses in this study, the sample was subset into net worth quartiles, based on initial net worth as measured in either 2006 or 2008 when the pre-retirement variables were captured.

Income, retirement benefit eligibility, access to employer-sponsored health insurance in retirement, and the presence of financial dependents in the household were used as independent variables in the financial factors group in this study. Total income was used to refer to the sum of all household income, reported in nominal dollars and measured as a natural logarithmic transformed continuous variable after adding 1 to household income greater than or equal to zero to account for the skewness of income data. In this study, total income was measured in either 2006 or 2008, when pre-retirement variables were captured. Retirement benefit eligibility was calculated in accordance with Social Security benefit tables (United States Social Security Administration, 2018) based on age in months at the survey end date for each given wave. This

approach is consistent with Olson's (1999) methodology for identifying respondents eligible for

Social Security benefits. The availability of employer-sponsored health insurance in retirement

was considered time invariant for the analyses, measured by the question asked of 2006 and 2008

HRS respondents: "Does employer sponsored health insurance cover retirees?". A "yes"

response from either the respondent or their partner was coded as 1. Finally, the presence of

financial dependents was measured by the question, "were any children, parents, or other

relatives dependent on you for more than half of their support?". A "yes" response was coded as

1. The measurement of each household financial factor is summarized in Table 3.1.

Table 3.1

Measurement of Household Financial Factors

Variable	Measurement
Home Mortgage Use	Binary, 1 if mortgage; otherwise 0
Loan-to-Value Ratio	Continuous
Net Worth	Continuous, with inverse hyperbolic sine transformation
Natural Logarithm of Income	Continuous
Eligibility for Retirement Income Benefits	Binary, 1 if eligible; otherwise 0
Availability of Employer-Sponsored Health Insurance in Retirement	Binary, 1 if available; otherwise 0
Financial Dependents	Binary, 1 if dependents; otherwise 0

Health factors

In the STREAM framework (Ybema et al., 2014), it is proposed that an individual's

health affects their employment transitions. Limitations in performing activities of daily living

and self-reported health status were designated as time-variant health factors for this analysis.

The measurement of each health factor is summarized in Table 3.2. Number of activities of daily living (ADL) limitations was operationalized based on Wallace and Herzog's (1995) construct, where an ADL is recorded as 1 if a participant responded with "any difficulty," "a little difficult," "somewhat difficult," or "very difficult/can't do" to questions related to bathing, dressing, eating, getting out of bed, and walking across the room. A zero was assigned if the respondent answered, "not difficult at all." Scores ranged from zero to five, with higher scores equating to a higher number of ADL limitations. Self-reported health status was measured by an HRS question in which respondents were asked to rate their health status on a Likert-type scale, with answers ranging from one (= excellent health) to five (= poor health). This scale was reverse coded for the current analysis, with higher numbers equating to better self-assessed health.

Table 3.2

Measurement of Health Factors

Variable	Measurement
ADL Limitations	6-point scale, with higher scores representing a higher number of ADL limitations
Self-Reported Health Status	5-point scale, with higher scores representing healthier status

Pre-retirement job characteristics

Under the STREAM framework (Ybema et al., 2014), positive and negative job characteristics are understood to affect retirement transition decisions. In the analyses for this study, all job characteristics were considered as time invariant and were captured in either 2006 or 2008, depending on the year in which the respondent was eligible for the HRS Leave-Behind Questionnaire. Self-employment, years of tenure at one's current job, job stress, job satisfaction,

and chronic work discrimination were considered pre-retirement job characteristics for the analyses. The measurement of each job characteristic variable in this study is summarized in Table 3.3.

Self-employment was measured using a question that asked working respondents, "do you work for someone else, are you self-employed, or what?". Responses were binary coded as 1 if the respondent indicated that they were self-employed, and binary coded as zero if they were not self-employed. Years of tenure at one's current job were calculated in years, rounded to the nearest tenth, using the current interview date minus the current job start date.

Pre-retirement job stress was measured by an HRS question in which respondents were asked to rate their agreement with the statement that their "current job involves much stress" on a Likert-type scale ranging from one (= strongly agree) to four (= strongly disagree). Responses were reverse coded for the current analysis so that higher numbers indicated higher levels of job stress. Pre-retirement job satisfaction was measured via the HRS question, "all things considered, I am satisfied with my job" (one = strongly disagree and four = strongly agree). Chronic discrimination experienced at work was operationalized from an index established by Williams, Jackson, and Anderson (1997). Respondents were asked about the frequency with which they experienced six situations that could arise at work (unfairly given tasks at work that no one else wants to do, watched more closely than others, bothered by supervisor or coworkers making slurs or jokes about women or racial or ethnic groups, have to work twice as hard as others at work, ignored or not taken seriously by boss, and unfairly humiliated in front of others at work). Consistent with guidance provided by the HRS (Smith et al., 2017) scores of one (= never) to six (= almost every day) were averaged across six items, with higher scores indicating higher levels of perceived discrimination. Also consistent with Smith et al. (2017), observations with more

than three missing values within the scale were defined as missing. This scale demonstrated good internal reliability during the sample years used in the current analyses, with a Cronbach's alpha score of .81 to .85 (Smith et al., 2017).

Table 3.3

Measurement of Job Characteristics

Variable	Measurement
Self-Employed	Binary, 1 if self-employed; otherwise 0
Years Tenure at Current Job	Continuous
Job Stress	4-point scale, with higher scores representing higher job stress
Job Satisfaction	4-point scale, with higher scores representing higher job satisfaction
Chronic Work Discrimination	6-point scale, with higher scores representing more discrimination

Skills and knowledge

Within the STREAM framework, the skills and knowledge construct concerns
opportunities an individual pursues to perform their job effectively and to enhance their
suitability for a job or within an organization. In the current analysis, the "opportunity to develop
new skills" construct was based on the respondent's level of agreement with the statement, "I
have the opportunity to develop new skills." Agreement was measured on a Likert-type scale,
ranging from one (= strongly disagree) to four (= strongly agree). The measurement of this
variable is summarized in Table 3.4.

Table 3.4

Measurement of Skills and Knowledge

Variable	Measurement
Opportunity to Develop New Skills	4-point scale, with higher scores representing more agreement with statement

Social factors

Under the STREAM framework (Ybema et al., 2014), social determinants are understood to affect an individual's decision to continue working. Having a partner who is not working, receiving positive social support from one's partner, perceived social status, and the feeling that work enhances one's personal life were used to construct the "social factors" independent variable group. The measurement of each social factor is summarized in Table 3.5. Retired status of the respondent's partner was operationalized in the same way as the employment status indicator that served as the outcome variable. Birditt, Newton, Cranford, and Ryan (2015) established a set of three items to examine the positive social support that respondents received from their partners. Those items were, "how much do they really understand the way you feel about things?", "how much can you rely on them if you have a serious problem?", and "how much can you open up to them if you need to talk about your worries?". Responses were based on a Likert-type scale, ranging from one (= a lot) to four (= not at all), and were averaged across the three items. Observations with more than one missing value within the scale were defined as missing, consistent with guidance provided by the HRS (Smith et al., 2017). Responses were reverse coded so that higher scores indicated higher levels of positive social support. This scale was found to have good internal reliability during the sample years used in the current analyses, with a Cronbach's alpha score of .80 to .82 (Smith et al., 2017).

Cantril's Ladder (Cantril, 1965) was designed to measure how study respondents perceive their social status. In this study, respondents were asked to do the following: "Think of this ladder as representing where people stand in our society. At the top of the ladder are the people who are the best off—those who have the most money, most education, and best jobs. At the bottom are the people who are the worst off—who have the least money, least education, and the worst jobs or no jobs. The higher up you are on this ladder, the closer you are to the people at the very top and the lower you are, the closer you are to the people at the very bottom. Please mark an X on the rung on the ladder where you would place yourself." This variable ranged from one to 10, with higher scores indicating higher perceived social status.

The following three items, which were established by MacDermid et al. (2000), were used to assess the respondent's level of agreement with the statement that work enhanced their personal life: "My work leaves me enough time to attend to my personal responsibilities," "my work gives me energy to do things with my family and other important people in my life," and "because of my job, I am in a better mood at home." Responses were based on a Likert-type scale, from one (= rarely) to four (= most of the time). Consistent with guidance provided by the HRS (Smith et al., 2017), responses were then averaged to create a work enhancement index. Higher scores indicated stronger agreement with the statement. This scale demonstrated acceptable internal reliability for the sample years used in analyses for this study, with a Cronbach's alpha score of .78 to .79 (Smith et al., 2017).

Table 3.5

Measurement of Social Factors

Variable	Measurement
Partner Retired	Binary, 1 if retired; otherwise 0
Positive Partner Support	4-point scale, with higher scores representing more support
Perceived Social Status	10-point scale, with higher scores representing more support
Work Enhances Personal Life	4-point scale, with higher scores representing more enhancement

Purpose in life

Although not originally a construct of the STREAM framework (Ybema et al., 2014), Sewdas et al. (2017) found evidence that a sense of purpose in life was an important predictor of retirement transitions. In this study, purpose in life was measured by one variable and was based on the respondent's agreement with the statement, "I have a sense of direction and purpose in my life." Responses were measured on a Likert-type scale ranging from one to six, with higher scores indicating a stronger sense of direction or purpose. This measurement is summarized in Table 3.6. HRS researchers gathered information to create a "purpose in life" subscale. However, guidance from HRS (Smith et al., 2017) is to define this variable as missing if more than three items in the scale were missing. As a result of the researcher following this guidance, the number of observations was reduced drastically due to listwise deletion. Therefore, the single item measure was considered the better measure for "purpose in life" in analyses for this study.

Table 3.6

Measurement of Purpose in Life

Variable	Measurement
Sense of Direction/Purpose in Life	6-point scale, with higher scores representing more sense of direction/purpose in life

Demographic characteristics

In the STREAM framework, it is acknowledged that interrelations between any variables in the framework and individual demographic characteristics can moderate the effects on retirement transitions. Age, age squared, gender, race, and education were used as demographic characteristics in this study. Age was measured in years as a continuous variable. Consistent with Calvo, Sarkisian, and Tamborini (2012), age squared was also used in the models for this research due to the expected curvilinear relationship between age and retirement. Gender, race, and education were treated as time-invariant variables for this analysis. Due to small cell sizes, race was coded as white (one) and not white (zero). The highest level of education was collapsed into two categories: College graduate (one) and non-college graduate (zero).

Statistical Analysis

In this study, associations between home mortgages and retirement transitions were explored. Retirement transitions are major life events (Shultz & Wang, 2011; Wang & Shi, 2014). Panel data, such as the HRS, can be used to create event histories that are ideal for investigating the causal effects of events (Allison, 1982; Steele, 2011). Event history analysis requires careful analytical considerations—standard statistical modeling can lead to biased estimates and loss of information (Allison, 1982). Biased estimates and loss of information may occur due to right censoring (i.e., the possibility that an event may occur after the data collection

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period has ended) and time-varying predictor variables. Further, in most standard statistical models used to analyze panel data, it is assumed that time is measured as a continuous variable. However, event history data typically is measured in intervals of time, resulting in interval-censored data (Steele, 2011).

According to Allison (1982), discrete-time methods, which are also known as failure-time analysis and survival analysis (Steele, 2011), are ideal for event history analysis because they allow for data to be right censored. Moreover, these methods allow for the use of both time-variant and time-invariant covariates (Allison, 1982; Zissimpoulos & Karoly, 2003). Another positive feature of discrete-time methods is that they can be fitted as regression models with binary responses (Steele, 2011). In discrete-time models, it is assumed that time can take the form of positive integer values ($t = 1, 2, . . ., T$) and that a total of n independent individuals is observed ($i = 1, . . . , n$) beginning at some starting point ($t = 1$). These observations continue until time t_i, when the event in question either occurs or the observation is censored. In order to use discrete-time models effectively, the event history must be structured into person-episode based files, with one record for each of n_j episodes for each individual j (Allison, 1982; Steele, 2011). The person-episode file is then structured into a person-episode-period file, with durations of episode i of individual j expanded to t_{ij} records. The binary indicator y_{tij} for each record is defined as one if episode i of individual j ends in an event during interval t. Otherwise, it is coded as zero (Allison, 1982; Steele, 2011).

The logit model for discrete time, also known as the discrete time hazard, is the preferred model when events occur at regular discrete points in time (Allison, 2010; Allison, 2014; Jenkins, 2008; Steele, 2013). The logit model can be expressed by the following equation:

$$\text{Log}[P_{it} / (1 - P_{it})] = \alpha_t + B_1 x_{it1} + \ldots + B_k x_{itk} + u_{i,} \qquad [3.1]$$

where P_{it} is the conditional probability that individual i incurs an event at time t, given that an event has not already occurred to that individual; depending on the value of x_1 for individual i at time t (Allison, 2010) for intervals 1 through k.

A series of logit models for discrete time were employed in this study to examine durations of employment leading to the retirement transition in question. The model can be expressed via the formula:

$$\text{Log}[P_{it} / (1 - P_{it})] = \alpha_t + B_1 M_{it1} + B_2 F_{it2} + B_3 H_{it3} + B_4 J_{it4} + B_5 K_{it5} + B_6 S_{it6} + B_7 P_{it7} + B_8 D_{it8} + u_i \quad [3.2]$$

where P_{it} is the conditional probability that individual i has a retirement transition at time t, α_t captures the duration that an individual is in the state of origin (e.g., in the workforce for Research Questions 1 and 2 or in full-time employment for Research Question 3), M represents the key predictor variable, home mortgage use, and u_i is a random term that captures correlations with time-constant, respondent-specific unmeasured characteristics (Allison, 1982, 2010; Vidal, Huinink, & Feldhaus, 2017).Variables F, H, J, K, S, P, and D represent the STREAM framework (Ybema et al., 2014), which was used to inform the conceptual model, hypotheses, and variable selection for this study. Specifically, F = a vector of other financial factors, H = a vector of health factors, J = a vector of job characteristics, K = opportunity to develop new skills, S = a vector of social factors, P = purpose in life, and D = a vector of demographic factors. The maximum likelihood method was used to account for the effect of time on the odds of an event

occurring (Allison, 2010). This analysis did not allow for repeated events—once the event in question occurred to the individual, no further records were created.

The transition represented in P_{it} was altered depending on the research question being explored. To analyze the first and second research questions (that is, whether home mortgage use and loan to value ratio influence the timing of the transition from the workforce to full retirement), the response variable was binary coded as one if the individual transitioned to full retirement in time t. Otherwise, the response variable was coded as zero. In the third research question, the transition from full-time work to either bridge employment or full retirement was investigated. To analyze this question, the response variable was coded based on a competing risks model. The outcome variable was coded as zero if there was no transition (i.e., the person remained in full-time employment) in time t, as one if the individual transitioned to bridge work in time t, and as two if an individual transitioned to full retirement in time t.

In the HRS, Black and Hispanic individuals and Florida residents are oversampled intentionally (HRS, 2015). Therefore, individual and household sample weights were used to ensure the analytic sample used in this study was nationally representative. Robust standard errors were used to account for the weighting and complex sample design of the HRS.

Summary of Procedures

In summary, the following analytical procedures were performed to analyze the three research questions from multiple perspectives:

1. To explore the timing of the transition from the workforce to full retirement, the following analyses were performed:

    a. A binary logit model for discrete time, in which the presence of a home mortgage was used as the key variable to predict the conditional probability of

transitioning from the workforce to full retirement while controlling for

STREAM factors.

    i. Secondary analyses were performed to explore differences in effects related to net worth, gender, race, and education.

  b. A binary logit model for discrete time, in which the loan-to-value ratio was used as the key variable to predict the conditional probability of transitioning from the workforce to full retirement while controlling for STREAM factors. Only the subset of home-mortgage holders from the initial sample was used.

    i. Secondary analyses were performed to explore differences in effects related to gender, race, and education.

