

Three essays on homeownership and financial well-being

by

Ashlyn Rollins-Koons

B.S., Corban University, 2018
M.A., Stanford University 2019

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY

Department of Personal Financial Planning
College of Health and Human Sciences

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2024

Abstract

This dissertation uses multiple techniques and frameworks to examine how housing tenure decisions relate to different components of financial well-being using primary and secondary data. Buying or maintaining a home has become increasingly expensive and out of reach for many individuals in the U.S. Research is needed to understand how mortgage and non-mortgage-holding homeowners and renters experience financial strain and residential satisfaction, and what other housing factors help explain these relationships. Both objective and subjective measures of financial well-being provide a comprehensive view of how U.S. individuals are faring in their homes.

Essay one examined whether housing adjustments — specifically residential mobility and residential adaptation — are related to objective indicators of financial strain. Using the 2022 Survey of Consumer Finances, the sample was restricted to 2,832 respondents who indicated their primary residence was an owned house. The findings suggested that residential adaptation was negatively related to financial strain.

In essay two, an experimental design was used to determine whether housing adjustments (residential mobility, residential adaptation, and family adaptation) were related to residential satisfaction and financial strain. This study also looked at the association between financial strain and residential satisfaction. Primary data was collected through Amazon's Mechanical Turk (MTurk) from homeowners in the U.S. with at least one financially dependent child. The final sample size was 933. The findings indicated that family adaptation and residential mobility are related to residential satisfaction, but not financial strain. Financial strain was positively related to residential satisfaction.

Essay three explored the mediating effects of residential satisfaction and housing cost burden for three different housing tenures (non-mortgage holding homeowners, mortgaged homeowners, and renters). This study collected primary data through MTurk and used structural equation modeling to examine these relationships. The results indicated that homeowners with mortgages and renters had less financial well-being than homeowners who did not have mortgages. It also appeared that these relationships were fully mediated by objective and subjective housing cost burden and residential satisfaction. Both measures of housing cost burden were negatively related to financial well-being, while residential satisfaction was positively related to financial well-being.

The findings from these three essays help explain why homeowners may experience increased financial well-being from their housing tenure. This dissertation provides evidence that housing adjustments may not impact financial strain (at least for those who can afford to make the adjustment in the first place) and do improve residential satisfaction. These studies also provide more context for why homeownership is often found to have a positive relationship to financial well-being. Having a mortgage, someone's realized or perceived housing cost burden, and their residential satisfaction all play an important role.

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Acknowledgements

I want to start by thanking my husband, Jordan Koons, and my family for all their support along this journey. Jordan, your patience and encouragement during this entire process made all the difference. I want to also especially thank my dad, who is an incredible business partner, financial planner, and mentor.

The Kansas State Personal Financial Planning faculty also has my utmost gratitude. To Derek Lawson, thank you for always making time to answer my never-ending questions and for teaching me so much about statistics and research. You have been an amazing chair, and I am so honored to have worked with you. To Megan McCoy, I cannot thank you enough for your mentorship, feedback, support, and encouragement throughout the years. You have always challenged me to grow and learn with such grace and kindness. To Yulia Zhang, thank you for serving on my committee. Talking with you during the summer session about all things housing research was one of the highlights of my summer. To Kristin Anders, thank you for serving as my outside committee member. Your invaluable feedback helped fundamentally shape this dissertation and your encouragement helped me persevere in completing it. To my many other professors including Blake Gray, Congrong Ouyang, Martin Seay, and those who have moved onto new jobs including HanNa Lim and Stuart Heckman, your support and tutelage have meant so much to me. And, of course, I must thank Morgan Graham who kept me organized and on track to graduate.

Lastly, I want to thank my colleagues — many of whom I am lucky to call friends as well. I want to especially thank my cohort, Jason Anderson, Shelitha Smodic, Lena Gan, and Joanne Wu, as well as my other colleagues including Tanya Staples, Efthymia Antonoudi, Eric Ludwig, Chet Bennetts, and Greg Anderson. I have cherished working with and learned so much

from each of you. I have valued every long conversation about research, life, or our plans to take on the world with you all.

Dedication

I dedicate this dissertation to my daughter, Elizabeth Margaret Koons. May you always be curious about the world around you and never lose your excitement for discovering something new.

Chapter 1 - Introduction

Statement of Problem

Housing represents a fundamental physiological need for shelter (Jung & Lee, 2023), and many fulfill this need through homeownership (Abidoye et al., 2021; Goodman & Mayer, 2018). Homebuying is often associated with many positive outcomes including wealth building (Goodman & Mayer, 2018; Xu, 2015), financial security (Colic-Peisker & Johnson, 2010), and potentially even income streams later in life through as accessing their home equity through line of credits or reverse mortgages (Pfau, 2016). In the U.S., homeownership is still a major financial goal for many, but homeowners and renters are more cost burdened than ever, as housing, rent, and renovation costs remain significantly higher than historical averages and, especially, pre-pandemic levels (Joint Center for Housing Studies, 2023; Joint Center for Housing Studies, 2024). To identify long-term solutions for the challenges homeowners and renters face, research is needed to understand what effect housing tenure has on financial strain and financial well-being.

Renovating, moving, or even adapting the current family structure are often a response to residential satisfaction and are a part of many homeowner's housing journeys (Emami & Sadeghlou, 2021). These three primary methods of housing adjustments according to Morris and Winter's (1975) theory of family housing adjustment are formally referred to as residential mobility (i.e., moving to a new residence), residential adaptation (i.e., renovating the existing residence), and family adaptation (i.e., changing family structure to meet housing needs). For instance, even after becoming a homeowner, housing needs may change if families add to their household through marriage, childbearing, or taking care of elderly family members, which could spur renovations or home projects. Concerns over insurability in the face of natural

disasters (Howard, 2023), increasing property taxes in certain areas (Martin & Beck, 2016), or even new job opportunities (DeLuca et al., 2019) may prompt residential mobility. These adjustments could cause significant financial strain for families who use financial leverage to fund their projects, such as large mortgages, home equity lines of credit, or other secured or unsecured debt. On the other hand, those who intentionally save for adjustments and are well-equipped to handle the economic costs may experience a reduction in financial strain and enjoy the benefits of increased property value and residential satisfaction. Therefore, these studies will test whether these housing adjustments financially strain financial resources and/or improve residential satisfaction.

In addition to potentially affecting a family's balance sheet or cash flow statement, housing decisions may influence people's perceptions of their financial condition. Financial well-being can be measured with objective and/or subjective indicators. While objective measures are important, they can fail to capture how an individual feels about their financial situation (Brüggen et al. (2017). For example, homeownership has been associated with more wealth (Goodman & Mayer, 2018; Sodini et al., 2023), yet mortgages can increase financial strain and reduce subjective well-being (Tharp et al., 2020; Will & Renz, 2023). More research is needed to understand why and in what ways homeownership seems to improve financial well-being. It may be that housing costs and the level of residential satisfaction are just as important to financial well-being as the housing ownership arrangement itself.

Purpose

The purpose of this dissertation is to study how homeowners make housing adjustments and whether these adjustments relate to financial strain and/or residential satisfaction. This dissertation also investigates possible mediating relationships between housing tenure — a term

that refers to the financial and ownership terms of a person's dwelling — and financial well-being. To accomplish these goals, essay one examines whether housing adjustments (residential mobility and residential adaptation) relate to the level of financial strain homeowners experience using Morris and Winter's (1975) theory of housing adjustments. Secondary data from the Survey of Consumer Finances (2022) is used to analyze whether homeowners are financially strained by moving to a new residence or making any additions or remodeling to their current home.

The second essay uses primary data collected through Amazon's Mechanical Turk to examine how the use of housing adjustments (residential mobility, residential adaptation, and family adaptation) to address residential dissatisfaction is related to subjective financial well-being. This study uses a narrative technique and an experimental design to analyze these relationships.

The final essay investigates how home tenure decisions relate to an individual's sense of financial well-being and whether residential satisfaction and housing cost burden mediate this relationship. While there are many forms of housing tenure, this essay focuses on homeowners without mortgages, homeowners with mortgages, and renters. The research questions for each of the three essays in this dissertation are discussed below.

Description of Studies

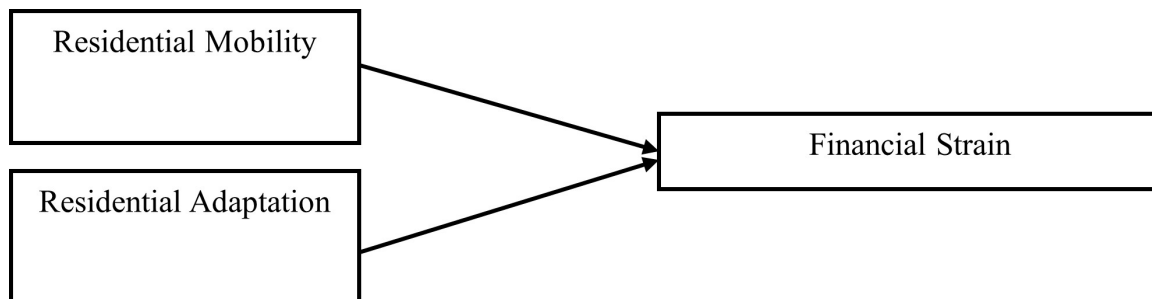
Essay One

Morris and Winter's (1975) theory of family housing adjustment suggests that families constantly evaluate their housing. When dissatisfaction occurs, they adjust. Morris and Winter (1975) propose three adjustment mechanisms and one coping mechanism. Families adjust either by moving (residential mobility), changing their homes through efforts such as remodeling

(residential adaptation), or altering their family composition (family adaptation). Families can cope by compromising and accepting their low satisfaction levels. While there have been many studies examining residential mobility (e.g., Wang & Wang, 2020) and others on the determinants of residential satisfaction (Abidin et al., 2019), few studies have examined its relationship to financial strain (Emami & Sadeghlou, 2021). Therefore, the primary research question for this essay is how do housing adjustment choices relate to other financial well-being indicators?

This study uses the Survey of Consumer Finances and employs a logistic regression to examine these relationships. The sample is restricted to homeowners. Figure 1.1 illustrates the conceptual model for this essay.

Figure 1.1 A conceptual model of housing adjustments relationship to financial strain



The hypotheses are as follows:

H1. Residential mobility will be positively related to financial strain.

H2. Residential adaptation will be positively related to financial strain.

Essay Two

An important element of the theory of housing adjustment (Morris and Winter, 1975) is that there are cultural housing norms that influence the level of residential dissatisfaction families experience. These norms dictate what an “ideal” housing arrangement looks like. The more one’s housing situation deviates from these norms, the more the family may be motivated

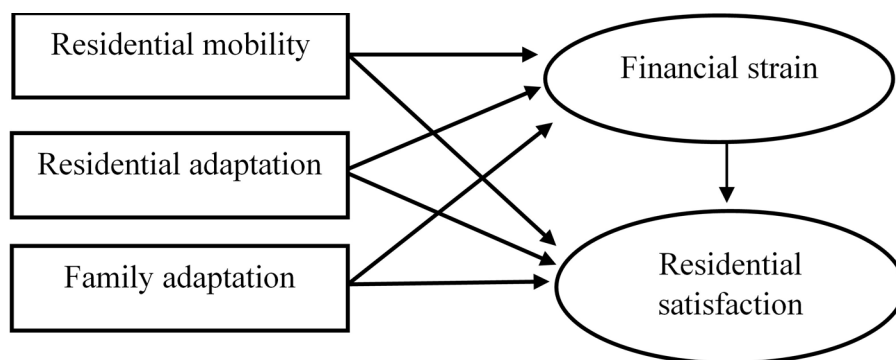
to make a housing adjustment. These adjustments come in three forms: residential mobility, residential adaptation, and family adaptation. This study uses an experimental design to answer the following research questions:

RQ1. How, and to what extent, do different housing adjustments—such as moving to a new home, renovating an existing home, or repurposing space within the home—impact residential satisfaction and financial strain?