2. The following analysis was performed to investigate the transition from full-time work to the competing risks of either bridge employment or full retirement:

  a. A competing risks model for discrete time, in which the presence of a home mortgage was used as the key variable to predict the conditional probability of transitioning from full-time work to either bridge work or full retirement while controlling for STREAM factors.

Chapter 4 - Results

In this chapter, the results of empirical analyses conducted for this study using the 2006 through 2014 biennial collection waves of the HRS are presented. First, the characteristics of the sample used in this study are discussed. In the next section, results from a series of logit models for discrete time are reported. These logit models were used to predict the conditional probability of transitioning from the workforce to full retirement (Research Questions 1 and 2) and from full-time employment to the competing risks of either bridge employment or full retirement (Research Question 3).

For this study, the initial HRS sample of 26,536 respondents was limited to those who were working full-time in 2006 and 2008 (2,593), then limited to homeowners (1,753), then to those who were in a partnered relationship (1,286), and finally to those who did not indicate that they had been forced into retirement (1,048). Records were expanded into person years, providing a total of 2,777 observations at risk and under observation, reduced to 2,079 observations after listwise deletion. All work-related variables, pre-retirement household income, and some demographic characteristics (gender, race, and education) were considered time invariant for the analyses. These were captured in 2006 or 2008, depending upon the year in which the respondent was eligible for the HRS Leave-Behind Questionnaire. All other variables were considered time variant and were collected in 2010 (Time 1), 2012 (Time 2), and 2014 (Time 3). Data were weighted and robust standard errors were employed to account for the complex sample design of the HRS.

Sample Characteristics

An overview of the categorical and continuous characteristics of the sample can be found in Tables 4.1 and 4.2, respectively. Sample characteristics for subsamples used in the analyses

can be found in Appendix A. Beginning with the dependent variable, employment status over time for respondents in the sample is depicted in Figure 4.1. To avoid left-censoring, all 1,048 respondents in the sample were working full-time in 2006 and 2008. In Time 1, 78% were still working full-time, while 10% had transitioned to bridge work and 13% had transitioned to full retirement. By Time 2, 67% of respondents were working full-time, while 13% had transitioned to bridge work and 20% to full retirement. By Time 3, only 54% of the respondents in the sample were working full-time, while 16% had transitioned to bridge work and 30% had transitioned to full retirement.

Figure 4.1. Employment Status Over Time.
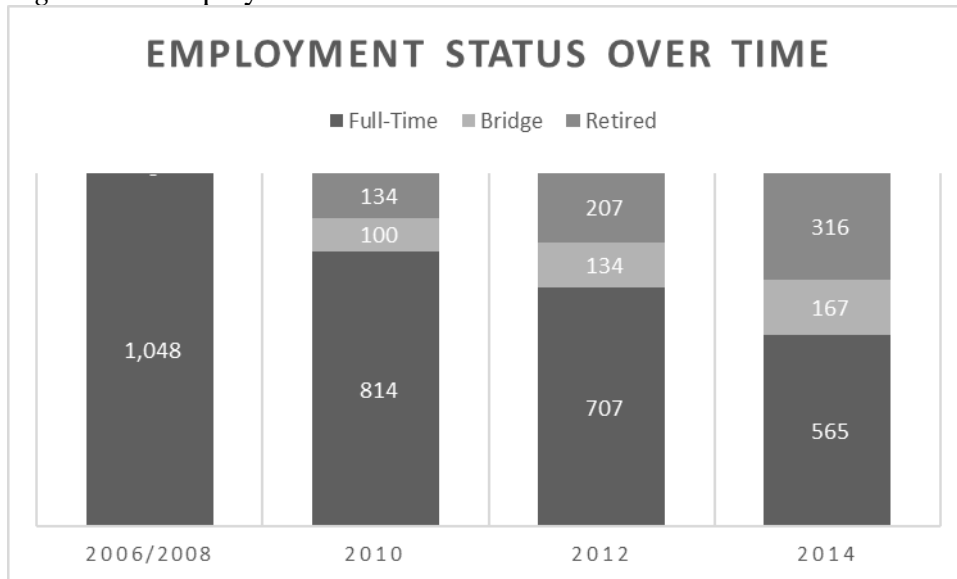
In terms of key independent variables, most respondents in the sample used a home mortgage. However, that number decreased over time (67% in Time 1, 62% in Time 2, and 58% in Time 3). The loan-to-value ratio of mortgages was consistent, at around .50 for all three time periods (*SD* = .39, .53, and .47 for Time Periods 1 through 3, respectively) in the subsample of respondents with home mortgages.

Regarding other household financial factors, mean net worth for the sample was $679,372 in Time 1, increasing to $833,977 by Time 3. Net worth was separated into quartiles

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for some analyses in this study, based on net worth at baseline (2008), with $134,625, $321,000, and $759,500 representing the 25th, 50th, and 75th percentiles, respectively. Mean annual household income at baseline (2008) was $136,210. Greater numbers of the population became eligible for retirement benefits over time, from 24% in Time 1 to 46% in Time 3. Ten percent of the sample planned to have access to employer-health insurance in retirement. Some respondents had financial dependents in the home—however, that number decreased from 18% in Time 1 to 11% in Time 3.

Respondents in the sample considered themselves to be relatively healthy, with a mean ADL limitation between .04 in Time 1 to .08 in Time 3 (SD between .25 and .39) on a scale of zero to five. Respondents in the sample had a mean self-reported health status of 3.6 in Time 1, decreasing to 3.5 in Time 3 (SD between .88 and .91) on a scale of one to five. In terms of pre-retirement job characteristics, 20% of the sample were self-employed. The average tenure at one's current job was 15.8 years ($SD = 12.01$). Mean job stress was high, at 2.9 ($SD = .80$) on a scale of zero to four. However, mean job satisfaction was also high, at 3.4 ($SD = .75$) on a scale of one to four. Mean chronic work discrimination was low, at 1.7 ($SD = .77$) on a scale of one to six. Internal reliability for the chronic work discrimination index was adequate, at .76 and .77 (2006 and 2008, respectively). Respondents in the sample felt they had the opportunity to develop new skills at work, with a mean of 3.0 ($SD = .77$) on a scale of one to four.

In terms of social factors, 36% of the sample had a retired partner in Time 1. This figure increased to 49% by Time 3. Respondents in the sample felt they received positive social support from their partner, with a mean around 3.5 for all three time periods ($SD = .54$ to .59) on a scale of one to four. Internal reliability for the positive partner social support index was adequate, at .81, .76, and .77 (2010, 2012, and 2014, respectively). Members of the sample rated themselves

highly on perceived social status, with a mean around 6.9 (SD = 1.43 to 1.48) for all three time periods on a scale of one to 10. Respondents in the sample also felt that their work enhanced their personal life, with a mean of 2.7 (SD = .86) on a scale of one to four. Internal reliability for the index used to measure the degree of personal life enhancement from work was adequate, at .76 and .77 (2006 and 2008, respectively). Members of the sample felt strongly that they had a sense of direction and purpose in life. However, the mean for this variable decreased over time, from 5.1 in Time 1 to 4.9 in Time 3 (SD = 1.15 and 1.25, respectively).

Respondents in the sample were between 52 and 78 years of age during the first data collection wave under analysis (2006/2008), with a mean age of 62.3 in Time 1, 64.3 in Time 2, and 66.1 in Time 3 (SD = approximately 4.9 for each time period). The majority of individuals in the sample were male (62%) and white (86%). Forty percent of those in the sample were college graduates.

Table 4.1

Characteristics of Categorical Variables Over Time

(*N* = 1,048 Respondents)

Variables	Time Invariant^		Time 1 2010		Time 2 2012		Time 3 2014	
	n	%	n	%	n	%	n	%
Dependent Variable								
Employment Status								
Full-Time Work			814	78%	707	67%	565	54%
Bridge Work			100	10%	134	13%	167	16%
Retired			134	13%	207	20%	316	30%
Household Financial Factors								
Home Mortgage			707	67%	648	62%	607	58%
Eligible for Retirement Benefits			247	24%	344	33%	486	46%
Employer-Spons. Health Ins. in Retirement	108	10%						
Financial Dependents			184	18%	150	14%	111	11%

Pre-Retirement Job Characteristics

Self-Employed   207   20%

Social Factors

Partner Retired   381   36%   429   41%   516   49%

Demographic Characteristics

Male   649   62%

White   904   86%

College Graduate   424   40%

^Variable measured in 2006 or 2008, depending on the respondent's eligibility for the Leave-Behind Questionnaire.

Table 4.2

Characteristics of Continuous Variables Over Time

($N = 1,048$)

Variables	Time Invariant^ Mean	Time 1 2010 Mean	Time 2 2012 Mean	Time 3 2014 Mean
Household Financial Factors				
Loan-to-Value Ratio (Where Home Mortgage = 1)	-	0.50	0.52	0.50
Net Worth (Prior to Transformation)	-	$679,372	$734,714	$833,977
Inverse Hyperbolic Sine of Net Worth	-	12.7	-	-
Annual Income (Prior to Transformation)	$ 136,210	-	-	-
Natural Logarithm of Annual Income	11.5	-	-	-
Health Factors				
ADL Limitations	-	0.04	0.06	0.08
Self-Reported Health Status	-	3.63	3.61	3.50
Pre-Retirement Job Characteristics				
Years Tenure at Current Job	15.77	-	-	-

Job Stress	2.88	-	-	-
Job Satisfaction	3.35	-	-	-
Chronic Work Discrimination	1.69	-	-	-
Skills and Knowledge				
Opportunity to Develop New Skills	3.00	-	-	-
Social Factors				
Positive Partner Social Support		3.52	3.56	3.57
Perceived Social Status		6.89	6.95	6.98
Work Enhances Personal Life	2.74	-	-	-
Purpose in Life				
Sense of Direction/Purpose	-	5.11	5.02	4.94
Demographic Characteristics				
Age	-	62.34	64.25	66.11

Research Question 1

Primary Analysis

In Table 4.3, the results of the primary logit model for discrete time are presented. This logit model was utilized to explore the association between home mortgage use and the conditional probability of transitioning from the workforce to full retirement in a given time period, given that the transition had not happened in a prior period. The 2010, 2012, and 2014 collection waves of the HRS were used to represent Times 1, 2, and 3, respectively. Data were weighted and conservative standard errors were employed to account for the complex sample design of the HRS. In regard to model fit, pseudo R^2 was .20. Variance inflation factors from each wave included in the model ranged from 1.03 to 3.03, indicating that multicollinearity among the predictor variables was not a concern in this analysis.

A key concept in discrete time analysis is the risk set, which is the set of individuals who are at risk of event occurrence at each point in time (Allison, 2014; Jenkins, 2008; Steele, 2011; Steele & Washbrook, 2013). In the sample used for this study, 1,048 homeowners were at risk of transitioning from the workforce to full retirement during the first year. For this reason, the entire sample used in this study constituted the risk set in that year. Once a respondent transitioned to full retirement, they were no longer deemed at risk. At the end of each time period, the risk set was reduced by the number of respondents who transitioned to full retirement in that time period. Another key concept in discrete time analysis is the hazard rate, or the conditional probability that an event will occur at a particular time to a particular respondent, given that the respondent is at risk at that time (Allison, 2014). In this analysis, the hazard was the conditional probability

of transitioning from the workforce to full retirement in a given time period, given that the respondent had not made this transition in a previous time period.

In support of Hypothesis 1, the model yielded evidence of a systematic relationship between home mortgage use and the odds of transitioning from the workforce to full retirement. Specifically, homeowners with home mortgages had 24% lower odds of transitioning to full retirement. Among the household financial factors used as control variables for this analysis, having access to employer-sponsored health insurance in retirement was associated with 2.5 times higher odds of transitioning to full retirement. However, level of net worth, pre-retirement annual household income, eligibility for retirement benefits, and the presence of financial dependents in the household were not significantly associated with the transition.

No association was found between the two health factors included in the model and the transition to full retirement. However, some pre-retirement job characteristics were associated with this transition. Specifically, those who were self-employed had 78% lower odds of transitioning to full retirement. The number of years spent in one's current job was positively related to a person's odds of transitioning to full retirement. Levels of job stress, job satisfaction, feelings of work discrimination, and opportunity to develop new skills at work were not significantly associated with the transition to full retirement.

Some social factors were associated with the probability of transitioning from the workforce to full retirement. Individuals with a retired partner had 77% higher odds of transitioning to full retirement. A one-point increase on the scale used to measure agreement with the statement that work enhanced personal life was associated with 26% lower odds of transitioning to full retirement. Levels of positive social support from one's partner, perceived

social status, and sense of direction or purpose in life were not associated with the transition from the workforce to full retirement.

Among the demographic characteristics included in this study, a positive association was found between age and the probability of transitioning to full retirement. However, a negative association was found between age squared and the transition to full retirement. Based on this inverse relationship, it appears that the effect of age on the transition to full retirement decreases with time. Time itself was also significantly associated with the odds of transitioning to full retirement. Specifically, the odds of transitioning to retirement in Wave 3 were 77% higher than the odds of transitioning in Wave 1. Education was also a significant predictor of the transition to full retirement: College graduates were associated with 46% lower odds of transitioning to full retirement in a given wave. Neither gender nor race were associated with the transition.

Table 4.3

Results from Binary Logit Model for Discrete Time (Primary Model): Estimating the Conditional Probability of Transitioning from Workforce to Full Retirement

	Full Sample ($N = 1,048$)			
Variables	*B*	*SE B*	*Odds Ratio*	
Household Financial Factors				
Home Mortgage	(0.12)	0.11	0.76	*
Inverse Hyperbolic Sine of Net Worth	(0.01)	0.02	0.98	
Natural Logarithm of Annual Income	(0.02)	0.06	0.96	
Eligible for Retirement Benefits	0.12	0.33	1.33	
Employer-Spons. Health Ins. in Retirement	0.39	0.50	2.45	***
Financial Dependents	(0.16)	0.17	0.70	

Health Factors

ADL Limitations	0.11	0.26	1.28	
Self-Reported Health Status	(0.05)	0.08	0.90	

Pre-Retirement Job Characteristics

Self-Employed	(0.65)	0.07	0.22	***
Years Tenure at Current Job	0.01	0.01	1.02	**
Job Stress	(0.01)	0.09	0.98	
Job Satisfaction	(0.04)	0.09	0.92	
Chronic Work Discrimination	(0.04)	0.09	0.91	

Skills and Knowledge

Opportunity to Develop New Skills	(0.07)	0.10	0.84	

Social Factors

Partner Retired	0.25	0.23	1.77	***
Positive Partner Social Support	0.06	0.15	1.15	
Perceived Social Status	0.04	0.06	1.10	
Work Enhances Personal Life	(0.13)	0.07	0.74	**

Purpose in Life

Sense of Direction/Purpose	0.01	0.06	1.03	

Demographic Characteristics

Age	0.62	1.86	4.18	***
Age Squared	(0.00)	0.00	0.99	**
Male	(0.08)	0.12	0.84	
White	(0.11)	0.18	0.77	

College Graduate		(0.27)	0.09	0.54	***
Wave					
2		0.13	0.25	1.35	
3		0.25	0.33	1.77	**
Pseudo R^2		0.20			

*p<.05, **p<.01, ***p<.001*

Net Worth Stratification

It was assumed that a respondent's level of net worth could affect their decision to transition from the workforce to full retirement. For this reason, the sample for this study was stratified into net worth quartiles for secondary analyses. The discrete logit model from the primary analysis was applied to each group in this stratified sample. The results of these four discrete hazard logits are located in Table 4.4. In terms of model fit, R^2 results were the lowest in Net Worth Quartile 1, at .24. Results were highest in Net Worth Quartile 4, at .31.

Consistent with the primary analysis, results from these analyses revealed a negative association between home mortgage use and the transition from the workforce to full retirement. However, this result held true only in the lowest and highest net worth groups. In the lowest net worth quartile, home mortgage use was associated with 49% lower odds of transitioning to full retirement. In the highest net worth group, the odds of transitioning to full retirement were 66% lower for those with home mortgages. Among other household financial factors included in this study, access to employer-sponsored health insurance in retirement was associated with higher odds of transitioning to full retirement for those in the two lowest net worth quartiles ($OR = 3.5$ and 6.8, respectively). This finding was consistent with the primary analysis for this study. However, this characteristic was not a significant predictor of the transition to full retirement

among those in the two highest net worth groups. Although no association was found between the presence of financial dependents and the transition to full retirement in the primary analysis, a negative relationship was found between this characteristic and the transition to full retirement for homeowners in the third net worth quartile.

Health factors were not significantly associated with the transition to full retirement in the primary analysis. However, ADL limitations were positively associated with the transition to full retirement among those in the two highest net worth quartiles ($OR = 2.1$ and 2.4, respectively). Although not significant predictors of the transition to full retirement in the primary analysis, among those in the highest net worth quartile, job satisfaction was negatively associated with the transition to full retirement. Chronic work discrimination was positively related to the transition.

In other departures from the primary analysis, a one-unit increase on the scale used to measure the opportunity to develop new skills at work was negatively associated with the transition to full retirement in the second net worth quartile. However, a one-unit increase on that same scale was positively associated with the transition to full retirement in the highest net worth quartile. Increased positive social support from one's partner was associated with 4.7 times higher odds of the transition to full retirement for those in the highest net worth quartile. Conversely, an increase on the scale used to measure sense of direction or purpose in life was negatively associated with the transition to full retirement in the highest net worth quartile. An increase on that same scale was positively associated with the transition to full retirement for homeowners in the second net worth quartile.

In terms of demographic independent variables used in this study, age had a significant, curvilinear association with the transition to full retirement in the primary analysis. However,

age was not significantly associated with the transition in the lowest net worth quartile. The effects of age were also stronger in the net worth quartile models than in the primary analysis. Specifically, a one-year increase in age was associated with 4.2 times higher odds of transitioning to full retirement in the primary model. On the other hand, that increase was associated with 4.7, 30.4, and 6.0 times higher odds of the transition in Quartiles 2, 3, and 4, respectively. The effect of time was also stronger in the quartile models than in the primary model. In the primary model, respondents had 1.8 times higher odds of transitioning from the workforce to full retirement in Time Period 3 than they did in Time Period 1. That effect increased to 2.2 in the Quartile 3 model.

Gender was not significantly associated with the transition to full retirement in the full model. However, males in the lowest and highest net worth quartiles had 49% and 62% lower odds of making this transition, respectively. Finally, race was not significantly associated with the transition from the workforce to retirement in the primary analysis. However, significant relationships were noted between this characteristic and full retirement in the various net worth quartiles. In the lowest net worth quartile, white respondents had 2.4 times higher odds of transitioning to full retirement than non-white respondents. In contrast, white respondents were associated with lower odds of transitioning to full retirement among those in the second and third quartiles.

Table 4.4

Results from Binary Logit Model for Discrete Time (Stratified by Net Worth): Estimating the Conditional Probability of Transitioning from Workforce to Full Retirement

N = 1,048	Net Worth Quartile 1				Net Worth Quartile 2				Net Worth Quartile 3			Net Worth Quartile 4			
Variables	*B*	*SE B*	*Odds Ratio*		*B*	*SE B*	*Odds Ratio*		*B*	*SE B*	*Odds Ratio*	*B*	*SE B*	*Odds Ratio*	
Household Financial Factors															
Home Mortgage	(0.29)	0.18	0.51	*	(0.06)	0.22	0.87		0.03	0.40	1.06	(0.47)	0.13	0.34	***
Inverse Hyperbolic Sine of Net Worth	(0.01)	0.02	0.98		(0.02)	0.05	0.96		(0.01)	0.45	0.98	(0.04)	0.37	0.91	
Natural Logarithm of Annual Income	(0.06)	0.09	0.88		0.32	0.10	2.11		0.02	0.12	1.05	0.01	0.12	1.03	
Eligible for Retirement Benefits	0.43	1.59	2.69		0.11	0.42	1.30		(0.02)	0.62	0.96	(0.16)	0.47	0.69	
Employer-Spons. Health Ins. in Retirement	0.54	1.69	3.48	*	0.83	2.57	6.82	***	(0.07)	0.78	0.85	0.04	0.71	1.11	

Financial Dependents	(0.12)	0.41	0.76		0.01	0.42	1.03		(0.67)	0.17	0.21	**	(0.07)	0.54	0.85	
ADL Limitations	(0.02)	0.34	0.96		(0.50)	0.30	0.32		0.31	0.57	2.06	**				
													0.38	0.70	2.39	*
Self-Reported Health Status	(0.11)	0.12	0.77		(0.09)	0.14	0.81		0.02	0.22	1.05		(0.00)	0.21	0.99	

Pre-Retirement Job Characteristics

Self-Employed	(0.52)	0.22	0.30		(1.13)	0.31	0.07	***	(0.36)	0.09	0.44		(0.92)	0.05	0.12	***
Years Tenure at Current Job	(0.00)	0.02	1.00		0.01	0.01	1.03	**	0.01	0.01	1.02	*	0.00	0.01	1.00	
Job Stress	(0.10)	0.15	0.79		0.02	0.20	1.05		0.12	0.34	1.32		(0.08)	0.14	0.83	
Job Satisfaction	(0.01)	0.21	0.97		0.16	0.37	1.44		0.01	0.14	1.02		(0.31)	0.16	0.49	**
Chronic Work Discrimination	(0.14)	0.19	0.73		(0.14)	0.11	0.73		(0.07)	0.17	0.85		0.27	0.44	1.88	**

Skills and Knowledge

Opportunity to Develop New Skills	(0.08)	0.19	0.84		(0.32)	0.13	0.48	*	(0.11)	0.30	0.77		0.30	0.40	1.99	*

Social Factors

		Model 1				Model 2				Model 3				Model 4	
Partner Retired	0.09	0.40	1.24		0.46	0.63	2.91	**	0.33	0.47	2.12	**	0.23	0.59	1.69	
Positive Partner Social Support	(0.16)	0.15	0.70		(0.04)	0.28	0.92		0.06	0.25	1.15		0.67	2.65	4.69	***
Perceived Social Status	0.06	0.14	1.14		0.00	0.10	1.01		(0.01)	0.14	0.97		0.14	0.29	1.37	
Work Enhances Personal Life	(0.13)	0.18	0.74		(0.33)	0.10	0.47	***	(0.02)	0.11	0.95		(0.11)	0.20	0.78	

Purpose in Life

Sense of Direction/Purpose	0.06	0.12	1.16		0.12	0.13	1.33	*	(0.04)	0.20	0.91		(0.16)	0.10	0.69	*

Demographic Characteristics

Age	0.04	0.58	1.10		0.67	6.69	4.66	*	1.48	10.78	30.42	**	0.78	11.85	5.98	*
Age Squared	(0.00)	0.00	1.00		(0.00)	0.01	0.99	*	(0.01)	0.01	0.98	**	(0.01)	0.01	0.98	*
Male	(0.29)	0.15	0.51	*	0.06	0.4	1.15		0.23	0.51	1.71		(0.42)	0.15	0.38	**
White	0.39	0.47	2.43	*	(0.53)	0.22	0.30	**	(0.54)	0.23	0.29	*	0.49	1.44	3.06	
College Graduate	(0.16)	0.39	0.69		(0.13)	0.41	0.74		(0.55)	0.10	0.28	***	(0.33)	0.09	0.46	*

Wave

2	0.06	0.69	1.15		0.22	0.38	1.65		0.02	0.87	1.05		0.26	0.49	1.84
3	0.26	0.88	1.82		0.24	0.47	1.74		0.33	1.74	2.15	*	0.34	0.65	2.21
Pseudo R^2	0.24				0.31				0.28				0.31		

*p<.05, **p<.01,

***p<.001

Separate Demographic Regressions

In the STREAM framework, it is understood that the effects of financial, health, job, knowledge, social, and life purpose characteristics on the probability of employment transitions can be moderated by gender, race, and education (Ybema et al., 2014). For secondary analyses, separate regressions were performed on various subsets of the initial sample of 1,048 homeowners to explore demographic differences in the retirement transition decisions of these homeowners.

Gender

The full sample of 1,048 homeowners used in this study was subset into males ($n = 649$) and females ($n = 399$). Table 4.5 includes the results of the primary model that was applied to each of these subsamples. In terms of model fit, R^2 was .23 and .22 for the male- and female-only models, respectively. The effects of home mortgage use and most other characteristics were similar between the primary analysis and the male-only model. However, some differences were noted between these models. First, the presence of financial dependents in the household and the opportunity to develop new skills at work were not associated with the probability of transitioning to full retirement in the primary analysis. However, both characteristics were negatively related to this transition in the male-only model.

Further, higher levels of positive social support from one's partner and an increased sense of direction or purpose in life were positively associated with the transition to full retirement in the male-only model. However, these characteristics were not significantly associated with this transition in the primary analysis. Finally, access to employer-sponsored health care in retirement, age and age squared were significantly related to the probability of transitioning to

full retirement in the primary model. On the other hand, these characteristics were not significant predictors of the transition in the male-only model.

Home mortgage use was not associated with the transition to full retirement in the female-only model. One other difference was noted between the primary model and the female-only model among household financial factors used as control variables. Specifically, eligibility for retirement benefits was associated with two times higher odds of transition to full retirement in the female-only model. However, no relationship was noted in the primary model. Having access to employer-sponsored health insurance in retirement was associated with 2.5 times higher odds of the transition to full retirement in the primary model. That characteristic was significant in both models—however, those odds increased to 4.6 in the female-only model. Similarly, age was a significant predictor of the transition to full retirement in both models, but the effect was higher in the female-only model (10.3 times odds) than in the primary model (4.2 times odds). Years of tenure in one's current job, age, time, and the belief that work enhances one's personal life were significantly associated with the transition to full retirement in the primary model. However, these characteristics were not associated with the transition in the female-only model.

Table 4.5

Results from Binary Logit Model for Discrete Time (By Gender): Estimating the Conditional Probability of Transitioning from

Workforce to Full Retirement

Variables	Male (N = 649)				Female (N = 399)			
	B	*SE B*	*Odds Ratio*		*B*	*SE B*	*Odds Ratio*	
Household Financial Factors								
Home Mortgage	(0.17)	0.12	0.67	*	(0.02)	0.25	0.96	
Inverse Hyperbolic Sine of Net Worth	0.00	0.02	1.00		(0.02)	0.02	0.96	
Natural Logarithm of Annual Income	(0.03)	0.06	0.94		0.04	0.12	1.10	
Eligible for Retirement Benefits	0.04	0.39	1.09		0.30	0.68	2.02	*
Employer-Spons. Health Ins. in Retirement	0.23	0.46	1.69		0.66	1.62	4.55	***
Financial Dependents	(0.33)	0.15	0.47	*	0.04	0.50	1.10	
Health Factors								
ADL Limitations	0.13	0.33	1.35		0.09	0.57	1.22	
Self-Reported Health Status	(0.07)	0.11	0.84		(0.04)	0.12	0.91	
Pre-Retirement Job Characteristics								
Self-Employed	(0.73)	0.08	0.19	***	(0.57)	0.12	0.27	**

Years Tenure at Current Job	0.01	0.01	1.02	**	0.00	0.01	1.00	
Job Stress	(0.04)	0.11	0.91		0.04	0.15	1.10	
Job Satisfaction	0.01	0.15	1.03		(0.14)	0.14	0.73	
Chronic Work Discrimination	(0.04)	0.12	0.92		(0.02)	0.14	0.95	
Skills and Knowledge								
Opportunity to Develop New Skills	(0.22)	0.11	0.61	**	0.04	0.16	1.11	
Social Factors								
Partner Retired	0.29	0.35	1.93	***	0.28	0.36	1.91	*
Positive Partner Social Support	0.26	0.37	1.84	**	(0.05)	0.17	0.89	
Perceived Social Status	0.03	0.08	1.08		0.04	0.11	1.09	
Work Enhances Personal Life	(0.22)	0.08	0.61	***	0.02	0.16	1.04	
Purpose in Life								
Sense of Direction/Purpose	0.07	0.10	1.18	*	(0.02)	0.09	0.96	
Demographic Characteristics								
Age	0.48	1.73	2.99		1.01	5.65	10.34	***

Age Squared	(0.00)	0.00	0.99		(0.01)	0.00	0.98	**
Male	-	-	-		-	-	-	
White	(0.25)	0.19	0.56		(0.13)	0.28	0.74	
College Graduate	(0.24)	0.12	0.57	**	(0.29)	0.18	0.51	*
Wave								
2	0.13	0.35	1.36		0.09	0.36	1.24	
3	0.32	0.52	2.09	**	0.11	0.40	1.28	
Pseudo R^2	0.23				0.22			

*p<.05, **p<.01, ***p<.001*

Race

The full sample of 1,048 homeowners used in this study was subset into white ($n = 904$)

and non-white ($n = 144$) respondents. Table 4.6 includes the results of the primary model that

was applied to these subsets. In terms of model fit, pseudo R^2 results were .20 and .41 for the

white and non-white models, respectively. Contrary to the primary analysis, home mortgage use

was not a significant predictor of the transition to full retirement in either the white or non-white

models. All other effects were consistent between the primary model and the model with only

white respondents.

Several differences were noted between the primary model and the model with only non-

white respondents. Eligibility for retirement benefits was not a significant predictor of the

transition to full retirement in the primary analysis. However, those in the model of non-white

respondents who were eligible for retirement benefits had 6.8 times higher odds of transitioning

to full retirement. Moreover, increased feelings of chronic work discrimination had significant

negative associations with this transition in the non-white model. Being self-employed, age,

education, and an increased belief that work enhances one's personal life were significantly

associated with the probability of transitioning from the workforce to full retirement in the

primary analysis. These characteristics were not associated with the transition in the sub-sample

of only non-white respondents.

The effects of two variables were much larger in the non-white model than the primary

model. Having access to employer-sponsored health insurance in retirement was associated with

2.5 times higher odds of transitioning to full retirement in the primary model. The effect of this

characteristic increased to 4.6 times higher odds in the non-white model. Similarly, having a

retired partner was associated with 1.8 times higher odds of transitioning to full retirement in the

primary analysis, and 4.5 times higher odds of transitioning in the non-white model. Finally, the

effect of time was much larger in the non-white model than in the primary model. Specifically,

respondents in the primary model had 1.8 times higher odds of transitioning to full retirement in

Time Period 3 than in Time Period 1, and 10.4 times higher odds of that same transition in the

non-white model.