RQ2. Do those who report more financial strain perceive less residential satisfaction?
See Figure 1.2 below for the conceptual model for this study.

First, a multivariate analysis of variance (MANOVA) is used to assess the effects of the treatment on both dependent variables at the same time. Then a one-way analysis of variance (ANOVA) is used to examine the differences between groups. Lastly, three ordinary least square regression models are used to observe the relationship between the treatments and the dependent variables when including sociodemographic controls, and to model the relationship between residential satisfaction and financial strain.

Figure 1.2 A conceptual model of housing adjustments on financial strain and residential satisfaction



The hypotheses for this study are as follows:

H1. The treatments will affect residential satisfaction and financial strain.

- H2. Residential mobility will be positively related to residential satisfaction.
- H3. Residential adaptation will be positively related to residential satisfaction.
- H4. Family adaptation will be positively related to residential satisfaction.
- H5. Residential mobility will be positively related to financial strain.
- H6. Residential adaptation will be positively related to financial strain.
- H7. Family adaptation will be negatively related to financial strain.
- H8. Financial strain will be negatively related to residential satisfaction.

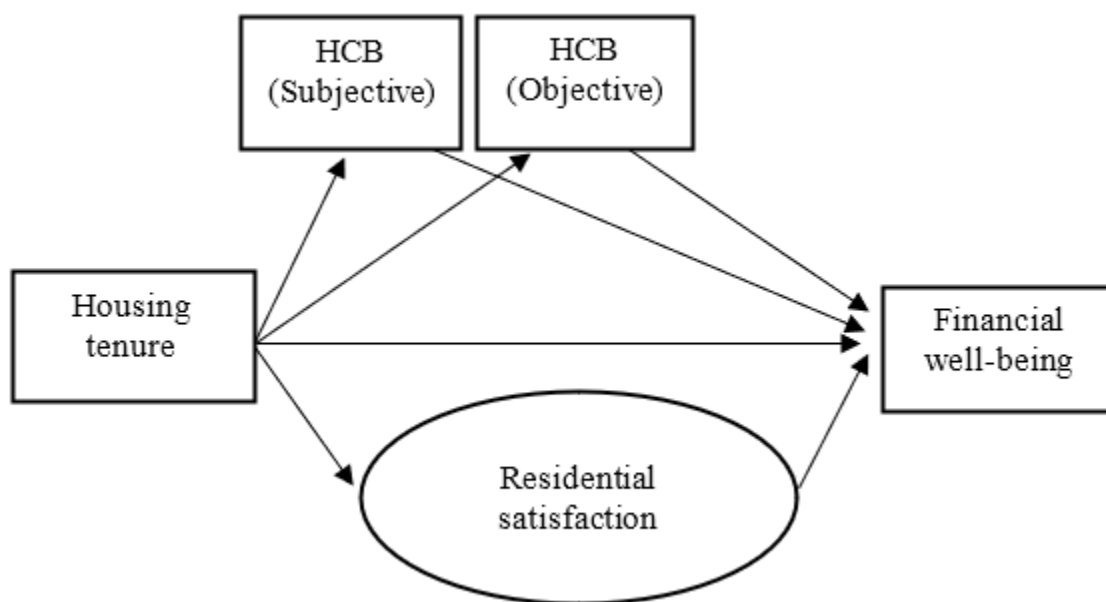
Essay Three

As U.S. individuals continue to prioritize homeownership and researchers find more ways that homeownership may improve financial well-being, there is growing concern that those unable to achieve homeownership may experience greater socio-economic setbacks. Identifying the factors that explain why homeownership improves financial well-being may be able to help bridge this divide. This essay relies on Brüggén et al. (2017) definition of financial well-being and the Consumer Financial Protection Bureau's (CFPB) financial well-being scale (2015). Both housing cost burden and residential satisfaction are predicted to relate to financial well-being directly and mediate the relationship between homeownership and financial well-being. The primary research questions for this study are as follows:

- RQ1. To what extent does housing tenure relate to financial well-being?
- RQ2. Is there a disconnect between the traditional objective measures of housing cost burden and how cost-burdened U.S. individuals feel?
- RQ3. Does housing tenure itself promote financial well-being or are housing costs and residential satisfaction equally, if not more, important?

This study uses primary data collection and structural equation modeling. The dependent variable in this study is subjective financial well-being, as measured by the CFPB's abbreviated financial well-being scale. Predictors will include demographics, housing tenure, housing cost burden, and residential satisfaction. See Figure 1.3 for the conceptual model for this essay.

Figure 1.3. A conceptual model of the mediating effects of housing cost burden and residential satisfaction



The hypothesized relationships for these variables are as follows.

- H1. Housing tenure will be negatively associated with financial well-being.
- H2. Housing tenure will be negatively associated with residential satisfaction.
- H3. Housing tenure will be positively associated with subjective housing cost burden.
- H4. Housing tenure will be positively associated with objective housing cost burden.
- H5. Residential satisfaction will be positively associated with financial well-being.

H6. Subjective housing cost burden will be negatively associated with financial well-being.

H7. Objective housing cost burden will be negatively associated with financial well-being.

H8. Housing cost burden will mediate the relationship between housing tenure and financial well-being.

H9. Residential satisfaction will mediate the relationship between housing tenure and financial well-being.

Implications

There are many challenges when evaluating the financial implications of homeownership, especially when considering how housing markets, needs, and goals change. These studies attempt to ask more specific questions about how home tenure decisions affect aspects of one's financial life and what trade-offs, challenges, and constraints homeowners and renters face in their housing decisions. Considering the societal and cultural expectations to pursue homeownership in the U.S., this research has many policy and practitioner implications as well. If there are other housing and financial factors (e.g., housing adjustments, housing cost burden, residential satisfaction, financial strain) that significantly contribute to one's sense of financial well-being, it may be important for policymakers to consider how much focus they attach to incentivizing homeownership and whether there is a need to also prioritize making housing adjustments more feasible and affordable, housing quality, and housing affordability.

This dissertation also aims to help financial planners see the unique and valuable service they can offer their clients by helping them identify their housing goals and discussing the best financing methods to achieve those goals. Moreover, planners can help clients balance the desire

to save for their housing goals — be it a nicer apartment in a better neighborhood or a down payment on a house — with other financial goals in their lives such as retirement savings. Ensuring individuals are not forsaking one financial goal for another may ultimately help improve overall financial well-being.

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Chapter 2 - Achieving housing goals: Examining how housing adjustments relate to financial strain

Introduction

In the age of HGTV and do-it-yourself (DIY) trends, home projects have become integral to both maintaining a home and creating a space that reflects a household's needs and personality (Mackay & Perkins, 2019). Morris and Winter's (1975) theory of family housing adjustments suggests that renovation is one way a family can remedy dissatisfaction with their housing, whereas other families may decide to move. The popular television show "Love It or List It" demonstrates Morris and Winter's (1975) theory in action. In each episode, a family is no longer satisfied with their housing and must pay for renovations to their current home while viewing other houses for sale. At the end of the episode, they must decide whether to stay in their newly renovated house or buy a new house. Inevitably, budgets are often stretched both for buying and renovating. While the decision on the show may or may not be the one the family ultimately decides, some enthusiasts discovered that of the 236 episodes, 140 families chose to stay whereas 96 chose to move (Shouse, 2023). Of course, this is not a rigorous empirical analysis, but it does bring up the question—to what extent do they stretch their finances when they move or renovate?

Theoretical Framework

Family Housing Adjustment

While financial satisfaction is a well-defined and understood concept in consumer economics (e.g., Joo & Grable, 2004; Seay et al., 2015), residential satisfaction is less commonly discussed. Yet this is an important concept to those interested in consumer's financial behaviors

because housing choices over one's lifetime often require enormous financial resources, and homes represent a major asset. Housing is not a static decision, especially for families. Riemer's (1943) theory of home adjustment provided the foundation for much of the research related to residential satisfaction and home adjustment. While Riemer (1943) did not extensively elaborate on how households adjust beyond suggesting there are objective and subjective adjustments, he described ways to optimize home design and ways to evaluate housing needs. He also emphasized that housing needs are dependent on family composition, personality, and social needs.

Building on Riemer's (1943) work, subsequent researchers suggested that people move to alleviate the stress and dissatisfaction caused by a misalignment with their housing needs and current housing situation (Emami & Sadeghlou, 2021). For example, Morris and Winter (1975) broadened Riemer's foundation work through their theory of family housing adjustment, which suggested that families continually assess their housing to determine if their current situation still meets their needs or if an adjustment needs to be made. One unique element of Morris and Winter's (1975) theory is that families are influenced by family and cultural norms. For example, U.S. individuals tend to value homeownership over renting, which may cause housing dissatisfaction for renters (Morris & Winter, 1975). Moreover, there may be different reasons why certain racial and ethnic groups desire homeownership. McCabe (2018) observed that African Americans and Latinos placed greater value on homeownership as a tool for building wealth or increasing social status, whereas White respondents were more concerned with the convenience of living in certain neighborhoods.

A person is motivated to make housing adjustments when a deficit is found in their level of residential satisfaction (Morris & Winter, 1975). However, even if a family experiences a

deficit, they may face economic or household constraints that prevent them from making an adjustment. This is a critical component of family housing adjustment theory because it explains why individuals who live in objectively poor conditions do not make housing adjustments. Despite a possible desire to adjust, it might be impossible to do so based on their current economic and household constraints (Morris & Winter, 1975).

If a household is dissatisfied with its housing, there are three methods of adjusting. This essay focuses on two of the three adjustment methods: residential mobility and residential adaptation (Morris & Winter, 1975). Family adaptation, the third method of adjustment, is a fascinating concept that explores how individuals leaving and entering the household meet housing needs. The dataset used for this study does not include an adequate measure for family adaptations. Moreover, family adaptations are not always thought of as an action related to housing choices (Morris & Winter, 1975). For example, if a family encourages a child to go to college, it is likely out of their hopes for their child to obtain an education rather than a housing decision to create an extra bedroom. Some family adaptations (such as having a parent move in) could be driven by childcare needs or financial considerations rather than housing dissatisfaction. Growing and contracting families may experience housing deficits due to their changing household needs, which will be considered as a possible explanation for residential mobility or adaptation. For these reasons, the antecedents to family adaptation are not discussed herein.

Residential mobility refers to when a family moves to a new residence. While the theory of housing adjustment (Morris & Winter, 1975) specifies that residential mobility is a decision made primarily to explain a desire for new accommodations rather than, for example, a new job, the data used in this study does not ask respondents what their motivation for moving was. Residential adaptation primarily considers how households change their current residence to

meet housing needs. This is the rationale for why this essay solely focuses on homeowners as they have more potential financing methods available, and renters are typically restricted by lease agreements to make renovations.

Financial Strain

There are many related concepts to financial strain such as financial distress, financial well-being, or income adequacy, and these measures can be subjective or objective (Brüggen et al., 2017). Researchers have defined different components of financial well-being in many ways. For example, financial stress is typically defined as an event that could cause a financial hardship and may contribute to financial anxiety (Britt et al., 2016; Lurtz, 2020), whereas income adequacy considers whether someone has sufficient income to meet their needs (Arber et al., 2014). While all interrelated concepts, financial strain measures the “magnitude to which the household is having financial difficulties,” (Lyons & Yilmazer, 2005). This study will use three objective indicators to measure financial strain as proposed by Lyons and Yilmazer (2005). Financial strain will include a variable for loan delinquency, assets to debt ratio, and liquid assets to income ratio (Grafova, 2011; Kim & Lyons, 2008; Xiao & Yao, 2014). Lyons and Yilmazer (2005) explain that these measures capture three elements of financial strain: 1) the degree of difficulty a household has paying bills 2) how leveraged a household is and 3) the level of cash available for immediate needs.