Table 4.6

Results from Binary Logit Model for Discrete Time (By Race): Estimating the Conditional Probability of Transitioning from

Workforce to Full Retirement

Variables	Race White (N = 904)				Race Non-White (N = 144)			
	B	*SE B*	*Odds Ratio*		*B*	*SE B*	*Odds Ratio*	
Household Financial Factors								
Home Mortgage	(0.12)	0.11	0.75		0.16	1.12	1.43	
Inverse Hyperbolic Sine of Net Worth	(0.01)	0.02	0.98		0.00	0.05	1.01	
Natural Logarithm of Annual Income	(0.05)	0.07	0.89		0.08	0.11	1.21	
Eligible for Retirement Benefits	0.07	0.31	1.17		0.83	6.14	6.80	*
Employer-Spons. Health Ins. in Retirement	0.37	0.50	2.32	***	0.66	5.20	4.60	*
Financial Dependents	(0.13)	0.18	0.75		(0.60)	0.21	0.25	
Health Factors								
ADL Limitations	0.12	0.27	1.33		(0.49)	0.24	0.32	
Self-Reported Health Status	(0.02)	0.01	0.95		(0.24)	0.16	0.58	
Pre-Retirement Job Characteristics								
Self-Employed	(0.64)	0.07	0.23	***	(0.77)	0.23	0.17	

	B	SE	OR		B	SE	OR	
Years Tenure at Current Job	0.01	0.01	1.02	*	0.04	0.03	1.09	**
Job Stress	(0.02)	0.10	0.96		0.19	0.49	1.57	
Job Satisfaction	(0.06)	0.09	0.88		0.07	0.61	1.19	
Chronic Work Discrimination	(0.03)	0.10	0.94		(0.34)	0.13	0.45	**
Skills and Knowledge								
Opportunity to Develop New Skills	(0.06)	0.12	0.88		(0.30)	0.18	0.50	
Social Factors								
Partner Retired	0.24	0.24	1.73	**	0.65	2.52	4.49	**
Positive Partner Social Support	0.08	0.18	1.22		(0.01)	0.38	0.98	
Perceived Social Status	0.05	0.07	1.11		0.11	0.34	1.29	
Work Enhances Personal Life	(0.16)	0.07	0.70	**	0.16	0.45	1.46	
Purpose in Life								
Sense of Direction/Purpose	0.01	0.07	1.02		0.11	0.20	1.30	
Demographic Characteristics								
Age	0.63	2.01	4.31	**	1.04	25.07	10.99	

Age Squared	(0.00)	0.00	0.99	**	(0.01)	0.01	0.98	
Male	(0.09)	0.12	0.81		0.20	0.89	1.58	
White	-	-	-		-	-	-	
College Graduate	(0.28)	0.10	0.53	**	(0.40)	0.23	0.40	
Wave								
2	0.10	0.25	1.27		0.41	2.03	2.55	
3	0.22	0.31	1.64	**	1.02	7.90	10.43	**
Pseudo R^2	0.20				0.41			

*p<.05, **p<.01, ***p<.001*

Education

The full sample of 1,048 homeowners used in this study was split into subsets of those who had graduated from college (*n* = 624) and those who had not (*n* = 424). Results from models in which the primary analysis was applied to these subsamples are located in Table 4.7. Pseudo R^2 was consistent between the college graduates and non-college graduates, at .21. Consistent with the primary analysis, home mortgage use was negatively associated with the transition from the workforce to full retirement in the college graduate-only model. Access to employer-sponsored health insurance in retirement, time, and an increased belief that work enhances one's personal life were significant factors in the primary analysis. However, these characteristics were not significant predictors of the transition to full retirement in the college graduate-only model.

In other departures from the primary analysis, increased ADL limitations and increased feelings of positive partner social support were positively associated with the transition to full retirement, even though these characteristics were not significant in the primary analysis. Further, the presence of financial dependents, an increased sense of direction or purpose in life, and being white were negatively associated with the transition to full retirement in the college graduate-only model. However, these characteristics were not significant predictors of the transition to full retirement in the primary analysis.

Home mortgage use was not a significant predictor of the transition to retirement in the non-college graduate model. Moreover, years of tenure at one's current job was not associated with the transition to full retirement among non-college graduates, even though significant associations were revealed between this characteristic and the transition to retirement in the primary model. Conversely, an increased sense of direction or purpose in life was positively associated with the transition to full retirement in the non-college graduate model. This

characteristic was not a significant predictor of the transition to retirement in the primary

analysis for this study.

Table 4.7

Results from Binary Logit Model for Discrete Time (By Education): Estimating the Conditional Probability of Transitioning from

Workforce to Full Retirement

Variables	College Graduate (*N* = 424)				Non-College Graduate (*N* = 624)			
	B	*SE B*	*Odds Ratio*		*B*	*SE B*	*Odds Ratio*	
Household Financial Factors								
Home Mortgage	(0.26)	0.14	0.55	*	(0.07)	0.15	0.85	
Inverse Hyperbolic Sine of Net Worth	(0.01)	0.02	0.98		(0.01)	0.02	0.98	
Natural Logarithm of Annual Income	(0.04)	0.10	0.91		(0.00)	0.09	0.99	
Eligible for Retirement Benefits	(0.00)	0.44	0.99		0.19	0.47	1.54	
Employer-Spons. Health Ins. in Retirement	0.27	0.66	1.86		0.49	0.77	3.07	***
Financial Dependents	(0.35)	0.19	0.45	*	(0.04)	0.26	0.91	
Health Factors								
ADL Limitations	0.29	0.47	1.97	**	0.02	0.37	1.04	
Self-Reported Health Status	0.03	0.18	1.08		(0.06)	0.09	0.86	
Pre-Retirement Job Characteristics								
Self-Employed	(0.55)	0.15	0.28	*	(0.77)	0.06	0.17	***

Years Tenure at Current Job	0.01	0.01	1.03	**	0.00	0.01	1.01	
Job Stress	0.10	0.20	1.25		(0.06)	0.10	0.87	
Job Satisfaction	(0.06)	0.15	0.87		(0.04)	0.13	0.91	
Chronic Work Discrimination	0.02	0.23	1.06		(0.08)	0.09	0.84	
Skills and Knowledge								
Opportunity to Develop New Skills	(0.13)	0.19	0.73		(0.05)	0.11	0.90	
Social Factors								
Partner Retired	0.23	0.39	1.70	*	0.24	0.28	1.72	**
Positive Partner Social Support	0.42	0.63	2.64	***	(0.02)	0.16	0.95	
Perceived Social Status	0.06	0.13	1.16		0.03	0.07	1.07	
Work Enhances Personal Life	(0.09)	0.14	0.81		(0.15)	0.08	0.72	**
Purpose in Life								
Sense of Direction/Purpose	(0.12)	0.06	0.76	**	0.08	0.10	1.20	*
Demographic Characteristics								
Age	0.66	3.51	4.53	*	0.71	2.05	5.13	***

Age Squared	(0.00)	0.01	0.99	*	(0.00)	0.00	0.99	***
Male	(0.12)	0.19	0.76		(0.04)	0.17	0.91	
White	(0.45)	0.18	0.35	*	-	0.24	1.00	
College Graduate	-	-	-		-	-	-	
Wave								
2	1.21	0.39	1.21		0.14	0.32	1.38	
3	1.60	0.50	1.60		0.28	0.44	1.89	**
Pseudo R^2	0.21				0.21			

*p<.05, **p<.01, ***p<.001*

Research Question 2

Primary Analysis

In Table 4.8, results of a logit model for discrete time are presented. The researcher used this model to explore the association between the loan-to-value ratio of a respondent's mortgage and their conditional probability of transitioning from the workforce to full retirement in a given time period, given that the transition had not happened in a prior period. The key variable in these analyses was the loan-to-value ratio of the mortgage. For this reason, the initial sample of 1,048 homeowners was limited to only the 707 homeowners with home mortgages. The 2010, 2012, and 2014 HRS collection waves were used to represent Times 1, 2, and 3, respectively. Data were weighted and conservative standard errors were employed to account for the complex sample design of the HRS. In terms of model fit, pseudo R^2 was .23. Variance inflation factors from each wave included in the model ranged from one to three, indicating that multicollinearity among the predictor variables was not a concern in this analysis.

The risk set included all mortgage-holders who were at risk of transitioning from the workforce to full retirement during each time period ($n = 707$, 648, and 607 in Time Periods 1, 2, and 3, respectively). Once a respondent transitioned to full retirement, they were no longer deemed at risk. At the end of each time period, the risk set was reduced by the number of respondents who transitioned to full retirement in that time period. In this analysis, the hazard in question was the conditional probability of transitioning from the workforce to full retirement in a given time period, given that the respondent had not made this transition in a previous time period.

In Hypothesis 2, it was predicted that the loan-to-value ratio of a respondent's mortgage would be negatively associated with their probability of transitioning from the workforce to full retirement among a subset sample of home mortgage-using homeowners. No support for Hypothesis 2 was found in results from this model. Specifically, in a sample of only home-mortgage users, the loan-to-value ratio of a respondent's mortgage was not significantly associated with the probability of transitioning from the workforce to full retirement. Among the household financial factors that were used as control variables in this analysis, one characteristic was associated with the transition to full retirement: That is, respondents who had access to employer-sponsored health care in retirement had 3.1 times higher odds of transitioning to full retirement than those who did not.

Several control variables from the other blocks of control variables were significantly associated with the transition from the workforce to full retirement. Years of tenure at one's current job and having a retired partner were positively associated with the transition to full retirement. However, being self-employed, having the opportunity to develop new skills at work, being male, and being a college graduate were negatively associated with the transition from the workforce to full retirement. Based on the positive relationship between age and the probability of transitioning to full retirement, combined with the negative relationship between age squared and the transition to full retirement, it appears that a curvilinear relationship exists between the two sets of characteristics.

Table 4.8

Results from Binary Logit Model for Discrete Time (Mortgage Only): Estimating the Conditional Probability of Transitioning from Workforce to Full Retirement

N = 707

Variables	Home Mortgage Only			
	B	*SE B*	*Odds Ratio*	
Household Financial Factors				
Loan-to-Value Ratio	0.08	0.25	1.19	
Inverse Hyperbolic Sine of Net Worth	(0.01)	0.02	0.98	
Natural Logarithm of Annual Income	(0.04)	0.06	0.92	
Eligible for Retirement Benefits	0.18	0.51	1.50	
Employer-Spons. Health Ins. in Retirement	0.49	0.82	3.07	***
Financial Dependents	(0.16)	0.19	0.69	
Health Factors				
ADL Limitations	(0.16)	0.29	0.69	
Self-Reported Health Status	(0.04)	0.11	0.92	
Pre-Retirement Job Characteristics				
Self-Employed	(0.46)	0.13	0.34	**
Years Tenure at Current Job	0.01	0.01	1.03	**
Job Stress	0.08	0.16	1.21	
Job Satisfaction	(0.07)	0.12	0.86	
Chronic Work Discrimination	(0.03)	0.12	0.93	
Skills and Knowledge				

Opportunity to Develop New Skills	(0.15)	0.12	0.71	*
Social Factors				
Partner Retired	0.32	0.38	2.11	***
Positive Partner Social Support	(0.09)	0.13	0.82	
Perceived Social Status	0.05	0.09	1.13	
Work Enhances Personal Life	(0.07)	0.11	0.85	
Purpose in Life				
Sense of Direction/Purpose	(0.02)	0.07	0.96	
Demographic Characteristics				
Age	0.58	1.82	3.81	**
Age Squared	(0.00)	0.00	0.99	**
Male	(0.17)	0.13	0.68	*
White	(0.10)	0.23	0.79	
College Graduate	(0.31)	0.11	0.49	**
Wave				
2	0.14	0.34	1.38	
3	0.18	0.37	1.51	
Pseudo R^2	0.23			

*p<.05, **p<.01, ***p<.001*

Separate Demographic Regressions

In the STREAM framework, individual demographic characteristics such as gender, race, and education are understood to moderate the effects of financial, health, job, knowledge, social, and life purpose characteristics on the probability of employment transitions (Ybema et al.,

2014). For secondary analyses in this study, the sample of 707 mortgage-using homeowners was divided into various demographic subgroups. Separate regressions were utilized to explore the retirement transition decisions of these various subgroups.

Gender

The full sample of 707 mortgage-using homeowners was subset into males ($n = 444$) and females ($n = 263$). Table 4.9 includes the results of the primary model that was applied to each of these subsamples. In terms of model fit, pseudo R^2 was .25 and .30 for the male- and female-only models, respectively. Consistent with the primary model used in this analysis, the loan-to-value ratio of a respondent's mortgage was not significantly associated with their transition from the workforce to full retirement in either model. Some notable inconsistencies were identified between the primary model and the gender subgroup models.

In the male-only model, the presence of financial dependents, increased agreement with the statement that work enhances one's personal life, and being white were negatively associated with the transition to full retirement. However, these characteristics were not significantly associated with this transition in the primary model. Also inconsistent with the primary model, access to employer-sponsored health insurance in retirement and age were not associated with the transition to full retirement among male respondents. Finally, no consistent association was identified between time and the transition to full retirement in the primary model used in this study. However, time was associated with two times higher odds of making the transition in the model with only male respondents.

Moving to the female-only model, having access to employer-sponsored health insurance in retirement was associated with 3.1 times higher odds of transitioning to full retirement in the primary model. That number increased to 5.9 times higher odds in the female-only model. Years

of tenure at one's current job and the opportunity to develop new skills at work were significant predictors of the transition to full retirement in the primary model. However, these characteristics were not significantly associated with the transition in the female-only model. A negative relationship was revealed between positive social support from one's partner and the probability of transitioning to full retirement. Perceived social status was positively associated with the transition to full retirement. Neither characteristic was significantly associated with this transition in the primary model. Finally, the effect sizes of age were inconsistent between the primary model ($OR = 3.8$) and the female-only model ($OR = 30.2$).

Table 4.9

Results from Binary Logit Model for Discrete Time (Mortgage Only, By Gender): Estimating the Conditional Probability of Transitioning from Workforce to Full Retirement

| Variables | Home Mortgage Only | | | | | | |
| | Male (N = 444) | | | | Female (N = 263) | | |
	B	SE B	Odds Ratio		B	SE B	Odds Ratio
Household Financial Factors							
Loan-to-Value Ratio	0.24	0.71	1.73		0.06	0.32	1.14
Inverse Hyperbolic Sine of Net Worth	0.01	0.02	1.02		(0.02)	0.03	0.96
Natural Logarithm of Annual Income	(0.04)	0.13	0.91		(0.02)	0.34	0.96
Eligible for Retirement Benefits	0.16	0.73	1.43		0.35	1.12	2.22
Employer-Spons. Health Ins. in Retirement	0.26	0.77	1.83		0.77	2.57	5.90 ***
Financial Dependents	(0.34)	0.17	0.46 *		(0.04)	0.43	0.91
Health Factors							
ADL Limitations	(0.06)	0.48	0.87		(0.26)	0.21	0.55
Self-Reported Health Status	(0.11)	0.13	0.78		0.03	0.20	1.07
Pre-Retirement Job Characteristics							

Self-Employed	(0.49)	0.17	0.33	*	(0.76)	0.12	0.17	**
Years Tenure at Current Job	0.02	0.01	1.04	**	0.00	0.02	1.01	
Job Stress	0.09	0.23	1.22		0.09	0.24	1.23	
Job Satisfaction	(0.05)	0.17	0.90		(0.13)	0.20	0.74	
Chronic Work Discrimination	(0.11)	0.16	0.78		0.14	0.29	1.38	
Skills and Knowledge								
Opportunity to Develop New Skills	(0.36)	0.11	0.44	**	0.09	0.23	1.23	
Social Factors								
Partner Retired	0.36	0.63	2.28	**	0.38	0.77	2.42	**
Positive Partner Social Support	0.13	0.31	1.34		(0.24)	0.16	0.58	*
Perceived Social Status	0.01	0.11	1.03		0.11	0.17	1.29	*
Work Enhances Personal Life	(0.16)	0.12	0.69	*	0.03	0.24	1.06	
Purpose in Life								
Sense of Direction/Purpose	0.07	0.12	1.17		(0.05)	0.11	0.88	
Demographic Characteristics								
Age	0.26	1.12	1.81		1.52	36.56	33.21	**

Age Squared	(0.00)	0.00	1.00		(0.01)	0.01	0.97	**
Male	-	-	-		-	-	-	
White	(0.41)	0.16	0.39	*	0.06	0.61	1.14	
College Graduate	(0.25)	0.16	0.56	*	(0.51)	0.13	0.31	**
Wave								
2	0.15	0.48	1.41		0.05	0.41	1.11	
3	0.30	0.64	1.98	*	(0.05)	0.37	0.89	
Pseudo R^2	0.25				0.30			

*p<.05, **p<.01, ***p<.001*

Race

The full sample of 707 mortgage-using homeowners was subset into white ($n = 621$) and non-white ($n = 86$) respondents. Only 86 respondents from the sub-sample of home mortgage users were non-white. For this reason, additional analysis was performed on the white-only subset of respondents, and not on the other group. Table 4.10 includes the results of the primary model that was applied to this subset. In terms of model fit, the pseudo R^2 result was .22. Consistent with the primary analysis, the loan-to-value ratio of a respondent's mortgage was not significantly associated with their probability of transitioning from the workforce to full retirement. All other effects were consistent between the primary model and the model with only white respondents, with the exception of one variable. The opportunity to develop new skills at work was negatively related to the odds of transitioning from the workforce to full retirement in the primary model. However, no significant association was identified between this variable and the transition to full retirement in the white-only model.

Table 4.10

Results from Binary Logit Model for Discrete Time (Mortgage Only, White Only): Estimating the Conditional Probability of Transitioning from Workforce to Full Retirement

| Variables | Home Mortgage Only | | |
| | Race White ($N = 621$) | | |
	B	*SE B*	*Odds Ratio*
Household Financial Factors			
Loan-to-Value Ratio	0.10	0.28	1.25
Inverse Hyperbolic Sine of Net Worth	(0.01)	0.02	0.98
Natural Logarithm of Annual Income	(0.06)	0.19	0.86

Eligible for Retirement Benefits	0.14	0.49	1.38	
Employer-Spons. Health Ins. in Retirement	0.48	0.86	3.03	***
Financial Dependents	(0.15)	0.20	0.70	
Health Factors				
ADL Limitations	(0.13)	0.33	0.75	
Self-Reported Health Status	(0.01)	0.13	0.98	
Pre-Retirement Job Characteristics				
Self-Employed	(0.42)	0.16	0.38	*
Years Tenure at Current Job	0.01	0.01	1.02	*
Job Stress	0.09	0.18	1.22	
Job Satisfaction	(0.10)	0.11	0.79	
Chronic Work Discrimination	0.00	0.14	1.01	
Skills and Knowledge				
Opportunity to Develop New Skills	(0.12)	0.14	0.75	
Social Factors				
Partner Retired	0.33	0.43	2.14	***
Positive Partner Social Support	(0.06)	0.15	0.86	
Perceived Social Status	0.06	0.10	1.14	
Work Enhances Personal Life	(0.08)	0.12	0.83	
Purpose in Life				
Sense of Direction/Purpose	(0.02)	0.08	0.95	
Demographic Characteristics				
Age	0.59	1.95	3.92	**

Age Squared	(0.00)	0.00	0.99	*
Male	(0.20)	0.13	0.63	*
White	-		-	
College Graduate	(0.32)	0.12	0.48	**
Wave				
2	0.11	0.33	1.30	
3	0.12	0.33	1.33	
Pseudo R^2	0.22			

*p<.05, **p<.01, ***p<.001*

Education

The full sample of 707 mortgage-using homeowners was split into subsets of those who had graduated from college (*n* = 313) and those who had not (*n* = 394). Results from models in which the primary analysis was applied to these subsamples are located in Table 4.11. Pseudo R^2 was consistent between the college graduates and non-college graduates, at .24 and .25, respectively. Consistent with the primary analysis, the loan-to-value ratio of a respondent's mortgage was not significantly associated with the transition from the workforce to full retirement in either model. However, several inconsistencies were identified between the primary model and the education subset models.

Self-employment, the opportunity to develop new skills, and gender were associated with the probability of transitioning to full retirement in the primary model. However, these were not significant characteristics in the college graduate-only model. Conversely, sense of direction or purpose in life had no significant association with the transition to full retirement in the primary model. However, this characteristic was negatively related to the transition in the college

graduate-only model. All other effects were similar between the two models, with the exception of age. A one-year increase in age was related to 61.2 times higher odds of transitioning to full retirement in the college graduate-only model, compared to 3.8 times higher odds in the primary model.

Several inconsistencies were noted between the non-college graduate model and the primary model. First, eligibility for retirement benefits was associated with 3.3 times higher odds of transitioning to full retirement for non-college graduates, even though this characteristic was not associated with the transition in the primary model. Additionally, increased positive partner social support was negatively related to the transition in the non-college graduate model. This variable was not significant in the primary model. Conversely, years of tenure at one's current job, age, gender, and the opportunity to develop new skills were significantly associated with the transition to full retirement in the primary model. These characteristics were not significantly associated with the transition to full retirement in the non-college graduate model.

Table 4.11

Results from Binary Logit Model for Discrete Time (Mortgage Only, By Education): Estimating the Conditional Probability of

Transitioning from Workforce to Full Retirement

Variables	Home Mortgage Only							
	College Graduate ($N = 313$)				Non-College Graduate ($N = 394$)			
	B	*SE B*	*Odds Ratio*		*B*	*SE B*	*Odds Ratio*	
Household Financial Factors								
Loan-to-Value Ratio	0.25	0.57	1.76		(0.08)	0.21	0.84	
Inverse Hyperbolic Sine of Net Worth	(0.01)	0.04	0.97		(0.01)	0.02	0.97	
Natural Logarithm of Annual Income	(0.07)	0.33	0.85		0.07	0.27	1.18	
Eligible for Retirement Benefits	(0.13)	0.42	0.74		0.52	1.40	3.30	**
Employer-Spons. Health Ins. in Retirement	0.40	1.02	2.54	*	0.59	1.28	3.90	***
Financial Dependents	(0.33)	0.20	0.46		(0.16)	0.26	0.69	
Health Factors								
ADL Limitations	(0.01)	0.50	0.97		(0.19)	0.34	0.65	
Self-Reported Health Status	0.05	0.23	1.11		(0.10)	0.11	0.79	
Pre-Retirement Job Characteristics								

Self-Employed	(0.19)	0.34	0.65		(0.82)	0.07	0.15	***
Years Tenure at Current Job	0.02	0.02	1.04	**	0.01	0.01	1.02	
Job Stress	0.17	0.37	1.48		0.05	0.20	1.11	
Job Satisfaction	(0.16)	0.15	0.69		(0.04)	0.18	0.92	
Chronic Work Discrimination	0.15	0.31	1.41		(0.11)	0.11	0.78	
Skills and Knowledge								
Opportunity to Develop New Skills	(0.23)	0.18	0.59		(0.09)	0.13	0.81	
Social Factors								
Partner Retired	0.40	0.79	2.49	**	0.31	0.48	2.04	**
Positive Partner Social Support	0.18	0.49	1.51		(0.17)	0.13	0.68	*
Perceived Social Status	0.00	0.16	1.01		0.06	0.11	1.14	
Work Enhances Personal Life	0.03	0.25	1.08		(0.13)	0.12	0.75	
Purpose in Life								
Sense of Direction/Purpose	(0.09)	0.09	0.80	*	0.03	0.11	1.07	
Demographic Characteristics								
Age	1.79	89.90	61.15	**	0.21	0.85	1.64	

Age Squared	(0.01)	0.01	0.97	**	(0.00)	0.00	1.00
Male	(0.08)	0.27	0.84		(0.20)	0.16	0.63
White	0.15	1.04	1.40		(0.15)	0.24	0.71
College Graduate	-	-	-		-	-	-
Wave							
2	1.21	0.55	1.29		0.16	0.45	1.46
3	1.60	0.58	1.52		0.17	0.49	1.47
Pseudo R^2	0.24				0.25		

*p<.05, **p<.01, ***p<.001*

Research Question 3

In Table 4.12, results are presented from a joint competing risks logit that was used to predict the conditional probability of transitioning from full-time work to either bridge employment or full retirement in a given time period, given that the respondent had not made this transition in a previous time period. The 2010, 2012, and 2014 HRS collection waves represent Time Periods 1, 2, and 3, respectively. Data were weighted and conservative standard errors were employed to account for the complex sample design used in the HRS. In terms of model fit, pseudo R^2 was .17. Variance inflation factors from each wave included in the model ranged from 1.03 to 3.03. On this basis, it appears that multicollinearity among the predictor variables was not a concern in this analysis.

All 1,048 homeowners in the sample used in this study were at risk of transitioning from full-time employment to either bridge employment or full retirement. Once a respondent transitioned to bridge work or to full retirement, they were no longer deemed at risk. At the end of each time period, the risk set was reduced by the number of respondents who transitioned to bridge work or to full retirement in that time period. In this analysis, the hazard in question was the conditional probability of transitioning from full-time work to either bridge work or to full retirement in a given time period, given that the respondent had not made this transition in a previous time period.

Using this competing risk logit, strong evidence of a systematic relationship between home mortgage use and the employment transitions under investigation was identified ($p < .05$). In Hypotheses 3 and 4, a negative association was predicted between home mortgage use and the transition from full-time work to either bridge employment or full retirement. In support of Hypotheses 3 and 4, mortgage holders had lower odds of transitioning from full-time work status

to either bridge or full retirement status (*OR* = .64 and .69, respectively). In Hypothesis 5, a positive association was predicted between the transition from full-time work to bridge employment instead of from full-time work to full retirement. Insufficient evidence was generated through these analyses to support Hypothesis 5. Home mortgage use was not significantly associated with the transition from full-time work to bridge work instead of from full-time work to full retirement.

Transition to Bridge Status versus Remaining in Full-Time Status

In addition to home mortgage use, several control variables were significantly associated with the probability of transitioning to bridge employment instead of remaining in full-time work. First, health and demographic characteristics were strongly associated with this transition. Specifically, each one-point increase on the ADL limitation and self-reported health scales was associated with 59% and 25% higher odds of transitioning from full-time work to bridge work, respectively. In terms of demographic effects, age was positively associated with the odds of transitioning to bridge status. However, that effect appeared to be curvilinear—age squared was negatively associated with this transition.

Being male was negatively associated with the odds of transitioning to bridge status. Conversely, white respondents had 2.5 times higher odds of transitioning from full-time work to bridge work compared to non-white respondents. Results from this model revealed a negative relationship between both net worth and household income and the odds of transitioning from full-time work to bridge status. Finally, time was positively associated with the transition from full-time work to bridge status. Homeowners had 66% higher odds of transitioning from full-time work to bridge employment in wave three compared to wave one.

Transition to Full Retirement versus Remaining in Full-Time Status

The next model in this analysis was used to predict a respondent's conditional probability of transitioning to full retirement instead of remaining in full-time work. Along with home mortgage use, several control variables were significantly associated with the probability of this transition. First, access to employer-sponsored health insurance in retirement, a retired partner, years of tenure on the job, and time were positively associated with the odds of making the transition from full-time work to full retirement. Conversely, being self-employed, an increased belief that work enhances one's personal life, and being a college graduate were negatively associated with the odds of transitioning from full-time work to full retirement. Finally, there was a curvilinear relationship between age and this transition.

Transition to Bridge Status versus Transition to Full Retirement

The conditional probability of transitioning from full-time work to bridge status instead of from full-time work to full retirement status was explored in the third competing risks model. Although home mortgage use was not a strong predictor of this transition, several control variables were strongly associated with the transition to bridge status instead of to full retirement status. Among the financial factors associated with this transition, access to employer-sponsored health insurance in retirement was associated with 62% lower odds of transitioning to bridge employment instead of to full retirement. Having a retired partner and increased perceived social status were also negatively associated with the transition to bridge status instead of full retirement. Conversely, increased self-reported health status, being white, and being a college graduate were positively associated with the transition to bridge status compared to full retirement status. Finally, respondents who were self-employed had 4.5 times higher odds of transitioning to bridge employment instead of full retirement.

Table 4.12

Results from Competing Risks Model for Discrete Time: Estimating the Conditional Probability of Transitioning from Full-Time Employment to Either Bridge Work or Full Retirement

($N = 1,048$)

Variables	Transition to Bridge Status vs. Remaining Full-Time Status				Transition to Full Retirement Status vs. Remaining Full-Time Status				Transition to Bridge Status vs. Transition to Full Retirement Status			
	B	SE B	Odds Ratio		B	SE B	Odds Ratio		B	SE B	Odds Ratio	
Household Financial Factors												
Home Mortgage	(0.19)	0.11	0.64	**	(0.16)	0.10	0.69	*	(0.05)	0.18	0.90	
Inverse Hyperbolic Sine of Net Worth	(0.02)	0.02	0.96	*	(0.01)	0.02	0.97		(0.01)	0.02	0.99	
Natural Logarithm of Annual Income	(0.11)	0.09	0.79	**	(0.06)	0.09	0.87		0.03	0.05	1.06	
Eligible for Retirement Benefits	0.04	0.30	1.10		0.15	0.36	1.41		(0.11)	0.26	0.78	
Employer-Spons. Health Ins. in Retirement	(0.03)	0.31	0.93		0.39	0.51	2.45	***	(0.42)	0.13	0.38	**
Financial Dependents	(0.01)	0.25	0.97		(0.14)	0.17	0.73		0.12	0.42	1.33	
Health Factors												

ADL Limitations	0.20	0.30	1.59	*	0.17	0.32	1.50		0.03	0.25	1.07	
Self-Reported Health Status	0.10	0.12	1.25	*	(0.02)	0.09	0.95		0.12	0.15	1.32	*

Pre-Retirement Job Characteristics

Self-Employed	(0.01)	0.19	0.99		(0.65)	0.07	0.23	***	0.65	1.47	4.49	***
Years Tenure at Current Job	0.00	0.01	1.00		0.01	0.01	1.02	**	(0.01)	0.01	0.99	
Job Stress	0.02	0.11	1.04		(0.00)	0.09	0.99		0.02	0.13	1.06	
Job Satisfaction	(0.05)	0.11	0.88		(0.05)	0.09	0.90		(0.01)	0.14	0.98	
Chronic Work Discrimination	(0.06)	0.11	0.88		(0.05)	0.09	0.89		(0.00)	0.14	0.99	

Skills and Knowledge

Opportunity to Develop New Skills	(0.03)	0.11	0.93		(0.08)	0.10	0.83		0.05	0.17	1.12	

Social Factors

Partner Retired	(0.08)	0.14	0.84		0.23	0.23	1.71	**	(0.29)	0.10	0.51	**
Positive Partner Social Support	0.03	0.17	1.08		0.07	0.16	1.17		(0.04)	0.17	0.92	
Perceived Social Status	(0.04)	0.06	0.91		0.03	0.06	1.07		(0.06)	0.06	0.87	*
Work Enhances Personal Life	(0.02)	0.11	0.95		(0.13)	0.07	0.73	**	0.11	0.18	1.29	

Purpose in Life

Sense of Direction/Purpose	0.02	0.07	1.05		0.02	0.07	1.04		0.00	0.08	1.00	
Demographic Characteristics												
Age	0.48	1.07	3.00	**	0.65	2.03	4.46	**	(0.16)	0.35	0.69	
Age Squared	(0.00)	0.00	0.99	**	(0.00)	0.00	0.99	**	0.00	0.00	1.00	
Male	(0.17)	0.13	0.67	*	(0.11)	0.12	0.78		(0.06)	0.18	0.87	
White	0.39	0.81	2.46	**	(0.03)	0.22	0.93		0.44	0.88	2.73	*
College Graduate	0.01	0.18	1.02		(0.25)	0.10	0.56	**	0.27	0.37	1.87	**
Wave												
2	0.07	0.24	1.17		0.13	0.26	1.35		(0.06)	0.22	0.87	
3	0.22	0.34	1.66	*	0.29	0.37	1.95	***	(0.07)	0.20	0.85	

*p<.05, **p<.01, ***p<.001

Summary of Results

Research Question 1

In Research Question 1, the relationship between home mortgage use and the transition from the workforce to full retirement in a sample of older homeowners was explored. Under Hypothesis 1, a negative association was expected between home mortgage use and the transition to full retirement. This hypothesis was supported by the results in the primary model that included the entire sample of homeowners. However, Hypothesis 1 was not supported by results for all subsamples that were used to further investigate the association between home mortgage use and retirement transitions. In the primary model, homeowners with home mortgages had 24% lower odds of transitioning to full retirement than those without home mortgages. In the male-only model, the effect was similar but slightly higher, with mortgage-using males associated with 33% lower odds of making the transition to full retirement compared to males with no mortgages.