Literature Review

Methods of Adjustment

Residential mobility. Residential mobility is more often studied than residential adaptation. Morris and Winter’s (1975) theory of family housing adjustment differentiates mobility — short-distance moves that are only motivated by housing decisions — from

migration — long-distance moves for factors unrelated to housing such as a new job. Residential mobility often occurs naturally throughout the life cycle, during times of childbirth, aging, and marriage/partnership, for example. This may also prompt mobility or individuals make the leap from renter to owner (Coulter & Scott, 2015; Coulter et al., 2016). Coulter and Scott (2015) also observed that younger (single) individuals were more likely to report moving for a job or independence than older individuals. Riley et al. (2015) explain that housing market conditions may have a greater effect on homeowners' mobility. They found that renters are more likely to move because of economic changes while homeowners typically move for other reasons, such as household composition changes (Riley et al., 2015).

Residential mobility may be associated with financial strain, which may impact mental health. For example, Woodhead et al. (2015) found that those with poorer mental health may see moving as a mechanism to reduce financial strain. However, there is also concern that moving puts an immediate strain on financial resources, which can adversely affect children in households that have moved (Anderson et al., 2014). Wood et al. (2024) found that residential mobility was only significantly related to mental health when there was a change in ownership status (i.e., owner to renter or renter to owner). Residential mobility may also indicate that a household is experiencing residential instability. While households may move to “resolve their residential dissatisfaction or disequilibrium between current and desired housing consumptions, low-income households' residential moves tend to occur frequently and involuntarily” (Kang, 2023, p. 1616). Although residential mobility, in theory, would maximize a household's utility or well-being, the move may present many disadvantages, especially for low-income families (Kull et al., 2015). There are many costs that could burden a household when moving including real estate commissions, inspection costs, closing costs, appraisals, boxes, and hiring movers or

moving trucks. These studies highlight the need to understand whether residential mobility is a cause of financial strain or if it is a method that helps households find more affordable housing or better economic opportunities to relieve financial strain.

Residential adaptation. Residential adaptation refers to the many methods a household takes to change their current living situation to meet their housing needs, such as renovations, remodeling, DIY, alterations, or home improvement. People may be motivated to make residential adaptations because of economic reasons, such as increasing the property value of their homes. Allon (2008) describes this phenomenon in Australia as such, “And as our houses became ever more important as capital assets and as stores of equity which we could ‘unlock’ and ‘tap into’ at will, the renovations became almost constant, a never ending [sic] process of improvement and upgrading” (p. 2). The idea of a home as a source of wealth building and asset ownership is not new. Researchers have found that homeownership is associated with higher wealth for low- and high-income families (Zavisca & Gerber, 2016). However, low-income families may be at risk of putting too much money into their homes and not making that money back when they sell (Zavisca & Gerber, 2016). To financially benefit from home improvements, homeowners must be able to withstand periods of housing market volatility, such as the Great Recession or COVID-19. If they are unable to stay in their homes during these periods, they may not realize an increase in wealth (McCargo & Choi, 2020; Wainer & Zabel, 2020).

Not all researchers, therefore, are convinced that residential adaptations are solely a result of a desire to increase property value. Homeowners may DIY to increase the equity of their homes or to express their identity and personality (Mackay & Perkins, 2019). More pertinent to this study, home improvement may also result from a change in a family’s needs. Mackay and Perkins’ (2019) qualitative study discovered that one family changed their adult child’s room

into a painting studio to be used in retirement while another started working on renovating the backyard to accommodate his son's interest in cricket. Residential adaptations can also be used to create more room in a household for a growing family, which can reduce crowding. There is some evidence that residential crowding can affect parent-child relationships and adversely affect their development (Ferguson et al., 2013). Household structure or life cycle stage, therefore, seems an important element of whether a family decides to renovate.

Whether a homeowner decides to renovate for financial reasons (i.e., increasing property value) or for personal reasons (i.e., disliking the color in the kitchen) residential adaptations often require a significant monetary investment. Many of the financing methods a household could use to make a home renovation are associated with financial strain or other similar concepts. A home equity line of credit (HELOC) is a secured loan that homeowners can use to borrow against the equity of their house and is often used for home improvements (Kim, 2020). While HELOCs can provide a source of liquidity, this decision may result in lower savings levels, more spending, and less stringent budgeting efforts (Kim, 2020).

But not every financing method is necessarily negative. Other home improvement loans could provide opportunities for homeowners to make their houses more energy-efficient (Higgs, 2017). These projects also might qualify for significant tax credits (i.e., the federal solar tax credit). Energy-efficient projects might also reduce the long-term costs of utilities (Kratschmann & Dütschke, 2021) and raise property values (Fuerst & Warren-Myers, 2018). Loibl et al. (2022) found that while credit card debt and other non-housing debt were associated with more financial strain, older individuals who took on more mortgage debt did not appear to experience an increase in financial strain. The additional mortgage balance could have been used for liquidity

or discretionary purchases (Loibl et al., 2022). Similarly, reverse mortgages can be used as a strategy for retirement income (Pfau, 2016).

Determinants of Financial Strain

Despite the desire to make a housing adjustment, a household may be constrained by their resources or household structure to make the desired adjustment (Mateyka, 2015; Phinney 2013). Financial constraints, such as mortgage debt, can increase a household's financial strain (Loibl et al., 2022), whereas a paid-off mortgage may increase financial security (Zavisca & Gerber, 2016). The relationship between housing adjustments and financial strain needs additional research. One study by Samuel et al. (2019) found that financial strain was positively associated with home disorders (i.e., issues with the home's quality such as disrepair) and relocation, but there was no relationship between home modifications and financial strain. The authors suggest that the high financial costs of renovations may be more burdensome than moving, prompting homeowners to move rather than adapt.

Research has studied how residential satisfaction affects individual well-being, and there is evidence that individuals who are more satisfied with their housing have a better quality of life and/or more satisfaction with their life in general (Emami & Sadeghlou, 2021; Ibem & Amole, 2014). If residential satisfaction affects one's overall sense of well-being, the mechanisms used to achieve residential satisfaction may also influence one's financial well-being. Residential adjustments can be both expensive and provide opportunities for wealth building. This dualistic feature presents an opportunity to explore whether housing adjustments mediate the relationship between financial strain and economic constraints, household constraints, and financing methods.

Individuals of varying sociodemographic backgrounds will also experience varying levels of financial strain. For older U.S. individuals, existing health conditions were found to increase the likelihood of financial strain as measured by liquidity and investment asset ratios (Kim & Lyons, 2008). Kim and Lyons (2008) explained that as healthcare costs continue to rise, elderly people with health conditions may be forced to deplete their wealth more quickly than planned and experience financial strain. Fenn et al. (2014) found that cancer care was significantly related to whether their treatment increased their financial burdens, and, consequently, a decrease in quality of life. People with more education may be more financially literate (Ergün, 2017) and have more investment and retirement income (Cole et al., 2014).

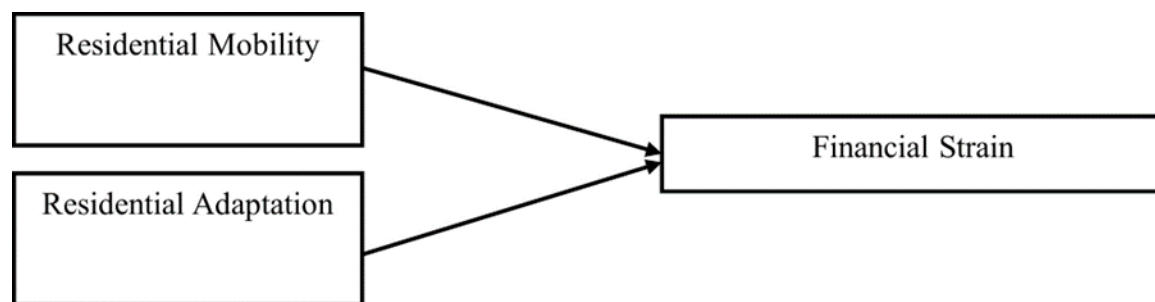
Gender, racial/ethnic differences, age, and marital status are also key to understanding how people experience financial strain (Anyamele, 2015; Longacre et al., 2021; Payne et al., 2014; Tran et al., 2018). Tran et al. (2018) found that females were more likely to report financial stress than males even when they reported similar financial conditions and experienced greater levels of general anxiety because of their financial stress than males. While family support reduced the effect of financial stress on anxiety for males, females experienced no such benefit (Tran et al., 2018). Anyamele (2015) explored the nuanced role of racial differences in loan delinquency. He found that African Americans, for example, were more likely to be delinquent on adjustable mortgage rate loans but less likely to be delinquent on loans overall if they had a college degree (Anyamele, 2015). One study by Netemeyer et al. (2018) broke age into generational categories (Millennials, Gen Xers, and Baby Boomers), and observed that while Millennials reported more money management stress, they also expected to have more financial security in the future and reported greater well-being than other generations. Finally, while larger households may have more financial obligations that may increase financial strain,

married individuals have been shown to have a greater sense of financial responsibility, which can improve financial well-being (Iramani & Lutfi, 2021).

Hypotheses and Conceptual Model

The theory of housing adjustment (Morris & Winter, 1975) and the construct of financial strain (Lyons & Yilmazer, 2005) provide the framework for testing the relationships between constraints, housing adjustments, and financial strain. The theory of housing adjustment (Morris & Winter, 1975) argues that households make decisions about whether to move or renovate based on their level of residential satisfaction. Moving to a new house may result in a better financial outcome long-term through a more affordable housing situation or closer proximity to a higher-paying job, but this study is concerned with the short-term financial repercussions of residential mobility, which may increase financial strain. Debt is often a negative indicator of financial well-being (Loibl et al., 2022), but many housing projects are achieved through financing. While households may achieve higher levels of residential satisfaction by making these adjustments, it is important to understand whether they do so to the detriment of their financial well-being. Therefore, this study examines what factors enable or inhibit housing adjustments and how housing adjustments ultimately relate to financial strain. Figure 2.1 illustrates the conceptual model used in this study.

Figure 2.1 A conceptual model of housing adjustments relationship to financial strain



When families experience dissatisfaction with their housing, they likely would want to reduce the deficit between their desired housing situation and their current housing situation. A family that does not make a housing adjustment is either satisfied with their current housing or experiences an economic or household constraint that inhibits them from adjusting (Morris & Winter, 1975). For example, a household with a lower mortgage balance may feel less inclined to move as they enjoy the large equity in their home. This equity, however, may also provide an opportunity to fund renovation projects. The hypotheses are as follows:

H1. Residential mobility will be positively related to financial strain.

H2. Residential adaptation will be positively related to financial strain.

Methodology

Data

This essay relies on data from the 2022 Survey of Consumer Finance (SCF) to analyze the factors related to housing adjustments. The Federal Reserve and the Department of the Treasury sponsor the triennial survey that interviews new U.S. households. The SCF surveys a greater percentage of wealthy families to collect sufficient data regarding financial assets and income. The final sample size for the 2022 SCF included 4,595 households. However, weighting files are available to make the sample nationally representative. To address missing data concerns and protect respondents' privacy, the SCF uses a multiple imputation technique to estimate missing values. This results in each respondent having data for the five imputates.