Moreover, in the model in which this relationship was explored for college graduates, the effect of mortgage use was even stronger: Mortgage-using college graduates were associated with 45% lower odds of transitioning to full retirement compared to college graduates with no mortgages. Turning to differences in net worth quartile groups, homeowners in the lowest net worth quartile who used home mortgages had 49% lower odds of transitioning from the workforce to full retirement. Mortgage-holders in the highest net worth quartile had 64% lower odds of making the transition than homeowners in the same net worth group who had no home mortgage. In the models in which subsamples of female, white, and non-white respondents were

explored, home mortgage use was not significantly associated with the transition from the workforce to full retirement.

Based on these results, it appears that older workers with home mortgages remain in the workforce longer. In this study, these effects were especially strong for males, college graduates, and for the least and most financially secure respondents in the sample.

Research Question 2

In Research Question 2, the association between the loan-to-value ratio of a home mortgage and the transition from the workforce to full retirement in a sample of only mortgage holders was investigated. Under Hypothesis 2, a negative relationship between the loan-to-value ratio of a respondent's mortgage and their transition from the workforce to full retirement was expected. Insufficient evidence was generated through these analyses to support this hypothesis. Subsample models were generated to explore demographic and socioeconomic differences in these effects. Consistent with the primary analysis, insufficient evidence was generated through the subsample models to support Hypothesis 2 in any subsample. The presence of a mortgage was found to affect a respondent's retirement transition decision making. In contrast, the amount of leverage was not found to affect retirement decision making. It appears that the psychological impact of mortgage debt might affect retirement transition decision making among older homeowners more than the financial impact of this particular type of debt.

Research Question 3

In Research Question 3, the association between home mortgage use and the competing risks of transitioning from full-time work to bridge work or to full retirement was investigated. Under Hypothesis 3, a negative relationship was expected between home mortgage use and the

transition from full-time work to bridge work. Through the analysis, sufficient evidence was generated to support this hypothesis: Mortgage debt was found to be associated with 36% lower odds of transitioning to bridge work compared to remaining in full-time employment.

Under Hypothesis 4, a negative relationship was expected between home mortgage use and the transition from full-time work to full retirement. Sufficient evidence was generated to support this hypothesis. Mortgage-holding was associated with 31% lower odds of transitioning from full-time work to full retirement. Under Hypotheses 5, it was expected that home mortgage use would be positively associated with the transition from full-time work to bridge work instead of from full-time work to full retirement. Insufficient evidence was generated from the analysis to support this hypothesis. Based on findings from the analyses performed to investigate Research Question 3, homeowners with mortgage debt are more likely to continue working full-time. However, based on these findings, it also appears that homeowners with mortgage debt are not necessarily more likely to engage in periods of bridge work when they are ready to leave full-time employment.

Chapter 5 - Discussion and Implications

The retirement process is undergoing an evolution with increasing numbers of retirement-aged workers delaying retirement by using part-time work as a bridge between full-time work and full-time retirement (Beehr & Bennett, 2015; Cahill, Giandrea, & Quinn, 2013; Wang & Shi, 2014). Moreover, growing numbers of full-time workers are returning to paid employment after transitioning to full-time retirement, in a phenomenon known as "unretiring" (RAND, 2018). At the same time, retirement-aged individuals are in more financial distress than their predecessors, with higher overall debt in relation to home equity, higher mortgage loan to value ratios, and a greater number of individuals with savings less than $25,000 (Lusardi, 2016). Further, individuals aged 55 and above are experiencing the largest relative increases in home mortgage debt of any age group, in both the number of originated mortgages and the amount of mortgage debt (CFPB, 2014).

Based on the existing literature, carrying mortgage debt into retirement might negatively impact both the financial and psychological health of retirees (Brown et al., 2005; Seay et al., 2015). However, some researchers have suggested that the trend of Americans retiring with mortgage debt should not be cause for alarm. These researchers reason that retiring with mortgage debt could be a complex financial trade-off strategy employed by financially sophisticated households who are trying to build wealth through housing leverage, or using mortgage debt to finance potential investment returns (Amromin et al., 2007). This strategy is concerning given that changes to US income tax law (Tax Cuts and Jobs Act of 2017) are expected to increase the cost of mortgages for many Americans.

Previous researchers have studied retirement transition decisions (e.g. Kim & DeVaney, 2005; Rooks et al., 2017; von Bonsdorff et al., 2009). However, there is no known study

in which researchers have investigated the association between the retirement transitions of older homeowners and their use of home mortgage debt. Further, there is no theory to guide financial planners, educators or laypeople in retirement transition decision making. Given this background, this researcher sought to understand factors that influence retirement transition decisions, particularly the role of mortgage debt in these transitions.

A series of logit models for discrete time were employed to investigate the association between home mortgage debt and the retirement transition decisions of older homeowners over three time periods. Specifically, the following research questions were explored:

1. Is home mortgage use associated with the timing of the transition from the workforce to full retirement?

2. Among retirement-aged homeowners with home mortgages, is the loan-to-value ratio of the mortgage associated with the timing of the transition from the workforce to full retirement?

3. In a competing risks model, is home mortgage use associated with the transition from full-time work to bridge employment instead of to full retirement?

In this chapter, results and implications generated through this investigation are discussed. Results are first analyzed against expectations outlined in the STREAM framework and existing literature. Next, this study's implications and contribution to the overall literature are discussed. The limitations of this study are then noted. Finally, suggestions for future research are provided.

Discussion of Results

The researcher's key objective in conducting this study was to explore the relationship between home mortgage debt and retirement transitions on a longitudinal basis. Additional insight was provided by the STREAM framework constructs. Most results of this study aligned with the expectations outlined in previous literature and the STREAM framework. However, some results were inconsistent between the primary and subset models and, in some cases, were contrary to expectations. A summary of expected versus actual effects can be found in Table 5.1, followed by a discussion of the results of this study compared to expectations at the outset of this research.

Table 5.1

Summary of Expected Versus Actual Effects

	Full Retirement vs. Workforce		Bridge Work vs. Full-Time Work		Full Retirement vs. Full-Time Work		Bridge Work vs. Full Retirement	
	Expected	Actual	Expected	Actual	Expected	Actual	Expected	Actual
Household Financial Factors								
Home Mortgage (RQs 1 and 3)	-	-	-	-	-	-	+	None
Loan-to-Value Ratio (RQ 2)	-	None						
Inverse Hyperbolic Sine of Net Worth	+	None	N/E	-	+	None	N/E	None
Natural Logarithm of Annual Income	-	None	N/E	-	-	None	N/E	None
Eligible for Retirement Benefits	+	+	N/E	None	+	None	-	None
Employer-Spons. Health Ins. in Retirement	+	+	N/E	None	+	+	-	-
Financial Dependents	-	-	N/E	None	-	None	+	None
Health Factors								
ADL Limitations	+	+	-	+	+	None	-	None
Self-Reported Health Status	-	None	+	+	-	None	+	+

Pre-Retirement Job Characteristics

Self-Employed	-	-	-	None	-	-	+	+
Years Tenure at Current Job	N/E	+	N/E	None	N/E	+	+	None
Job Stress	+	None	+	None	+	None	-	None
Job Satisfaction	-	-	-	None	-	None	+	None
Chronic Work Discrimination	+	+/-	+	None	+	None	-	None

Skills and Knowledge

Opportunity to Develop New Skills	-	+/-	-	None	-	None	+	None

Social Factors

Partner Retired	+	+	+	None	+	+	-	-
Positive Partner Social Support	+	+/-	+	None	+	None	-	None
Perceived Social Status	-	+	-	None	-	None	+	-
Work Enhances Personal Life	-	-	-	None	-	-	+	None

Purpose in Life

Sense of Direction/Purpose	+	+/-	+	None	+	None	-	None

Demographic Characteristics

Age	+	+	+	+	+	+	-	None
Male	-	-	-	-	-	None	+	None
Race White	N/E	+/-	N/E	+	N/E	None	N/E	+
College Graduate	-	-	-	None	-	+	+	+
Time (Wave)	+	+	+	+	+	+	-	None

N/E = No Expectation

Financial Factors

Mortgage debt

In the US, older homeowners are carrying more mortgage debt into retirement than in previous decades, both in terms of the number of mortgages originated and the dollar amount borrowed (CFPB, 2014). This trend is cause for concern: Home mortgage debt has been found to negatively impact the financial and psychological health of retirees (CFPB 2014; Lusardi et al., 2016). Moreover, recent changes in US income tax law are expected to increase the overall cost of home mortgages for a large number of American homeowners because they will lose the ability to deduct interest expense related to home mortgages (Tax Cuts and Jobs Act of 2017).

At the outset of this study, it was expected that older homeowners with mortgages would not feel financially or psychologically ready to withdraw from the workforce, delaying retirement as a result. This expectation was supported in this study. Compared to homeowners without home mortgages, homeowners with home mortgages were 24% less likely to transition from the workforce to full retirement. These results were consistent in secondary analyses, in which gender, educational, and net worth differences among this sample of homeowners were explored. Based on these results, the presence mortgage debt appears to affect decision making around retirement transitions in a different way than the level of net worth. For this reason, researchers should continue to separate mortgage debt from net worth and other types of debt in future research related to the retirement transition decisions of homeowners.

Male homeowners and homeowners who had graduated from college were less likely to transition from the workforce to full retirement while they possessed home mortgage debt. However, no association was found between mortgage debt and retirement transitions in the subsamples of females and non-college graduates in this study. Based on these findings, this

researcher supports Wang et al.'s (2009) suggestion that gender and education effects on retirement transitions should be interpreted with skepticism. Specifically, Wang et al. (2009) have argued that older males and college graduates might have the opportunity to remain in the workforce longer due to the types of jobs that traditionally have been more available to these sub-groups than to women and people without a college education. For this reason, it would be beneficial to control for job type in future studies that explore retirement transition decisions.

In secondary analyses, in which the original sample of homeowners was stratified into net worth quartiles, mortgage-using homeowners in the lowest quartile of household net worth and those in the highest quartile were less likely to transition from the workforce to full retirement compared to homeowners without mortgages. This negative relationship between home mortgage use and the transition to full retirement was expected at the outset of this study. However, it was expected that the effects of this relationship would be stronger in the lower net worth quartiles than among those in the higher net worth quartiles. Specifically, it was assumed that higher net worth homeowners would possess a larger amount of accumulated financial resources and would feel more financially ready to exit the workforce, even when they carried mortgages into retirement. Based on these results, it appears that the presence of mortgage debt may contribute to feelings of psychological unreadiness to exit the workforce for older homeowners, even when their objective financial circumstances would allow them to fully retire.

In another model used in this study, the researcher compared the relationship between home mortgage use and the transition from full-time work to the competing risks of either bridge work or full retirement. It was expected that older homeowners with home mortgages would remain in full-time work instead of transitioning to bridge work. Specifically, it was assumed that those individuals would not feel financially ready to leave their full-time positions for

(presumably lower-paying) bridge employment. This expectation was supported in this study. Compared to homeowners without home mortgages, homeowners with mortgages were 36% less likely to transition from full-time positions to bridge work. Under the next hypothesis in this study, it was expected that homeowners with home mortgages would remain in their full-time positions instead of transitioning to full retirement because they would not feel financially ready to exit the workforce. Again, results aligned with this hypothesis. Compared to homeowners without home mortgages, home mortgage users were 31% less likely to transition from full-time work to full retirement. Based on the results of these two models, it appears that older homeowners with mortgages are more likely to remain in full-time employment.

Under the third and final hypothesis tested in the competing risks model, it was predicted that homeowners with home mortgage debt would choose bridge work instead of full retirement after transitioning from full-time work. Specifically, it was assumed that these workers would not feel financially ready to exit the workforce completely. No support was found for this hypothesis. Based on these results, homeowners with mortgage debt are more likely to remain in their full-time positions longer. However, this particular form of debt is not necessarily associated with a period of bridge employment between full-time work and full retirement.

In addition to the presence of home mortgage debt, it was assumed at the outset of this study that the loan-to-value ratio of a home mortgage would contribute to an individual's perception of readiness to retire. Therefore, the loan-to-value ratio of a respondent's mortgage was explored as a key factor in retirement transition decision making in a subsample of mortgage-holding homeowners. It was hypothesized that homeowners whose mortgages had higher loan-to-value ratios would remain in the workforce longer. However, the loan-to-value ratio of a respondent's mortgage was not a significant predictor in any model utilized for this

study. Based on results in this investigation, while the presence of mortgage debt is a factor in retirement transition decisions, the degree of leverage is not a factor in these decisions. This finding could be attributed to individual's focusing more on their cash flow circumstances rather than their wealth. Future studies could explore the payment-to-income ratio as a predictor of retirement transitions to account for income constraint and overall cash flow concerns that might influence decisions around retirement.

In summary, based on results from analyses of the key variables explored in this study, older homeowners with home mortgages are more likely to delay their exit from the workforce. The presence of mortgage debt affects the timing of exit from full-time employment. However, homeowners with this type of debt are not necessarily more likely to engage in bridge work between periods of full-time work and full retirement. Moreover, the psychological impact of mortgage debt might be more important in retirement transition decision making among older homeowners than the financial impact of mortgage debt. The presence of a mortgage is a factor in retirement decision making, but the degree of leverage is not. Financial professionals should encourage older homeowners to reduce their mortgage debt early so that homeowners do not feel compelled to remain in the workforce longer than they plan to. Further, financial professionals should caution their more financially-sophisticated older clients who plan to use home mortgage debt to finance investment opportunities via a trade-off strategy. The psychological impact from the use of this form of leverage could outweigh the potential financial gains that might result from the use of this strategy; particularly if the use of this strategy derails retirement plans.

Based on the unexpected finding that the loan-to-value ratio of a respondent's mortgage did not affect retirement planning decision making in the subsample of mortgage-holders, it appears that older homeowners do not understand the potential impact their pre-retirement

leveraging decisions may have on their cash flow availability in retirement. As such, financial

professionals should educate their older clients on how these leveraging decisions may affect

retirement timing. Further, it appears that older homeowners who are male, are college

graduates, and are at the lower and upper ends of the net worth spectrum are more likely to delay

their withdrawal from the workforce due to mortgage debt. Financial professionals should use

information about individual retirement preferences to help clients plan realistically for the

timing of their exit from the workforce.

Other financial factors

Net worth. In the traditional view of the retirement process, older homeowners with

higher net worth would be expected to feel financially ready for retirement sooner than

homeowners with a lower net worth (Laitner & Sonnege, 2013). For this reason, a positive

relationship was expected between net worth and the transition from the workforce to full

retirement. However, no relationship was noted between these two variables in any model that

included a predicted transition from the workforce to full retirement. Again, based on this

finding, psychological readiness for retirement appears to play a greater role than financial

readiness in retirement transitions decisions.

Turning to the competing risks model, there were no directional expectations for the

relationship between net worth and the probability of transitioning to bridge work at the outset of

this study. Researchers have found no consistent evidence that financial needs affect a person's

decision to transition from full-time work to bridge employment (Wang et al., 2008). In this

study, a negative relationship was found between net worth and the transition from full-time

work to bridge work. This finding is similar to Kim and DeVaney's (2005) suggestion that assets

and debts play a role in a person's decision to engage in bridge work, as well as other evidence

that individuals with greater financial resources would be less likely to seek bridge employment in retirement (Adams & Rau, 2004; Kerr & Armstrong-Stassen, 2011; van Solinge, 2014; Zissimopoulos & Karoly, 2007).

In addition to exploring net worth as a predictor of retirement transitions in a sample of homeowners, the sample was also stratified into net worth quartiles to explore differences in retirement transition decisions between the quartile groups. Along with the impact of home mortgage use discussed above, several other differences were noted in terms of variables that affected the transition from the workforce to full retirement. First, homeowners in the two lowest net worth groups with access to employer-sponsored health insurance in retirement were more likely to retire. However, access to employer-sponsored health insurance in retirement did not appear to affect retirement decision making among members of the two higher net worth groups. It is understandable that homeowners with the least amount of financial resources would be most concerned about the availability of healthcare in retirement. On the other hand, based on this result, financial professionals should encourage clients to purchase supplemental health insurance to bridge the time between their exit from the workforce and Medicare eligibility so that they do not remain in the workforce longer than planned due to their need for health insurance.

Homeowners with access to employer-sponsored health insurance in retirement who were in the two lowest net worth quartiles were more likely to exit the workforce. Among members of the two higher net worth groups, declining health was one reason for leaving the workforce. Financial professionals should counsel clients about the relationship between health and retirement transition decisions as declining health may drive clients from the workforce earlier than they had intended.

Other notable differences were identified in terms of characteristics that affected

retirement transition decisions within the net worth quartile groups. For instance, job satisfaction,

chronic work discrimination, and positive social support from one's partner were factors in

decision making around retirement transitions only for members of the highest net worth group.

Based on this finding, older people with the most financial resources base their retirement

transition decision making on their psychological readiness to exit the workforce more than their

financial need to keep working. As expected for the top three net worth quartiles in this study,

age was associated with an exit from the workforce to full retirement. However, age was not

associated with the transition to retirement among those in the lowest net worth group. This

finding indicates that, holding all else equal, older homeowners who are the most financially

vulnerable remain in the workforce longer. However, it is not possible to ascertain from these

results if it was the actual lack of financial resources that influenced these lower net worth

individuals to remain in the workforce or if it was the perception that the resources would not

last in retirement that drove this decision, as was suggested by Gruber and Wise (1999).

Pre-retirement annual income. Kim and Feldman (2000) provided evidence that

individuals with lower salaries were more likely to retire early. Based on this evidence, a

negative relationship was expected at the outset of this study between pre-retirement annual

household income and the probability of transitioning from the workforce to full retirement. No

support was found for this expectation. However, it was found that an increase in pre-retirement

annual household income was associated with a 21% decrease in the likelihood of transitioning

from full-time work to bridge employment. In this study, there were no directional expectations

regarding the association between pre-retirement income and the probability of engaging in

bridge employment. However, this finding aligns with Kim and DeVaney's (2005) conclusion

that assets and debts affect a person's decision to engage in bridge work. This relationship could be explained by the idea that older homeowners with higher incomes will work in their higher-paying full-time jobs until they feel financially ready to retire instead of engaging in presumably lower-paying bridge work between the two.

Eligibility for retirement benefits. Turning to another indicator of financial status, eligibility for retirement benefits, it was expected at the outset of this study that older people who were eligible for retirement benefits would transition out of the workforce to full retirement. This assumption was consistent with findings by Kim and Feldman (2000) and Mennell et al. (2004). Moreover, it was anticipated that an individual who was eligible for retirement benefits would retire fully rather than remaining in full-time employment or stopping for bridge work between full-time work and full retirement. No significant association was found between this variable and the odds of transitioning to retirement in any of the full sample models. However, eligibility for retirement benefits was an important contributor to retirement transitions within several subsamples in this study. Female respondents who were eligible for retirement benefits were two times more likely to transition from the workforce to full retirement than females without these benefits. Non-college graduates who were eligible for retirement benefits were more than three times more likely to make this transition. Moreover, non-white respondents who were eligible for these benefits were almost seven times more likely to transition from the workforce to full retirement than non-white respondents without retirement benefits. Again, this result must be viewed through the lens of job opportunity and job type, as suggested by Wang et al. (2009). Specifically, older homeowners who are female, non-white, or less-educated might not have the opportunity to remain in the workforce once they reach the age to qualify for retirement benefits due to the types of jobs that traditionally have been available to them.

Employer-sponsored health insurance. Among the models utilized in this study, the association between access to employer-sponsored health insurance and the transition from the workforce to full retirement was one of the strongest associations. Researchers have suggested that this characteristic is associated with earlier retirement and the decision not to seek bridge employment (Adams & Rau, 2004; Kerr & Armstrong-Stassen, 2011; Mermin et al., 2007; van Soling, 2014; Zissimopoulos & Karoly, 2007). Consistent with this view, respondents in this study with access to employer-sponsored health insurance in retirement were more likely to transition from the workforce to full retirement and less likely to engage in bridge work. As noted above, financial professionals should encourage clients to purchase supplemental health insurance that will bridge the time between their exit from the workforce and Medicare eligibility. In this way, older clients can avoid remaining in the workforce longer than they had planned due to their need for health insurance. Moreover, employers looking to downsize their workforce should use this benefit to incentivize older workers to exit the workforce.

Financial dependents. The presence of financial dependents was the final household financial factor that was investigated in this study as a potential factor in retirement transition decision making. At the outset of this study, it was expected that the presence of financial dependents in the household would result in respondents delaying their transition from the workforce to retirement, making participation in bridge work more likely. This assumption was based on consistent evidence that individuals are more likely to postpone retirement and engage in bridge employment to provide for dependent children and grandchildren (Brown & Warner, 2008; Kim & Feldman, 2000). Retirement delays among homeowners with financial dependents were noted in the male, college graduate, and third net worth quartile subsamples in this study. However, no evidence was found that the presence of financial dependents was a factor in

respondents engaging in bridge employment. Again, this result must be viewed through the lens of job opportunity and job type, as suggested by Wang et al. (2009). It is possible that these subgroups—in particular, males and college graduates—have more opportunities to remain in the workforce due to the types of jobs that have been available to them traditionally.

STREAM Framework

Under the STREAM framework, several determinants other than financial factors are understood to influence an individual's ability, motivation, and opportunity to work (Ybema et al., 2014). In turn, an individual's ability, motivation, and opportunity to work result in work productivity and employment transitions (Ybema et al., 2014). At the outset of this study, it was expected that healthier individuals, those with favorable pre-retirement job characteristics, and those with the opportunity to increase their skills and knowledge at work would remain in the workforce longer. Individuals with positive social support and purpose in life outside of their work were expected to retire fully. In the following section, the results of this study are discussed in reference to these expectations.

Health Factors

Researchers have established that employees in good physical health are more likely to continue working, while employees in poor physical health are more likely to retire (e.g., Shultz & Wang, 2007; Szubert & Sobala, 2005). Along these lines, researchers have also suggested that physically healthier individuals will be more likely to engage in bridge employment when they are ready to scale back from their full-time positions (e.g., Feldman, 1994; Kerr & Armstrong-Stassen, 2011). Health factors were not consistent predictors of the transition from the workforce to full retirement in any full sample model used in this study. However, these factors were associated with the transition from the workforce to full retirement within some subgroups.

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Specifically, college graduates and those in the two higher net worth quartiles were about two times more likely to transition to full retirement than to remain in the workforce when they experienced a higher number of limitations in performing ADLs. This positive relationship between health limitations and retirement was expected at the outset of the study. On this basis, it may be the case that homeowners with more financial resources are in a position to make retirement transition decisions based on their health conditions. In contrast, those decisions may be tied to financial resources for homeowners with fewer financial resources.

Although not a predictor of transitions from the workforce to full-retirement, individuals with a higher number of limitations on their ability to perform ADLs were more likely to engage in bridge work than to remain in their full-time jobs. This result is inconsistent with expectations at the outset of this study, as well as results in the existing literature. Researchers have suggested that less healthy individuals are more likely to transition straight from full-time work to full retirement (e.g., Feldman, 1994; Kerr & Armstrong-Stassen, 2011). However, the results from this study could indicate that an older homeowner might want or need to reduce their work hours due to poor health, but may not necessarily wish to exit the workforce completely.

Self-reported health was also explored in this study as a factor in retirement transition decision making. This characteristic was not associated with the transition from the workforce to full retirement in any model. Even so, evidence was found in this study that a person's self-reported health is a factor in their decision to transition to bridge work. Individuals who reported being healthier were more likely to transfer from full-time work to bridge work. In addition, they were more likely to engage in bridge work instead of full retirement. These results align with findings by other researchers, who have concluded people who feel healthier will delay their exit from the workforce (e.g., de Wind et al., 2018; Shultz & Wang, 2007; Szubert & Sobola, 2005).

Pre-Retirement Job Characteristics

Based on the STREAM framework and on results of previous empirical studies (e.g., de Wind et al., 2016; Ybema et al., 2014), there was an expectation at the outset of this study that respondents with pre-retirement full-time jobs that included several favorable characteristics would be more likely to remain in the workforce longer. Several characteristics in this area were explored in this study and were found to be associated with retirement transitions. Consistent with evidence that individuals with greater autonomy in their jobs will stay in the workforce longer (Moen et al., 2016), self-employed individuals were less likely to transition from the workforce to full retirement. Moreover, in the competing risks model, self-employed individuals were less likely to transition from full-time work to full retirement. Respondents who transitioned from full-time work were 4.5 times more likely to engage in bridge work than to retire fully. This result was consistent with Kim and DeVaney's (2005) suggestion that older self-employed individuals had greater autonomy and flexibility at work, leading to greater opportunities for bridge work.

Kim and Feldman (2000) suggested that a person's tenure in their current job would affect their likelihood of engaging in bridge employment. In this study, tenure in one's current job was not significantly associated with any bridge transition. However, job tenure was positively associated with transitions from the workforce to retirement and from full-time work to full retirement. It is possible that respondents with longer tenures in their current job had better access to employee benefits, such as pensions plans and employer-sponsored healthcare in retirement, that might allow them to retire fully.

Researchers have suggested that people who experience job stress are more likely to leave the workforce (Elovainio et al., 20015; Lin & Hsieh, 2001; van den Berg, Elders, &

Burgdorf, 2010). However, insufficient evidence was identified in any model in this study to support an association between job stress and retirement transitions. In the same vein, researchers have suggested that people who report higher job satisfaction remain in the workforce longer (Moen et al., 2016). In this study, this variable was associated with retirement transitions in one model only. Specifically, increased job satisfaction was associated with 51% lower odds of transitioning from the workforce to full retirement in the highest net worth quartile only. On this basis, it appears that the most financially secure older homeowners have the luxury of basing their retirement decisions on their psychological readiness to leave the workforce instead of financial factors.

Finally, it was expected at the outset of this study that feelings of chronic work discrimination would affect retirement transitions. In line with this expectation, respondents in the highest net worth quartile had almost two times higher odds of transitioning from the workforce to full retirement when they reported higher feelings of discrimination. Again, it appears that older homeowners with the most financial resources can exit the workforce when they are psychologically ready to do so. One confounding result was identified from the model that included only non-white homeowners. Specifically, stronger feelings of chronic work discrimination were associated with a 55% decrease in the odds of transitioning from the workforce to full retirement. More research is warranted in order to understand the retirement transition decisions of this particular subgroup.

Skills and knowledge

Using the STREAM framework as their theoretical grounding, researchers have provided evidence that older employees who improved their fit within an organization by expanding their skills and knowledge were more likely to remain in the workforce (de Wind et al., 2014; Ybema

et al., 2014). Support for that view was found in the subsamples of males in this study, along with the second to lowest net worth group and the sample of only mortgage holders. However, the group in the highest net worth quartile was two times more likely to exit the workforce when they had the opportunity to develop new skills at work. This result was unexpected. It is possible that the question used to measure this construct was not effective as an indicator of an individual's efforts to fit into an organization. In particular, employees who have the opportunity to build new skills at work will not necessarily take advantage of those opportunities in order to improve their fit within their organization. In future studies on this topic, researchers could improve on this measurement by tying the skills and knowledge construct to an indicator related to employees seeking out training opportunities, rather than an indicator of the availability of training opportunities.

Social factors

Researchers have provided consistent evidence that people in a relationship tend to time their retirement decisions in relation to each other (e.g., Curl & Townsend, 2008; Henkens, 1999; Pienta, 2003). These findings were supported in this study—the presence of a retired partner affected a respondent's transition from the workforce to full retirement in almost every model, with the exception of the lowest and highest net worth quartiles. Moreover, individuals with retired partners were more likely to transition directly from full-time work to full retirement, with no stop for bridge work between the two.

It was also expected at the outset of this study that the presence of positive social support from a partner would affect a person's transition from the workforce. Results of this study were mixed in that respect: Males, college graduates, and those in the highest net worth quartile were more likely to transition from the workforce to full retirement if they had increased spousal

social support. On the other hand, in the model in which the sample was limited only to mortgage-holders and the loan-to-value ratio of a respondent's mortgage was the key independent variable, females and non-college graduates were less likely to make the transition when they reported increased spousal social support.

At the outset of this research, it was expected that strong feelings that work enhances one's personal life would be associated with delayed retirement. Support for this expectation was found in the full model in which transition from the workforce to full retirement was predicted, as well as in the model in which a transition from full-time work to full retirement was predicted. However, this characteristic was not associated with engagement in bridge work. It is possible that older homeowners who feel strongly that work enhances their personal life are more likely to remain in full-time work longer. However, older homeowners with this characteristic who are ready to leave their full-time positions are not more likely to engage in bridge work.

Purpose in life

Based on evidence from Sewdas et al. (2017), it was expected that respondents who reported a sense of direction or purpose in life would be more likely to exit the workforce. In this study, support for this expectation was identified in the subgroups of males, non-college graduates, and in the second lowest net worth quartile. Conversely, results in the college graduate and highest net worth subgroups were contradictory to expectations at the outset of this research. Specifically, respondents who reported a sense of direction or purpose in life had lower odds of exiting the workforce. It is possible that many college graduates and higher net worth homeowners feel that their work gives them a purpose in life, and therefore delay exiting the workforce. In future studies on this topic, the use of an indicator that only measures respondents' sense of direction and purpose in life outside of work would be useful.

Demographic characteristics

Based on the STREAM framework and results in the existing literature, a homeowner's financial status, pre-retirement job characteristics, opportunity to develop skills and knowledge at work, health factors, social factors, and purpose in life affect their decision making around retirement transitions. However, these effects can be moderated by demographic characteristics. In this study, associations between age, gender, race, and education and retirement transitions decisions were explored. Moreover, separate models were utilized to explore differences in retirement transitions by gender, race (white vs. non-white), and education (college graduate vs. non-college graduate).

Age

At the outset of this research, it was expected that older homeowners would transition from the workforce to full retirement at a faster rate. Moreover, it was expected that older individuals would choose to transition directly from full-time work to full retirement rather than engaging in bridge work between the two. Researchers have suggested that a curvilinear relationship exists between age and retirement transitions. For this reason, it was also expected that the squared term of age would be negatively associated with the transition to full retirement.

These expectations were supported in almost all models used in this study. No association was identified between age and transition from the workforce to full retirement in the male-only model. In comparison, a one-year increase in age was associated with 10 times higher odds of retiring for those in the female-only model. Additionally, age was not associated with retirement transitions in the model that included only non-white respondents. However, odds of transitioning from the workforce to full retirement were more than four times higher for respondents in the white-only model. Finally, support for expectations regarding age effects was identified in all net worth quartile models, with the exception of the lowest net worth quartile. It

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is clear that homeowners have individual expectations regarding how long they will remain in the workforce. Financial professionals should clearly understand these expectations when helping clients prepare for retirement.