The SCF also differentiates between the respondent and the reference person (formerly referred to as the household head). For mixed-sex couples, the reference person is the male. For a same-sex couple, the reference person is the older individual. Some questions are only asked of the respondent. While the term household will be used for clarity in this essay, the SCF refers to

the household unit as a primary economic unit (PEU). The PEU is intended to capture all the household members whose finances are intertwined with the respondent and the respondent's spouse if it is a couple household.

This essay uses the SCF because it is an excellent dataset for analyzing a household's balance sheet. Due to the in-depth data on household income and assets, there are multiple methods of assessing financial strain (late payments, debt-to-income ratio, and asset-to-debt ratio). The presence of home adjustment variables is also a valuable aspect of the SCF. Although it is not possible to observe from the data whether a household ended up moving, the SCF asks respondents to rate the likelihood of moving in the next year. The SCF also lets researchers observe whether the household has made any home adaptations.

Sample

In this essay, the sample is restricted to homeowners. While renters do experience varying levels of residential satisfaction and make housing adjustments, they do not have the broad range of financing methods available to them that homeowners do. This is by nature of not having a home to secure a loan against. Moreover, renters are often restricted by rental agreements that limit their ability to make home improvements. Similarly, those who share ownership of their home with someone outside of their PEU may face similar difficulties with renters making residential adaptations. For the same reasons, those who live in a condo, co-op, townhouse association, retirement lifetime tenancy, neither own nor rent are excluded. Those who live on a farm operated as a business are also excluded, because their housing adjustment motivations may be due to business needs rather than residential satisfaction. It also could be that these are employees who have little ability or financing options to make adjustments. This study only considers the primary residence of the individual. Moreover, these tenures (condos, co-ops,

townhouse, etc.) represent such a small percentage of respondents in the SCF that it would be difficult to conduct any meaningful analysis for these tenures using this data. The final sample size for this study was 2,832 respondents.

Variable Measurement

Financial strain. The dependent variable in this study will include three measures as described by Lyons and Yilmazer (2005). A household is considered to experience financial strain if they are either late on a payment for a loan by more than two months, if the ratio of total assets to debt is less than 1.0, or if the debt-to-income ratio is greater than .36. An asset-to-debt ratio below 1.0 may signal that a household has borrowed beyond their financial means, as it indicates that the household has more liabilities than assets (Baker, 2014). Households with a large debt to income ratio may not be able to make ends meet in a financial emergency or income shocks (Ampudia et al., 2014). Thirty-six percent is a standard recommendation for debt to income touted by institutions such as the CFP Board (2016). Loan delinquency is a Federal Reserve-created variable that indicates whether a household was late by more than two months on any type of loan in the last year. Total financial assets include the value of all assets the household reports, including total financial assets, including liquid assets, certificate of deposits, stocks, bonds, retirement accounts, and other financial assets, and non-financial assets, including the value of vehicles, real estate, business interest, and other physical items. Debt includes all housing-related debt, vehicle loans, credit card balances, education loans, and any other loans the household has reported. Income includes total household income from all sources.

Residential mobility. Whether a household intends to move is measured by a question that asks respondents to state a percentage to indicate how likely it is they will be living at their

current address two years from now. Those who indicated they were absolutely certain to stay were coded as 0 while others were coded as 1 to represent a possibility of moving.

Residential adaptation. Whether a household has made a housing adjustment is determined by a binary variable where respondents indicate whether they have ever made any additions or completed extensive remodeling to their primary residence where 1 = yes and 0 = no.

Control variables. The total cost of remodeling was initially included as a control variable, however, there were multicollinearity concerns identified in the analysis. Both residential adaptation and the cost of renovation could not be included. Residential adaptation is an important part of the theoretical framework used in this study. Moreover, when using the cost of renovation (which was log-transformed), the sample size was reduced by nearly one-half due to respondents who did not appear in the homeowner sample in all five implicates. For these reasons, residential adaptation was kept in the analysis rather than the cost of renovating.

Three variables are included to measure household composition: whether the respondent has children living at home, whether the respondent has children living outside the home, and marital status. The respondent's marital status is coded as 0 for a partner/married household and 1 for a single household, which included those who were separated, divorced, widowed, or never married. The respondent's age, race, gender, education, work status, and self-reported health status are also included as control variables. Education is measured from the respondent's education level — high school or less, some college/associate degree, bachelor's, or post-graduate degree. Employment status includes three categories for unemployed or disabled, retired, and employed either part-time or full-time.

Data Analysis

To examine the relationship between residential mobility and residential adaptation and financial strain, this study employs a logistic regression. The data was coded using Stata/SE 17.0 and all five SCF implicates were used. Multiple imputation is used to account for missing data and protect participants' privacy (Hanna et al., 2018). For a more conservative estimate, unweighted results are reported (Shin & Hanna, 2017). The respondent's data is reported rather than spouse or household head.

Results

Descriptive Statistics

Descriptive statistics are reported in Table 2.1 for the total 2022 SCF sample and for the restricted sample that only includes homeowners. Homeowners reported a higher propensity to stay in their current residence ($M = 1.15$, $SD = 2.33$) than in the total sample ($M = 2.16$, $SD = 3.26$). On the other hand, nearly 55% of homeowners said they had made a residential adaptation to their current dwelling compared to only 36% of all respondents. Nearly 42% of homeowners had a child living at home, and 64% reported having at least one child outside the home. Most homeowners were married (77%), and homeowners were slightly older than respondents in general. The mean age for homeowners was about 59 years old ($SD = 14.27$), whereas the mean age for the total sample was about 54 years old ($SD = 16.19$).

In both the homeowner sample and total sample, most respondents were white (70% and 60% respectively) and male (63% and 56%). Homeowners also appeared more educated than the total sample, with 63% having at least a bachelor's degree compared to 51% of the total sample. Only 8% of homeowners reported being unemployed or disabled (compared to 14% of the total sample), while 64% of respondents in both the restricted and total sample were employed.

Respondents primarily indicated good or excellent health (82% of homeowners and 75% of the total sample). Although income and net worth were not included as a control variable due to respondents' financial characteristics being used to create the dependent variable, the transformed results are reported in Table 2.1. In general, homeowners reported more income and greater net worth on average compared to the total sample. The median income in the total sample was \$94,039.33 and the median income in the restricted sample was \$155,651.3. The median net worth for the total sample was \$384,500, and for homeowners the median net worth was \$1,046,600.

Table 2.1 Descriptive statistics for total SCF sample and restricted homeowner sample

Variables	Total Sample		Homeowners	
	Prop (%)	M (SD)	Prop (%)	M (SD)
Residential Mobility		2.16 (3.26)		1.15 (2.33)
Residential Adaptation (Yes)	36.38		54.75	
At least one child living at home	39.85		41.70	
At least one child living outside the home	57.42		63.86	
Marital Status				
Married/Partner	63.22		76.69	
Never married or single	36.78		23.31	
Age		54.47 (16.19)		58.52 (14.27)
Race/Ethnicity				
White	59.71		69.60	
Black	13.41		8.55	
Hispanic or Latino	11.54		8.01	
Other	15.34		13.84	
Male	56.43		63.14	
Education				
High school or less	26.39		18.55	
Some college or associate's degree	22.33		18.95	
Bachelor's or master's degree	26.19		30.18	
Postgraduate degree	25.09		32.32	

Employment Status			
Unemployed or disabled	13.82		8.23
Retired	22.18		27.40
Employed	64.00		64.37
Health Status			
Poor	4.10		2.72
Fair	20.43		15.32
Good	48.01		50.60
Excellent	27.46		31.36
Log Income		11.77(1.70)	12.33(1.70)
IHS Net Worth		12.02(6.81)	14.81(3.08)

Logistic Regression

The results for the unweighted binary logistic regression are presented in Table 2.2, which measured financial strain as a binary outcome (0 = not financially strained and 1 = financially strained). Table 2.2 also reports the parameter estimates, standard errors, p values, and odds ratio. McFadden's Pseudo R^2 suggests that about 12% of the variance in whether an individual experiences financial strain can be explained by the model. The findings of the logistic regression suggest that compared to those who have not made a residential adaptation, those who have made a residential adaptation have about 21% lower odds of being financially strained ($p = .057$). Residential mobility was not significant.

Table 2.2 Logistic regression results for housing adaptations relationship to financial strain

Variable (Reference Group)	Coeff	SE	p	Odds Ratio
Residential Mobility (No chance of moving)	-0.098	0.139	0.483	0.903
Residential Adaptation (No)	-0.246	0.129	0.057	0.792
At least one child living at home (None)	0.242	0.143	0.091	1.268
At least one child living outside the home (None)	-0.052	0.153	0.736	0.959
Marital Status (Married/Partner)				
Never married or single	0.294	0.160	0.069	1.337
Age	-0.019	0.007	0.007	0.981
Race/Ethnicity (White)				

Black	1.200	0.200	<0.001	3.253
Hispanic or Latino	0.902	0.193	<0.001	2.430
Other	0.648	0.175	<0.001	1.918
Gender (Male)				
Female	0.167	0.133	0.210	1.177
Education (High school or less)				
Some college or associate's degree	-0.158	0.174	0.364	0.851
Bachelor's or master's degree	-0.590	0.180	0.001	0.556
Postgraduate degree	-0.822	0.199	<0.001	0.441
Employment Status (Unemployed or disabled)				
Retired	-0.462	0.237	0.052	0.633
Employed	-0.542	0.199	0.007	0.583
Health Status (Poor)				
Fair	-0.228	0.319	0.475	0.801
Good	-0.565	0.311	0.069	0.563
Excellent	-0.765	0.329	0.020	0.462
Intercept	0.047	0.512	0.926	-

Notes. Unweighted binary logistic regression of a restricted sample in the 2022 SCF. Reference groups are in parentheses.

c Statistic = .746

McFadden's Pseudo R^2 = .119

Log Likelihood = -4631.96

Among the control variables, single individuals had 1.3 times the odds of experiencing financial strain compared to married respondents ($p = .069$), and older respondents reported less financial strain than younger respondents ($p = .002$). Compared to White respondents, Black, Hispanic, and respondents of other races all had higher odds of experiencing financial strain, which supports findings from prior research (Anyamele, 2015). More education was associated with lower odds of financial strain, and respondents who were retired or employed compared to those unemployed or disabled also had lower odds of experiencing financial strain. Finally, in general, better health was associated with lower odds of having financial strain.

Discussion

The hypotheses in this study were not supported by the logistic regression results. Residential mobility was not significantly related to whether the respondent experiences

financial strain, while residential adaptation was negatively related to whether the respondent experiences financial strain. While the cost of renovating one's home may bring on additional debt or strain on finances, it may also increase home equity and bring additional wealth (Zavitsa & Gerber, 2016). This could lower the financial strain homeowners experience following a renovation. The results may also signal that those who are able to remodel their homes exhibit better financial management behaviors and experience financial benefits as a result. This may not be the case for other homeowners who are not able to address deficiencies in their homes through renovation.

Certain homeowners may be especially at risk of experiencing financial strain. For example, single individuals were predicted to have more financial strain than married or couple households, which may be due to their sole income. This could increase debt to income ratios and lower asset to debt ratios. Older respondents may have been able to spend more time accumulating assets and paying off debt than younger respondents, which could explain why they experience less financial strain. More education often results in higher paying jobs, and those in better health would be expected to have fewer medical expenses that may put a strain on their finances (Sav et al., 2013).