Gender

Based on the existing literature, it was expected that males would remain in the workforce longer than females (Bennet et al., 2016; Davis, 2003; Moen, Plassmann, & Sweet, 2001). Results from models in which gender was used as a predictor of the transition from the workforce to full retirement were consistent with this expectation. Compared to females, males were less likely to exit the workforce in subgroup models that included only the lowest and highest net worth quartiles. In the model that included only mortgage-holders and the model that only included white mortgage-holders, males were also less likely than females to transition from the workforce to full retirement. Additionally, in the competing risks model, males were less likely than females to transition from full-time work to bridge work.

Gender differences were also noted in the male-only and female-only models. In the area of household financial factors, the presence of a home mortgage and financial dependents were associated with lower odds of transitioning from the workforce to full retirement for males, but not for females. Conversely, females who were eligible for retirement benefits and had access to employer-sponsored health insurance in retirement were more likely to transition from the workforce to retirement. Those factors were not important for respondents in the male model.

In terms of pre-retirement job characteristics and the opportunity to develop new skills, increased job tenure and the opportunity to develop new skills at work were strongly associated with the transition for males but not for females. Regarding social factors and a sense of purpose in life, positive social support from one's partner was important for males, with increased support associated with 84% higher odds of transitioning to full retirement. However, this factor

was not important for females. A sense of direction or purpose in life and feelings that work enhances one's personal life were also important for males but not for females.

Gender differences were also noted in regard to the effects of age and time on retirement transitions. A one-year increase in age was associated with more than 10 times higher odds of transitioning to full retirement for females. However, this characteristic was not important for males. Moreover, males were two times more likely to transition from the workforce to full retirement in Time 3 than in Time 1. In contrast, time was not an important factor in female transitions.

Based on these results, it appears that males remain in the workforce longer than females. Female homeowners seem to be more likely than male homeowners to retire based on financial factors. However, males remain in the workforce for reasons other than financial factors. Positive pre-retirement job characteristics appear to be important in this respect, such as feeling that work enhances one's personal life and believing that adequate training opportunities are available at work. Both genders are more likely to retire when they have a retired partner. Employers who hope to retain the knowledge base of older workers in their workforce can use these results to design human resource practices that entice older employees to keep working. Moreover, financial professionals can use these results to inform retirement planning practices based on gender-specific antecedents to retirement.

Race

At the outset of this research, no directional assumptions were made regarding the association between race and retirement transitions. However, race was associated with retirement transitions in several of the subgroup models. First, white homeowners were 65% less likely to transition to full retirement than non-white homeowners in the model with only college graduates. It appears that white college graduates tended to remain in the workforce longer than

non-white college graduates. Effects of race were also noted in the net worth quartile models in this research. White respondents in the lowest net worth model were 2.4 times more likely to transition from the workforce to retirement than non-white respondents. This effect was the opposite in the second and third net worth quartile models, with white respondents around 70% less likely to make the transition to full retirement than non-white respondents.

In the competing risks model, white respondents were 2.5 times more likely to transition from full-time employment to bridge employment than non-white respondents. Compared to non-white respondents, white respondents were also 2.7 times more likely to transition to bridge employment instead of to full retirement after leaving full-time work. Again, this result could be explained by Wang et al.'s (2009) suggestion that older white homeowners have more opportunities to remain in their full-time positions and to engage in bridge work than non-white homeowners.

Racial differences were also identified in the white only and non-white only subgroup models. Eligibility for retirement benefits had a strong association with the transition from the workforce to full retirement in the model with only non-white homeowners. Age affected the transition to full retirement in the model with only white homeowners. However, time was a greater predictor of the transition for non-white homeowners, for whom the odds of transitioning to full retirement in Wave 3 were more than 10 times higher than in Wave 1. Based on these results, non-white homeowners tend to remain in the workforce longer, but are more likely to exit the workforce when they are eligible for retirement benefits.

Education
Older homeowners with a college degree were less likely to transition from the workforce to full retirement in the full sample and in most subsamples. In fact, the only subsamples where this characteristic did not matter were the non-white sample of homeowners and the two lowest

net worth quartiles. Moreover, homeowners with a college degree stayed in the workforce longer and were more likely to engage in bridge employment than to transition directly from full-time work to full retirement. Older homeowners with college education likely work in industries that are less demanding physically. On this basis, respondents in this group would have the opportunity to remain in the workforce longer than homeowners without a college education.

Different characteristics affected retirement transitions among the subgroups of college graduates and non-college graduates. First, financial factors had different effects on each group. College graduates who had home mortgages and financial dependents were more likely to remain in the workforce. However, non-college graduates were more likely to retire when they had access to employer-sponsored health insurance in retirement. Health-related factors also affected college graduates' decision to retire. Homeowners with college degrees were almost two times more likely to retire if they experienced increased limitations on their ability to perform ADLs. However, this was not an important factor for non-college graduates in their decision making around leaving the workforce. College graduates who received positive support from their partner and had longer tenure in their current job were also more likely to transition to full retirement. In contrast, non-college graduates who reported higher levels of chronic work discrimination were more likely to remain in the workforce. Time also played different roles in retirement transition decision making for members of these subgroups. Homeowners with no college degree were more likely to retire in Wave 3 than in Wave 1. This characteristic was not an important factor in the timing of retirement transitions for homeowners with no college degree.

Summary of Implications

Based on the results of this study, many factors affect an older homeowner's decision to retire fully or to continue working. In addition, older homeowners have individual preferences regarding their retirement transitions. These results can be applied to various settings. First, findings from this study should provide policymakers with a better understanding of characteristics that affect retirement transition decision making for older homeowners. For example, the retirement transition decisions of female and non-college graduate homeowners were strongly associated with the timing of their eligibility for retirement benefits.

Financial professionals could use the results from this study to help older homeowners identify their own retirement timing preferences. For instance, it would be helpful for a financial professional to share with their male clients that the presence of mortgage debt might derail the client's goal of retiring early, even if the client felt financially ready to retire. The planner and client could then agree that the client would pay down their mortgage debt before retiring or revise their expectations around retirement timing. Moreover, when working with a client who intends to work for as long as possible (or never retire), the planner could explain to the client that preferences for retirement timing might change once the client's partner retires. Based on the results of this study, older homeowners require education regarding the amount of mortgage debt they take on and how that debt might impact their cash flow management in retirement. Financial professionals should educate their clients regarding the optimal use of mortgage debt and help them revise retirement transition decisions accordingly.

Employers can use the results from this study to inform workplace policies in regard to workforce management. First, based on results of this study, female, non-white, and less-educated workers might not have the same opportunities to remain in their full-time positions or

to engage in bridge work at the same rate as male, white, and highly educated workers. Employers could seek out older workers with those characteristics to fill positions in times of expansion. Further, if employers hope to keep the knowledge base of their older workers in the workforce, they could initiate policies to reduce workplace discrimination and encourage older employees to learn new skills. Conversely, in times of contraction, employers could encourage older workers to exit the workforce by instituting policies that offer health care to bridge the gap between retirement and Medicare eligibility.

Finally, in this study, financial, health, job, social, and demographic characteristics were factors in retirement transition decision making among homeowners with higher net worth. However, only age and financial factors were important considerations for respondents in the lowest net worth quartile. Policy makers, financial professionals, and employers should use the results of this study to explore support structures for the retirement possibilities of older workers in the greatest financial need.

Limitations and Suggestions for Future Research

Limitations

In this study, the researcher sought to explore the relationship between mortgage debt and retirement transition decisions over three time periods. The following limitations were noted during the course of this study. Each limitation was mitigated by a strength through which the overall validity of this study was enhanced. The most significant limitation of this study was the possibility of omitted variable bias. However, this limitation was mitigated through careful variable selection based on the STREAM framework and a thorough review of the literature.

This careful approach to variable selection also allowed for directional expectations that were then incorporated into implications.

In addition, this study would have benefitted from the inclusion of more time periods to better explore the influence of time on retirement transition decisions. However, the variables necessary to capture pre-retirement job characteristics were not available in the HRS until 2006 and 2008. As a result, only the subsequent time periods were available for analyses related to the transitions in question. Despite this limitation, the sample used in this study was limited to respondents who were working when the pre-retirement variables were gathered. In this way, the researcher avoided left-censoring of the data. This approach was possible due to the large initial sample size available in the HRS.

Although the initial HRS sample was large, the sample limitations that were imposed to answer the specific research questions in this study resulted in a reduction in sample size. The initial sample of homeowners was adequate, at 1,048. However, a small sample was used for some subsample models. Small sample and subsample sizes were a clear limitation of this study. Nonetheless, the retirement transition decisions of these subsamples had not been explored prior to this research. Through this study, the researcher has contributed to knowledge regarding individual preferences for retirement transitions. A strength of this study in relation to the sample was the use of robust standard errors to account for the complex sample design of the HRS.

Another limitation of any investigation into retirement transition decisions is the fact that there is no known theory that is used consistently to inform variable selection or implications of results of such investigations. Based on the results of Dutch studies in which retirement transition decisions were explored, the STREAM framework was selected as the theoretical basis for this study. Each of the variable selections informed by the STREAM framework had a

significant association with retirement transition decisions in at least one model used in this study. As such, it appears that the STREAM framework could be used to inform future studies on retirement transition decisions.

The measurements for some psychological variables included in this study might not have been ideal. Specifically, respondents could have answered questions related to these variables from the perspective of their work or home lives. For instance, responses to perceived social status might have been different if the question were split into social status at work and social status outside of work. However, through these results, knowledge about the influence of these characteristics and factors on retirement transition decisions has been expanded.

Suggestions for Future Research

Several areas for future research were identified based on the results of this study and on gaps in the existing literature. First, in light of the results of this study, mortgage debt appears to affect homeowner retirement transition decisions in different ways than other financial factors. Researchers in this field should continue to separate mortgage debt from other debt. Moreover, researchers should consider dividing net worth into individual asset and liability components to explore the effect of each component on retirement transition decisions. For instance, student loan debt might affect retirement decisions in different ways than home mortgage debt or debt from revolving credit. Additionally, given the recent changes in US income tax law and the expectation that these changes will increase the overall cost of home mortgage use for many Americans, future researchers could explore the impact of the Tax Cuts and Jobs Act of 2017 on retirement transition decisions.

Further, it might be useful for future researchers to include financial health indicators such as debt service and quick ratios. In this way, researchers can understand the relationship

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between these indicators and retirement transition decisions. Additionally, loan-to-value ratios should be investigated further as a factor in retirement transition decisions. In this research, no significant association was found between this characteristic and retirement transitions using a continuous measurement. However, it is possible that various categorical levels of loan-to-value have different effects on retirement transition decision making among older homeowners. Moreover, future researchers could explore the payment-to-income ratio as a predictor of retirement transitions to account for the influence of income constraint and overall cash flow concerns on retirement decisions.

The variables used in this study to predict transitions from the workforce to retirement could also be applied to a sample of retired homeowners to investigate the influence of mortgage debt on an individual's likelihood of unretiring. Unretirement was not addressed in this study— however, based on the existing literature, this phenomenon is a factor in the evolving retirement process. For this reason, research on unretirement should result in a better understanding of retirement transition decision making among older people.

The concept of bridge work could also be further explored in future research. In this study, an employment status change from full-time working to either partial retirement or partial work status was used to operationalize the definition of bridge work. The independent variables selected for this study could be used to explore alternate definitions of bridge employment, such as a transition to a new field or a transition from salaried work to self-employment. Finally, it is suggested that an analysis similar to the one employed in this research be conducted using data from future waves of the HRS. Such research should result in a better understanding of the effect of mortgage debt on the retirement transitions of holder homeowners, especially as the sample moves well beyond the age of traditional retirement.

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Appendix A: Subsample Characteristics

Table A.1

Subsample Categorical Characteristics: Time 1 (2010)

Variables	Male (n = 649)		Female (n = 399)		White (n = 904)		Not White (n = 144)		College Grad (n = 424)		Non-College Grad (n = 624)	
	n	%	n	%	n	%	n	%	n	%	n	%
Dependent Variable												
Employment Status												
Full-Time Work	519	80%	295	74%	701	78%	113	78%	344	81%	470	75%
Bridge Work	59	9%	41	10%	93	10%	7	5%	38	9%	62	10%
Retired	71	11%	63	16%	110	12%	24	17%	42	10%	92	15%
Household Financial Factors												
Home Mortgage	444	68%	263	66%	621	69%	86	60%	313	74%	394	63%
Eligible for Retirement Benefits	175	27%	72	18%	219	24%	28	19%	92	22%	155	25%
Employer-Spons. Health Ins. in Retirement	66	10%	42	11%	84	9%	24	17%	34	8%	74	12%
Financial Dependents	120	18%	64	16%	151	17%	33	23%	94	22%	90	14%

Pre-Retirement Job Characteristics

Self-Employed	160	25%	47	12%	195	22%	12	8%	91	21%	116	19%

Social Factors

Partner Retired	233	36%	148	37%	311	34%	70	49%	138	33%	243	39%

Demographic Characteristics

Male	649	100%	399	100%	568	63%	81	56%	284	67%	365	58%
White	568	88%	336	84%	904	100%	144	100%	376	89%	528	85%
College Graduate	284	44%	140	35%	376	42%	48	33%	424	100%	624	100%

All displayed measurements are at Time 1 (2010)

Table A.2

Subsample Continuous Characteristics: Time 1 (2010)

Variables	Male (*n* = 649)	Female (*n* = 399)	White (*n* = 904)	Not White (*n* = 144)	College Grad (*n* = 424)	Non-College Grad (*n* = 624)
Household Financial Factors						
Loan-to-Value Ratio (Where Home Mortgage = 1)	0.51	0.48	0.48	0.60	0.50	0.50
Net Worth (Prior to Transformation)	$759,598	$548,877	$705,702	$514,074	$985,257	$471,525
Inverse Hyperbolic Sine of Net Worth	12.6	12.8	12.8	11.7	13.3	12.3
Annual Income (Prior to Transformation)^	$128,546	$114,597	$127,585	$95,931	$168,059	$92,778
Natural Logarithm of Annual Income^	11.4	11.3	11.5	11.0	11.8	11.1
Health Factors						
ADL Limitations	0.04	0.03	0.04	0.01	0.03	0.04
Self-Reported Health Status	3.6	3.7	3.7	3.3	3.8	3.5
Pre-Retirement Job Characteristics						

Years Tenure at Current Job^	16.9	14.0	15.9	15.0	15.8	15.7
Job Stress^	2.8	2.9	2.9	2.9	3.0	2.8
Job Satisfaction^	3.3	3.4	3.4	3.4	3.4	3.3
Chronic Work Discrimination^	1.7	1.7	1.7	1.8	1.6	1.8
Skills and Knowledge						
Opportunity to Develop New Skills^	3.0	3.0	3.0	2.9	3.1	2.9
Social Factors						
Positive Partner Social Support	3.6	3.4	3.5	3.4	3.6	3.5
Perceived Social Status	7.0	6.7	7.0	6.3	7.5	6.4
Work Enhances Personal Life^	2.8	2.7	2.7	2.9	2.8	2.7
Purpose in Life						
Sense of Direction/Purpose	5.1	5.1	5.1	5.4	5.2	5.0
Demographic Characteristics						
Age	62.8	61.6	62.4	61.8	62.2	62.5

^Variable measured in 2006 or 2008, depending on the respondent's eligibility wave for the Leave-Behind Questionnaire.
All other variable measured in Time 1 (2010)