Implications

Homeowners appear to be managing their housing adjustments within their financial means based on the results of this study. Respondents may not yet be experiencing financial strain from moving if they are only considering whether they will move in the future. Unexpected closing costs, hiring movers, buying moving supplies, gas, inflation, and even taking time off work can all result in significant expenses. One study found that moving costs increased by 15% in 2022 from a year prior, with some cities and states seeing 40% or higher increases

(Tracey, 2022). For those who adapt their home, there may be an initial strain to financial resources. However, it appears that households are either able to benefit from the increased equity or have financially prepared for their renovations to avoid increasing financial strain.

During the financial planning process, first-time homebuying is often identified as a financial goal (Xu et al., 2015), but financial advisors should be aware of other housing goals clients have. For clients who already own a home, financial planners should ask what their plans to move or upgrade are and consider that in their saving and planning calculations. Additionally, financial planners should be especially aware of which clients may be at more risk of experiencing financial strain. Evaluating financial ratios, such as debt to income or asset to debt, can help advisors identify what housing goals they can currently afford and how to best finance or save for others.

Limitations and Future Research

One limitation of this study is that it only examines two out of the three methods of housing adjustment due to the questions available in the SCF and the difficulty in measuring family adaptation as a method of housing adjustment as explained previously. Future studies should find a way to incorporate this element of the theory. Additionally, the measures available in the SCF for residential adaptation are past-oriented in that it asks respondents whether they previously adapted their house, whereas residential mobility is forward-looking in that it asks respondents whether they intend to move. Those who have already adapted their home might be more likely to experience financial strain because they have already paid the cost of the adaptations, whereas those who intend to move may realize those costs in the future.

Still, when a person moves, they often have financial costs and considerations to prepare for the move that could still impact their financial strain. The SCF also did not ask respondents

why they were moving. Including whether a homeowner experienced circumstances that may lead to residential mobility, such as foreclosure or a recent job change, could help identify specific circumstances under which residential mobility may reduce or alleviate financial strain. Future studies may also want to control for how far away a person is moving, with some research suggesting that long-distance moves are more financially straining than short-distance ones (Warner & Sharp, 2016).

Future researchers could examine residential adaptation in more detail by looking at just those who renovate their home. The SCF variable used to measure residential adaptation was a binary variable that asked respondents whether they made a renovation or not. There may be further insight available from measuring residential adaptation as a categorical variable where respondents are grouped according to making no adaptations, some adaptations, or many adaptations. This may also help alleviate the multicollinearity issue identified with including the cost of renovation as a control. These studies could analyze how the method of financing residential adaptation projects influences financial strain. For example, it may be that those who save up and pay cash for their remodeling experience more financial well-being. Similarly, another study might examine how larger downpayments or smaller mortgages are related to financial strain when examining residential mobility. Another limitation of this study is that the SCF does not include any questions related to residential satisfaction. A path analysis would be beneficial to examine the extent to which housing adjustments relate to residential satisfaction and financial strain.

While the results of this study did not support the hypothesis that housing adjustments positively influence financial strain, the future research suggestions discussed may help provide a better understanding of these relationships. Analyzing all three methods of housing

adjustments, including the rationale for moving, measuring the distance of the move, creating an ordinal variable for residential adaptations, and examining how a household paid for a housing adjustment may uncover additional findings. The results indicated there was a negative association between residential adaptation and financial strain, and longitudinal studies could determine whether households experience a lasting reduction in financial strain after making a residential adaptation. Moreover, analyzing a self-assessed measure of financial strain rather than or in addition to financial ratios could indicate if housing adjustments influence the perception of one's financial condition more than what is experienced.

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Chapter 3 - Creating the ideal home: An experimental design on housing adjustments' relationship to financial strain and residential satisfaction

Introduction

Every culture has norms regarding what makes the ideal home. In the U.S., homeownership is a major financial and personal goal (Goodman & Mayer, 2018). As individuals evaluate their housing, they consider these cultural norms and family needs; when they find a deficit, they are motivated to make a change (Morris & Winter, 1975). However, these changes can come with significant financial costs that could result in a household experiencing financial strain. The research is mixed on how housing adjustments relate to financial strain. Some scholars suggest that financing methods are associated with negative aspects of financial strain (i.e., more spending) and others have found that adjustments, such as moving, can alleviate financial strain (Kim, 2020; Woodhead et al. 2015). This study conducts an experiment to help further explain what methods of housing adjustments are most likely to drive residential satisfaction and what methods might create additional financial strain. The research questions for this study are two-fold.

RQ1. How, and to what extent, do different housing adjustments—such as moving to a new home, renovating an existing home, or repurposing space within the home—impact residential satisfaction and financial strain?

RQ2. Do those who report more financial strain perceive less residential satisfaction?

Theoretical Framework

The foundation of this study comes from Morris and Winter's (1975) theory of family housing adjustments. Their theory was built on Riemer's (1943) theory of home adjustment, which explained how to evaluate housing needs to achieve residential satisfaction but did not describe specific methods of adjustment. Morris and Winter (1975) suggested that when a family becomes dissatisfied with their housing, they seek to adjust in three primary ways to reduce stress and increase satisfaction (Emami & Sadeghlou, 2021). Before discussing these three adjustments in detail, it is critical to note that even when faced with residential dissatisfaction or poor living conditions, there are economic and household constraints that often prevent people from achieving their optimal housing (Morris & Winter, 1975). For example, a family may reside in subsidized housing that does not meet all their household needs but may be unable to move due to expenses. A family who has chosen their dwelling based on proximity to a school, job, or even family may also experience constraints. Consider a parent who has a job in a big city, resulting in the family residing in a condominium or apartment that has strict rules on allowable renovations. This could prevent the family from adjusting.

If the family can overcome these economic or household constraints, they may alleviate their dissatisfaction through one of the following: residential mobility, residential adaptation, or family adaptation. Residential mobility refers to when a family moves to a new home. A key aspect of Morris and Winter's (1975) theory is that these moves are motivated by a desire to change abodes rather than a move for a new job or other non-housing related reasons. Residential adaptation refers to how a household may change its current housing to meet its needs. This could include renovations, remodeling, or do-it-yourself projects (Morris & Winter, 1975). Family adaptation occurs when household composition changes meet housing needs. While it

may not be immediately apparent how these changes meet housing needs, consider how an elderly parent moving out to a nursing home may provide extra space or a new baby may fill a previously unused room in the house (Morris & Winter, 1975).

Literature Review

Residential Satisfaction

Residential satisfaction incorporates a variety of elements including satisfaction with one's dwelling, neighborhood, the surrounding area, and social relationships (Rioux & Werner, 2011). For the purposes of this study, only satisfaction with the dwelling itself is examined (Abidin et al., 2019). Mohit & Raja (2014) describes residential satisfaction as a multifaceted construct influenced by social environment, sociodemographic variables, characteristics of the dwelling and neighborhood, and resident's behavioral characteristics. For example, sociodemographic factors such as age and education are positively associated with residential satisfaction (Abidin et al., 2019). The three methods of housing adjustments as proposed by Morris and Winter (1975) can potentially improve residential satisfaction. Each adjustment will be discussed in more detail below.

Residential Mobility

There are many reasons people decide to move, and a family's financial situation may be the reason for moving or it may be significantly affected by the move. For example, families may seek more affordable housing or may be forced to move if they experience foreclosure (Phinney, 2013). Those who are more likely to move tend to be renters rather than homeowners, younger, and experience lifestyle changes, such as marriage (Causa & Pichelmann, 2020; Coulter & Scott, 2015). Poorer families tend to perceive residential mobility as a way to alleviate financial strain

(Woodhead et al., 2015). Even if the cost of the dwelling is cheaper in the new residence, the move itself may financially strain a family (Anderson et al., 2014).

Moving may be a way to increase residential satisfaction, but the costs (financial and otherwise) may inhibit such a change. Rohe et al. (2013) suggest that certain homeowners (such as the elderly) may end up “trapped” in neighborhoods due to the “extensive attachment they have to their neighborhoods, coupled with the relatively high economic and psychological costs of moving” (p. 204). Higher-income families, on the other hand, have the financial resources to afford to buy a home in the first place, which has been shown to increase residential satisfaction (Mohit & Raja, 2014). Other demographics such as age and housing tenure may also influence a family’s level of residential satisfaction and what adjustment they decide to make (Mohit & Raja, 2014).

Residential Adaptation

There is some disagreement in the literature as to why people renovate or remodel their homes. Some researchers suggest that renovations are economically motivated to increase property values (Choi et al., 2014). In this way, families may view their homes as an opportunity to build wealth (Acolin et al., 2021). On the other hand, Mackay and Perkins (2019) suggest that renovations are an expression of personality or a response to changing household needs. Others have suggested that those families who are dissatisfied with their dwellings and wish to move may first engage in renovations (Mohit & Raja, 2014).

Renovations require capital be it through one’s savings or a financing method. Some of these financing methods, such as home equity lines of credit, may negatively affect good financial behaviors such as budgeting or saving (Kim, 2020). For some families, however, financing a renovation project could bring benefits in the form of tax credits, such as the solar tax

credit, or increased property values (Fuerst & Warren-Myers, 2018). Interestingly, Loibl et al. (2022) did not observe a relationship between financial strain and taking on increased mortgage debt, even though these relationships were present in other forms of debt. These studies highlight the need for more research into how renovations ultimately relate to financial strain.

Family Adaptation

Morris and Winter (1975) recognize the difficulty of viewing family adaptation as a mechanism for meeting a housing deficit. They explain, “Adding foster children to a household with extra bedrooms would probably be thought of as an altruistic act rather than an attempt to match household size to dwelling size” (p. 84). However, there are certain scenarios many families have experienced. Some families may be inclined to wait until they own a home to have children (Tocchioni et al., 2021). Overcrowding is another housing deficit that could be resolved through family adaptation. Latinos in rural Georgia reported experiencing overcrowding. Many respondents explained that it was necessary to share space with so many people to keep costs at a reasonable level (Atilas & Bohon, 2003). Family adaptations were nearly impossible for the respondents, even though it would have resolved the housing deficit created by overcrowding (Atilas & Bohon, 2003).

Financial Strain

In this study, the concept of financial strain comes from Hibbert et al. (2014), who define financial strain as “the level of stress experienced by an individual from their assessment of upcoming circumstances” (p. 52). Most of the literature on residential satisfaction has looked at how overall well-being and residential satisfaction are related (Fernández-Portero et al., 2017; Mouratidis, 2020), rather than specific aspects of financial well-being. That said, there is some prior literature that has suggested that components of financial strain are related to residential

satisfaction. For example, Shamsuddin and Campbell (2021) found that housing cost burden was negatively related to the respondent's satisfaction with the state of repair of their house and the temperature during different seasons. Debt, an important aspect of Hibbert et al. (2014) financial strain scale, may also be associated with residential satisfaction. For instance, Will and Renz (2024) found that the additional financial burden from a mortgage or a higher mortgage payment was associated with more residential satisfaction (likely because it indicated a better-quality dwelling) but less overall life satisfaction. Income is another component of assessing financial strain, and there is some evidence that higher income households derive more residential satisfaction than lower income households (Balestra & Sultan, 2013). Finally, as discussed previously, Morris and Winter's (1975) theory suggest that for economically constrained households, they may not be able to make housing adjustments that would result in increased residential satisfaction. Considering this research, it is possible that homeowners exhibiting more financial strain may be especially cost burdened by making housing adjustments or feel unable to afford adjustments that resolve residential dissatisfaction, resulting in less residential satisfaction overall.

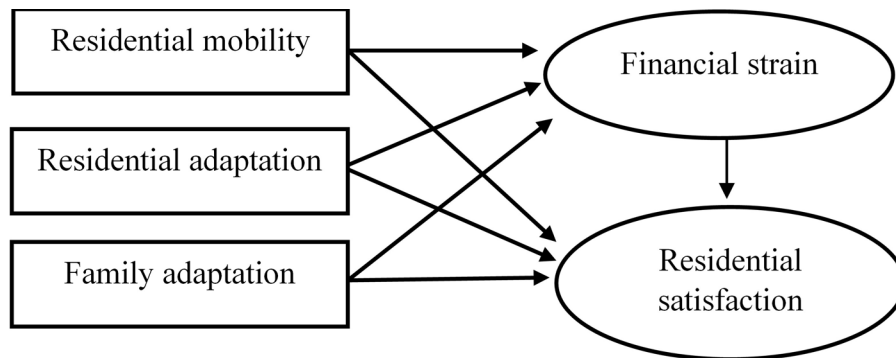
Many demographic variables are related to financial strain or a similar concept. The cost of living, for example, can add significant strain to household finances. French and Vigne (2019) found in a systematic literature review of financial strain, found that barriers to liquidity, borrowing, paying bills, affording debt payments, economic shocks, and an inability to save can increase a household's financial strain. Deidda (2015) observed that housing costs were positively related to economic hardships. Marital status, for example, has a complex relationship with components of financial well-being. On the one hand, married couples may have two incomes, but their interpersonal relationship may affect their financial strain (Copur & Eker,

2014; Sawai et al., 2018). Divorced or widowed individuals may experience higher levels of financial stress (Madero-Cabib & Fasang, 2016; Kim et al., 2017). Older U.S. individuals with health conditions have an increased likelihood of experiencing financial strain (Bierman, 2014). Women tend to experience greater levels of financial stress than men (Tran et al., 2018), and Bhatta et al. (2023) also observed that Black women tend to experience more financial strain than White women.

Hypotheses and Empirical Model

Based on the theoretical framework and the literature review discussed previously, the conceptual model and accompanying hypotheses are presented below. Figure 3.1 illustrates the proposed relationship between each housing adjustment method (family adaptation, residential adaptation, and residential mobility) and residential satisfaction and financial strain. Financial strain is also hypothesized to relate to residential satisfaction.

Figure 3.1. A conceptual model of housing adjustments on financial strain and residential satisfaction



- H1. The treatments will affect residential satisfaction and financial strain.
- H2. Residential mobility will be positively related to residential satisfaction.
- H3. Residential adaptation will be positively related to residential satisfaction.
- H4. Family adaptation will be positively related to residential satisfaction.

H5. Residential mobility will be positively related to financial strain.

H6. Residential adaptation will be positively related to financial strain.

H7. Family adaptation will be negatively related to financial strain.

H8. Financial strain will be negatively related to residential satisfaction.

Methodology

Data and Sample

The data for this study was collected in July 2024 using Amazon's Mechanical Turk (MTurk). The power calculations for sample size indicated that a minimum sample of 947 respondents would be needed to conduct the analyses (Soper, 2024). To account for attrition, this study was set to recruit 1,000 respondents. The survey was piloted to 10% of the sample before distribution (Todd, 2019), however, only 71 responses were valid as respondents were not able to verify that they took the survey in MTurk. To address this issue, MTurker IDs were collected in the final survey rather than a random number generator. The pilot responses were not included in the final survey due to the questionnaire change.

Although there have been concerns presented about whether MTurk participants are reliable and represent similar populations to respondents in traditional survey methods, many studies have found that MTurk respondents (often called MTurkers) typically are representative in terms of demographics and have similar reliability to more traditional means of survey collection (McCredie & Morey, 2019; Zhang & Gearhart, 2020). To increase reliability, multiple quality control measures were taken. First, only MTurkers who have completed 500 or more human intelligence tasks or HITs (which refer to other surveys or projects completed through MTurk) and a 95% approval rating (Peer et al., 2014). Next, bot detection was enabled in Qualtrics, which flags responses that have a high probability of originating from a bot rather than

a person. Qualtrics also provides options for preventing duplicate IDs and fraud, all of which were enabled in this survey. Finally, GeoIP was used to ensure that only respondents in the United States could answer the survey. Master qualifications in MTurk were not required as there is no strong empirical evidence that limiting the sample this way produces more reliable results (Rouse, 2019).

Participants were paid 50 cents for completing the survey. While there has been debate regarding whether MTurk is an ethical form of survey collection, Moss et al. (2022) found that most MTurkers view their time on the platform as paid leisure or part-time work. They also found that MTurkers enjoy their work, do not find MTurk as stressful as other jobs, and appreciate the flexibility of the work. In the pilot, the median duration was slightly below three minutes. With the minimum federal wage at \$7.25 or about 12 cents a minute, 50 cents was determined to be a fair wage for this survey (Aguinis et al., 2020).

The sample was restricted to adult homeowners in the U.S. with at least one dependent child to ensure they could imagine children sharing a bedroom and the possible ramifications of such a decision in their family. Moreover, while the theory of family housing adjustments (Morris & Winter, 1975) can apply to those in other housing tenures, such as renting, homeowners often have more flexibility to make housing adjustments as they are not controlled by the terms of a rental agreement. They also typically use more financing methods for housing, such as home equity lines of credit and mortgages. For these reasons, the sample was also restricted to homeowners.

The hypothetical narratives in this study may ask respondents to imagine their children sharing a bedroom. Moreover, the theory of family housing adjustments relies on many examples drawn from families with children. For a narrative to be effective, the participant should be able

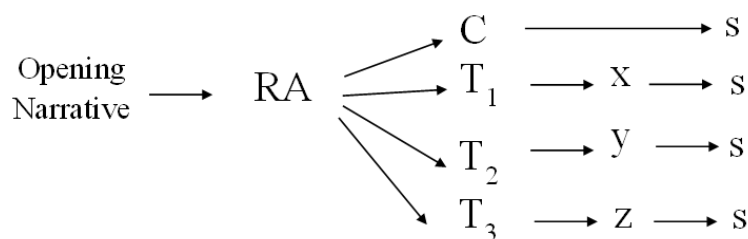
to identify with the character, regardless of the point of view (Shaffer et al., 2018; Chen et al., 2016). It is reasonable to think that respondents with children — or even one child — will have an easier time imagining this family dynamic than respondents without children. A participant need not fully identify with the character in the narrative, as too much immersion may hinder the effect of the narrative, so some possible differences are allowed (Shaffer, 2018). For example, a family may not wish to have their daughter and son share a room, but for the sake of the narrative could readily empathize with imagining themselves as a character in a story who decided to put their children in the same room. For this reason and the theoretical emphasis Morris and Winter (1975) assigned to family dynamics, the sample was restricted to those with a dependent child.

After filtering out bots, duplicate responses, fraudulent responses, respondents who spent less than 60 seconds on the survey, and respondents who did not answer at least one question, there were 935 respondents in the final sample. When reading silently in English, adults can read 238 words per minute on average (Brysbaert, 2019). Since this survey is more than 300 words (regardless of which group the participant was randomly assigned to), respondents who spent less than a minute on the survey were excluded.

Experimental Design

Figure 3.2 illustrates the experimental design used in this study.

Figure 3.2 Experimental design



After determining eligibility through the screening requirements, all respondents were given a hypothetical narrative that asked them to consider a scenario in which they live in a home that has one fewer bedroom than needed. While there are many reasons a family may be dissatisfied with their home, the number of bedrooms is strongly related to residential satisfaction (Abidin et al., 2019). Following the scenario, the respondents were randomly assigned to one of four groups. Respondents in the control group were not given any method of housing adjustment and were immediately directed to take the survey. Respondents in the first treatment group were given a narrative that uses residential mobility; respondents in the second treatment group were given a narrative that uses residential adaptation; and respondents in the third treatment group were given a narrative that uses family adaptation. The number of respondents in each group is shown in Table 3.1, with about 25% in each group. The narratives are provided and discussed further below.

Table 3.1 Random group assignment

Group	N	%
Control	232	24.81
Treatment 1 (Family adaptation)	232	24.81
Treatment 2 (Residential adaptation)	235	25.13
Treatment 3 (Residential Mobility)	236	25.24

Survey Design

After the respondents finished reading the narratives, they answered a survey that asked them to rate their level of residential satisfaction and financial strain and report their demographics.

Dependent variables. The dependent variables in this study are residential satisfaction and financial strain. Residential satisfaction is measured using Rioux and Werner's (2011) five-question scale, which has a Cronbach's alpha of .67. The scale is a 5-point Likert scale with 5

indicating *strongly agree* and 1 indicating *strongly disagree*. One of the items (I find it difficult or constraining to live in this house) was removed from the scale due to poor factor loading (-.22), making the scale a four-item scale. Cronbach's alpha improved to .71 after removing the item. The financial strain scale was developed by Hibbert et al. (2014) and has a Cronbach's alpha of .75. The three-question scale also uses a 5-point Likert scale where 1 indicates *never* and 5 indicates *always*.

Treatments. The three treatment groups will reflect the three methods of housing adjustments: (1) residential mobility, (2) residential adaptation, and (3) family adaptation. The narratives were designed to be as similar as possible, and the Flesch-Kincaid Reading Ease and Grade Levels are reported for each narrative. These scores help identify how easy it is to read the text, with higher scores indicating the narrative is easier to read (Choudhry et al., 2016). The narratives and their respective scores are listed in Table 3.2.

Table 3.2. Descriptive statistics of narratives

Opening Narrative	Control	T1 Residential Mobility	T2 Residential Adaptation	T3 Family Adaptation
Imagine that you currently live in a house with a mortgage. While you have liked living in your house, it has one less bedroom than you need for your family and feels overcrowded.	Now, imagine that you cannot change your house.	Now, imagine that you have decided to move to a new house with an extra bedroom. Your new monthly payment will be more expensive.	Now, imagine that you have decided to renovate your house to add an extra bedroom using a loan. Your new monthly costs will be more expensive.	Now, imagine that your children will share a room to create an extra bedroom.

Number of words	47	8	24	26	14
Number of sentences	3	1	2	2	1
Avg. words per sentence	15.6	8	12	13	14
Avg. characters per word	4.3	4.7	4.2	4.5	4.4
Flesch Reading Ease	75.7	82.3	74.8	69.9	77.8
Flesch- Kincaid Grade Level	6.5	3.7	5.8	6.7	5.8

Note. Calculations performed in Microsoft Word

Although the opening narrative is much longer than the other narratives, every respondent received the same opening narrative. The control group received significantly fewer words than the treatment groups, but overall, the treatment narratives have similar sentence counts and words per sentence and receive high readability scores.

Control variables. A cost-of-living index was created using the same methodology as Chien and Mistry (2013) using the Economic Policy Institute’s 2024 family budget calculator, which “measures the monthly income a family needs to attain a modest yet adequate standard of living,” (para. 1). The median family income was determined to be \$86,100 a year for a two-parent, two-child household. This was assigned a cost-of-living index of 1. Zip codes were used

to match the respondent's county, which was then scaled proportionately. A variety of demographic variables are included in the survey, including age (in years), gender (male/female), and race, which was collapsed to white or non-white. The respondents' marital status was collapsed into two categories (married/partner or single).

The highest level of education obtained by the participant is a categorical variable that includes three categories — some college or less, an associate or bachelor's degree, or a post-graduate degree. Income is a categorical variable where respondents were asked to choose the grouping that represents their total household income. Employment measures whether the respondent is employed (part-time, full-time, or self-employed) or unemployed (including retired, student, homemakers, and disabled respondents). The number of financially dependent children and the household composition (only adult, living with a spouse or significant other, living with other family, roommates, friends, or renters) are used to measure household composition. Health status is a self-reported measure with respondents indicating if they are in poor, fair, good, or excellent health. Finally, the respondents' zip codes were used to control for costs of living.

Data Analysis

After reviewing the descriptive statistics from the survey, one-way ANOVAs for each dependent variable were used to examine the mean difference between housing adjustment groups on each dependent variable. A multivariate ANOVA was also used to examine the statistical effects on the dependent variables simultaneously. To use an ANOVA, three assumptions should be met —independence, normality, and homogeneity. The data was collected from respondents who use MTurk, so it was assumed to be independent. The normality assumption was tested using Wilk's test. The results of Wilk's test ($p < .001$) indicated the data

was not normally distributed for the two dependent variables, which was confirmed by examining histograms. Levene's test for homogeneity indicated that the variances for financial strain ($p = .46$) and residential satisfaction ($p = .054$) were not significantly different from one another. Although the normality assumption was violated for an ANOVA, there is evidence that an ANOVA is a robust measure even when non-normality is present (which is often the case in social sciences) and that failing homogeneity tests may limit robustness more than a non-normal distribution (Blanca et al., 2017; Blanca et al., 2023). Since the assumptions of independence and homogeneity were met and there is a large sample size ($n = 933$), the F-test was used to examine whether there were differences between groups.

The post-hoc analysis used Tukey's honestly significant difference test to examine which groups exhibited differences in mean. Finally, three OLS regression models were used to include the effects of the control variables and observe the relationship between residential satisfaction and financial strain. Model 1 used residential satisfaction as the dependent variable, Model 2 used financial strain, and Model 3 examined the relationship between financial strain and residential satisfaction.

Missing data. Respondents who made it through the screening criteria discussed previously but did not answer any survey questions were excluded from the dataset. There is no current integration with Stata to use the `mi estimate` command with an ANOVA or MANOVA. Listwise deletion was used for these analyses, which resulted in three cases being dropped. However, multiple imputation is widely considered to demonstrate less biased results compared to listwise deletion or other methods of handling missing data when data is missing at random (van Ginkel et al., 2020). Therefore, missing data was estimated using multiple imputation for the logistic regression. There were no auxiliary variables since all the variables were included in

the model. Since both categorical and continuous variables required imputation due to missing data, multiple imputation for chained equations (MICE) was used due to the non-monotone missing data patterns and the presence of both categorical and continuous variables (Allison, 2001; StataCorp, 2023). Education, income, and the number of children were imputed using a cumulative regression. Household composition was imputed using a multinomial logistic regression. Marital status, employment, gender, and race were imputed using a logistic regression, and an OLS regression was used for health, age, and cost of living index. Of the dependent variables, only residential satisfaction had missing values. According to Allison (2009), the dependent variable should not be imputed if there are no auxiliary variables, so these were listwise deleted bringing the final sample size from 935 to 933. Then, the Stata command *mi impute mvn* was used to impute the missing data using 10 imputations.

Results

Descriptive Statistics

Scores for residential satisfaction and financial strain are presented in Table 3.3 for the total sample, the control group, and the three treatment groups. For residential satisfaction, across the entire sample, respondents reported a residential satisfaction score of 11.26 on average (with a maximum score of 16). Respondents in general appeared to exhibit high residential satisfaction, which may be a result of the sample being restricted to homeowners who tend to have more residential satisfaction (Mohit & Raja, 2014). Those randomly assigned to the family adaptation group had the highest average residential satisfaction score (11.53), whereas those in the control group, on average, reported the lowest residential satisfaction score (10.72).

Table 3.3 Distribution of dependent variables

Variables	Total Sample	Control	T1 Family adaptation	T2 Residential adaptation	T3 Residential mobility
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	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Residential satisfaction	11.26	2.91	10.72	3.24	11.53	2.92	11.28	2.61	11.49	2.78
Financial strain	8.45	2.42	8.28	2.46	8.45	2.35	8.49	2.32	8.55	2.56

When looking at the respondents' level of financial strain (a summative scale with the highest score being 12), respondents averaged 8.45 in the total sample. The control group reported the lowest level of financial strain, with a mean score of 8.28, and those randomly assigned to the residential mobility group had the highest level of financial strain, with a mean score of 8.55.

The descriptive statistics for the control variables are presented in Table 3.4. Univariate tests were run to observe whether there were sociodemographic differences between respondents in the four groups. Only gender was significant ($X^2 = 7.9952$, $df = 3$, $p = .046$). Subsequent testing after applying Bonferroni's correction indicated gender differences were only significant between the control group and the family adaptation group. In the total sample, the average cost of living index was 1.34, and the mean age was about 33 years old. Nearly 66% of the sample was male, and 86% of respondents were White. Nearly 92% of respondents were married or cohabitating. Most respondents had at least an associate degree or bachelor's degree (about 79%) and 13% reported having a post-graduate degree. More than half of the respondents in the total sample had an annual income between \$50,000 and \$99,999, and the vast majority were employed. Since respondents had to have at least one financially dependent child to participate in the survey, there were no respondents with zero children. About 52% of the sample had one financially dependent child, and 44% of the sample had two financially dependent children. Sixty-three percent of respondents reported living with their spouse, partner, or significant other, whereas 22% said they were the only adult in the household. Finally, respondents tended to have higher health scores.

Table 3.4 Descriptive statistics for control variables

Descriptive Statistics										
Variables	Total Sample		Control		Treatment 1		Treatment 2		Treatment 3	
	Prop (%)	M (SD)	Prop (%)	M (SD)	Prop (%)	M (SD)	Prop (%)	M (SD)	Prop (%)	M (SD)
Cost of Living Index		1.34 (.28)		1.33 (0.27)		1.37 (0.29)		1.32 (0.25)		1.36 (0.30)
Age		33.37 (8.25)		33.93 (8.78)		33.30 (8.77)		33.74 (7.72)		32.52 (7.70)
Male	65.74		59.48		68.10		64.10		71.19	
Female	34.26		40.52		31.90		35.90		28.81	
White	86.28		85.34		87.45		88.03		84.32	
Non-White	13.72		14.66		12.55		11.97		15.68	
Married/Partner	91.96		90.95		91.77		92.31		92.8	
Single	8.04		9.05		8.23		7.69		7.20	
Education										
Some college or less	8.69		10.34		7.39		9.36		7.66	
Associate's or bachelor's	78.65		78.88		76.09		79.15		80.43	
Post-Graduate	12.66		10.78		16.52		11.49		11.91	
Income										
Less than \$25,000	3.87		4.74		3.04		3.40		4.27	
\$25,000 to \$49,999	25.46		24.14		23.91		27.23		26.5	
\$50,000 to \$74,999	31.04		31.90		33.04		28.51		30.77	
\$75,000 to \$99,999	24.70		25.43		26.52		23.83		23.08	
\$100,000 to \$149,999	10.63		9.91		8.26		11.91		12.39	
\$150,000 or more	4.30		3.88		5.22		5.11		2.99	
Unemployed	3.45		3.91		3.93		2.99		2.99	
Employed	96.55		96.09		96.07		97.01		97.01	
Financially dependent children										
1	52.14		50.43		50.22		52.34		55.51	

2	43.58	45.26	44.59	44.26	40.25
3 or more	4.28	4.31	5.19	3.4	4.24
Household composition					
Live with spouse or partner	63.41	66.38	63.04	64.68	59.57
Only adult	22.10	19.89	21.74	20.00	26.81
Live with others	14.48	13.79	15.22	15.32	13.62
Health Status	2.24 (0.58)	2.23 (0.61)	2.27 (0.60)	2.20 (0.59)	2.26 (0.54)

Among the control and treatment groups, the descriptive statistics look very similar. The control group had the most females of any of the three groups (41%), whereas treatment group 3 had the least (29%). The control group had the most respondents without a college degree (10%), and treatment group 1 had the most respondents with a post-graduate degree (17%).

MANOVA

There was a weak correlation between financial strain and residential satisfaction (.33). Still, a MANOVA can be used to reduce the possibility of a Type-1 error and observe the effect of the treatment groups on the two dependent variables simultaneously (Rani et al., 2022). The test statistics for the MANOVA results are reported in Table 3.5. Only Roy's largest root was significant. As previously described, the normality assumption was violated. There is evidence that Roy's largest root statistic provides robust results when this is the case, but Pillai's may be more robust for two dependent variables (Ateş et al., 2019). Considering three of the statistics were insignificant and Pillai's insignificance, the results indicated a failure to reject the null hypothesis that the treatments simultaneously affect a homeowner's financial strain and residential satisfaction. However, due to the significance of Roy's largest root, further analyses were conducted.

Table 3.5 MANOVA results

Source	<i>Statistic</i>	<i>DF</i>	<i>F</i>	<i>p</i>
Treatment	Wilk's lambda	3	2.01	0.06
	Pillai's trace		2.01	0.06
	Lawley-Hotelling trace		2.02	0.06
	Roy's largest root		3.91	0.0087
Residual		929		

ANOVA

Following the MANOVA, a one-way ANOVA was used to test mean differences in the dependent variables individually by treatment group due to the low correlation of dependent variables. Although the MANOVA still has an advantage for reducing the likelihood of a Type-1 error, Tukey's HSD test is used as a post-hoc analysis to the one-way ANOVAs to control the Type-1 error rate. The ANOVA results are presented in Table 3.6. For residential satisfaction, the ANOVA indicated there was a statistically significant difference in residential satisfaction by treatment groups ($p = .0087$). The ANOVA results for financial strain did not reveal a statistically significant difference in financial strain between treatment groups.

Table 3.6 One-way ANOVA results

	<i>DF</i>	<i>F</i>	<i>p</i>
Residential Satisfaction			
Treatment	3	3.91	0.0087
Residual	929		
Total	932		
Financial strain			
Treatment	3	3.03	0.6718
Residual	931		
Total	934		

The second research question in this study asked whether one type of housing adjustment had a greater effect on residential satisfaction or financial strain. Since the ANOVA did not reveal a statistically significant difference in financial strain, no post-hoc analysis was conducted. For residential satisfaction, Tukey's HSD test was used for a post-hoc analysis to determine which groups exhibited statistically significant differences. Tukey's HSD test (at the 5% significance level) revealed that using family adaptation or residential mobility as a method of housing adjustment will improve residential satisfaction more than not making any housing adjustment (see Table 3.7). Residential adaptation did not appear to influence residential

satisfaction. The post-hoc analysis also showed there was no difference between treatment groups, indicating that there is no greater effect of family adaptation or residential mobility on residential satisfaction.

Table 3.7 Tukey's HSD results

Group	Margin	SE	Tukey's Group
Control	10.72	0.19	A
Family adaptation	11.53	0.19	B
Residential adaptation	11.28	0.19	AB
Residential mobility	11.49	0.19	B

Note. Margins that do not share a letter are significantly different at the 5% level.

OLS Regression

Three OLS regression models were used to examine the relationship between the control variables and the dependent variables. The results of the regression analyses are shown in Table 3.8. Model 1 tests the relationship between the treatment groups and control variables on residential satisfaction to expand on the findings of the one-way ANOVA. McFadden's Pseudo R^2 suggests that about 16% of the variance in residential satisfaction can be explained by the model. The results indicate that all three treatment groups are positively related to residential satisfaction. Respondents with a higher cost of living index were predicted to have more residential satisfaction.

Table 3.8 OLS regression results

	Model 1			Model 2			Model 3		
Variable (Reference Group)	Coeff	SE	<i>p</i>	Coeff	SE	<i>p</i>	Coeff	SE	<i>p</i>
Family adaptation (No)	0.63	0.25	0.012	0.07	0.22	0.737	0.61	0.24	0.012
Residential adaptation (No)	0.55	0.25	0.027	0.19	0.22	0.376	0.49	0.24	0.041
Residential mobility (No)	0.59	0.25	0.018	0.15	0.22	0.488	0.54	0.24	0.026
Cost of Living Index	1.49	0.36	<.001	1.44	0.32	<.001	1.05	0.35	0.003
Age	-0.04	0.01	0.001	-0.003	0.01	0.798	-0.04	0.01	0.001
Gender (Male)	0.60	0.19	0.002	0.36	0.17	0.035	0.49	0.19	0.008
Race (White)	-0.28	0.28	0.312	0.11	0.25	0.655	-0.32	0.27	0.243

Marital (Married)	-0.76	0.36	0.032	-0.40	0.31	0.205	-0.64	0.34	0.060
Education (Some college or less)									
Associate's or bachelor's	0.95	0.36	0.009	0.07	0.32	0.823	0.93	0.35	0.008
Post-Graduate	1.27	0.45	0.004	0.63	0.39	0.111	1.08	0.43	0.012
Income (Less than \$25,000)									
\$25,000 to \$49,999	1.82	0.51	<.001	1.59	0.46	0.001	1.33	0.50	0.008
\$50,000 to \$74,999	1.49	0.52	0.004	0.96	0.46	0.036	1.20	0.50	0.017
\$75,000 to \$99,999	1.33	0.53	0.012	1.04	0.47	0.028	1.01	0.51	0.049
\$100,000 to \$149,999	0.97	0.56	0.086	1.10	0.50	0.028	0.63	0.54	0.247
\$150,000 or more	1.32	0.68	0.055	0.81	0.60	0.176	1.06	0.66	0.108
Employed (Unemployed)	0.11	0.51	0.832	0.50	0.45	0.297	-0.04	0.49	0.938
Financially dependent children									
(1)									
2	-0.04	0.19	0.838	-0.17	0.17	0.310	0.01	0.18	0.943
3 or more	0.88	0.46	0.055	0.51	0.40	0.210	0.73	0.44	0.100
Household composition (Live with spouse or partner)									
Only adult	1.25	0.24	<.001	0.76	0.22	<.001	1.02	0.24	<.001
Live with others	0.30	0.26	0.260	0.13	0.23	0.557	0.26	0.25	0.313
Health Status	0.94	0.16	<.001	0.06	0.14	0.680	0.92	0.16	<.001
Financial Strain	-	-	-	-	-	-	0.31	0.04	<.001
Intercept	5.10	0.97	<.001	4.42	0.86	<.001	3.74	0.94	<.001

Note. In Model 1, the dependent variable is residential satisfaction. In Model, 2 the dependent

variable is financial strain. In Model 3, the dependent variable is residential satisfaction and

financial strain is a predictor.

^a McFadden's Pseudo R^2 : Model 1 = .1569, Model 2 = .0609, Model 3 = .2243

Age was negatively related to residential satisfaction, and females tended to report more residential satisfaction than males. For every one-unit increase in health status, the residential satisfaction score was expected to increase by .93 points. Single respondents reported less residential satisfaction than married respondents, and higher income was generally associated with more residential satisfaction. Compared to those who lived with a spouse or significant other, those who were single or lived alone were predicted to have higher residential satisfaction scores. Finally, more education was also positively associated with residential satisfaction.

Model 2 tested the relationship between the control variables and the treatment groups on financial strain. McFadden's Pseudo R^2 suggests that about 6% of the variance in financial strain can be explained by the model. Those who had a higher cost-of-living index were predicted to have higher levels of financial strain. Women reported slightly higher levels of financial strain, and income, in general, was positively related to financial strain. Finally, those who were single compared to those who were married or had a partner were predicted to have higher levels of financial strain.

Model 3 included financial strain as an independent variable to test the final research question, which asked whether financial strain was related to homeowners' residential satisfaction. McFadden's Pseudo R^2 for Model 3 was .22, indicating that about 22% of the variance in residential satisfaction was explained by the model. Many of the results of Model 3 were consistent with Model 1. Financial strain was significantly related to residential satisfaction. Every one-unit increase in financial strain was associated with a .28-point increase in residential satisfaction.

Discussion

This study hypothesized based on the theory of family housing adjustment (Morris and Winter, 1975) that family adaptation, residential adaptation, and residential mobility would influence both residential satisfaction and financial strain. The experiment was partially supported. The treatments did not appear to have an effect on the combined model, thereby not providing support for H1. The ANOVA revealed that the treatments affected residential satisfaction, and the post-hoc analysis indicated that family adaptation and residential mobility were significantly related to homeowners' residential satisfaction, meaning H2 and H4 were supported, while H3 was not supported. The results from the ANOVA, MANOVA, and

subsequent regression did not support H5, H6, or H7. However, the Model 3 regression results did indicate that there was a positive relationship between financial strain and residential satisfaction, which was the opposite effect hypothesized in H8. See Table 3.9 for a summary of the outcomes of the hypotheses.

Table 3.9 Hypotheses summary

Hypothesis	Analysis	Results
H1. The treatments will affect residential satisfaction and financial strain.	MANOVA	Not supported
H2. Residential mobility will be positively related to residential satisfaction.	ANOVA/Tukey's HSD	Supported
H3. Residential adaptation will be positively related to residential satisfaction.	ANOVA/Tukey's HSD	Not supported
H4. Family adaptation will be positively related to residential satisfaction.	ANOVA/Tukey's HSD	Supported
H5. Residential mobility will be positively related to financial strain.	ANOVA	Not supported
H6. Residential adaptation will be positively related to financial strain.	ANOVA	Not supported
H7. Family adaptation will be negatively related to financial strain.	ANOVA	Not supported
H8. Financial strain will be negatively related to residential satisfaction.	OLS	Not supported (Financial strain was positively related)

For dissatisfied homeowners, the results of this experiment suggest that residential satisfaction can be improved by moving to a new residence or adapting the family structure to accommodate the housing needs (in this case, having children share a bedroom to make another bedroom available for other uses). These changes do not appear to influence the financial strain the household experiences. Homeowners who have higher financial strain, however, also may experience increased residential satisfaction. While this may at first seem counterintuitive, homeowners who have more housing debt or higher expenses may have spent more money upfront when purchasing their home to live in a house that meets their needs. These findings

indicate a need for financial planners to consider the extent to which homeowners will stretch their finances to achieve their housing goals.

When examining the control variables, cost-of-living was an important predictor for both dependent variables. Those with higher costs of living had more residential satisfaction. This could be because those in high-cost-of-living areas have more income and are willing or able to spend more on housing (Handbury, 2021). Areas with a higher cost of living may also have attractive neighborhood qualities such as walkability that may also improve residential satisfaction (Bereitschaft, 2019). On the other hand, those who live in high-cost-of-living areas may be especially susceptible to experiencing financial strain. Other studies have found that cost of living is positively associated with homelessness (Heston, 2023) and difficulty affording necessities such as food (Albouy et al., 2016). Age is negatively related to residential satisfaction in both Model 1 and 3, which could be because older individuals may have more difficulty making adaptations. For example, elderly individuals may not want to move from neighborhoods they have lived in for a long time (Anderson et al., 2014), or they may not want to move due to health concerns (Coulter & Scott, 2015).

Implications

Homeowners may struggle to remedy residential dissatisfaction as the cost of buying a new house is rising (Hyman, 2024) and renovation costs are increasing (Joint Center for Housing Studies, 2023). Considering these challenges, this study provides encouraging findings that homeowners who make housing adjustments do not appear to experience any effect on their financial strain. Instead, thoughtful decisions to improve one's housing may improve residential satisfaction, which is associated with benefits including increased psychological well-being (Fernández-Portero et al., 2017) and life satisfaction (Ma et al., 2018).

That said, the positive relationship between financial strain and residential satisfaction found in this study should encourage financial planners to evaluate whether their clients are choosing the optimal strategies to achieve their housing goals. Moreover, the cost of living appears to be a more important predictor as to whether someone experiences financial strain than housing adjustments. Helping clients understand how much they can afford to spend on their homes while taking into consideration their overall cost of living could be a way to improve residential satisfaction without the additional financial strain. Planners should evaluate debt-to-income ratios, how much home equity their clients have and whether it can or should be accessed, and housing cost burden to see whether they have a high or excessive cost burden.

Family adaptation presents a unique opportunity for homeowners to increase their residential satisfaction, potentially with minimal costs. As explained by Morris and Winter (1975), families typically struggle to view people entering and exiting the household as a way to meet housing needs. That said, making use of these opportunities (such as children sharing a bedroom, a child going to college, or an elderly parent moving in) can give families the ability to find unique solutions to their housing needs. For example, deciding to give a child their own room may mean a room can no longer serve as an office or home gym. However, it could help meet family housing needs such as privacy. Rahim and Hashim (2018) explain it this way, “Ideally, housing designs support the overall needs of the family including the activity system, privacy and social interaction consistent with the culture of the people,” (p. 51). Researchers should continue to explore how family adaptation can meet housing needs, especially when residential mobility or adaptation is not possible due to external constraints.

Residential mobility can be beneficial in many circumstances. For families who have limited financial resources, Bergman et al. (2024) explain that enhancing communication efforts

about the programs and support available can help those who currently live in areas that have limited potential for upward mobility make the move to neighborhoods that do have this opportunity. Bergman et al. (2024) found that many of these families wish to move but face barriers (such as poor communication) to being able to do so. Policymakers should continue to update their communication strategies to reach families who are eligible for financial assistance to make moves that meet their housing needs.

Another interesting outcome of this study is the lack of significant findings related to residential adaptation. While renovating one's home may feel easier than moving or less complicated than changing family structure, it appears to have no relationship to residential satisfaction, nor does it impact financial strain. This is not to say homeowners should never renovate. They should, however, consider all possible alternatives and recognize when a home improvement project might spiral into a bigger task than ever initially imagined (see Brayham's 2015 autoethnography in DIY). The time, cost, and mental exhaustion associated with home improvements may limit the residential satisfaction achieved from it.

Limitations and Future Research

There are a few limitations and areas for future research to note in this study. First, future studies could benefit from collecting a more diverse sample. Respondents in the data were predominantly young and White. Most respondents were also married or cohabitating, which is likely a result of limiting the sample to those with a dependent child. Future studies may wish to use a different family adaptation measure to include other family structures, such as those who are childless.

The respondents in this study reported generally high levels of residential satisfaction, which may be a result of restricting the sample to homeowners who tend to have more residential

satisfaction in general (Mohit & Raja, 2014). Other studies may also consider using different measures of residential satisfaction. Many scales have been developed to measure this construct (Smrke et al., 2018). The Rioux and Werner (2011) scale used in this study has high reliability and measures the satisfaction someone has with their actual dwelling. However, it was developed using older adults in France. This may limit its applicability to U.S. citizens, although the questions used for dwelling satisfaction do not appear on its face to pose any cross-cultural challenges. Although this study focused on satisfaction with the dwelling, future studies may also wish to examine satisfaction with the neighborhood, as this is another component of residential satisfaction (Smrke et al., 2018).

Another potential limitation exists when using a narrative technique. The narratives ask the respondents to place themselves in the situation, which may help strengthen the narrative effect (Todd, 2019). However, respondents who have never actually experienced a housing adjustment be it moving, renovating, or adapting their family structure for housing-related reasons, may find it difficult to rate how their financial strain or residential satisfaction would be impacted. A longitudinal survey that tracks residential satisfaction and financial strain before and after housing adjustments may help alleviate this concern in future studies.

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Appendix A - Survey

Informed Consent Form

This survey is designed for homeowners residing in the United States with at least one dependent child. Your feedback is important to help financial planners and policymakers better understand the importance of housing goals and the methods used to achieve these goals. Below you will find the informed consent information required by the institutional board for ethical research. Please confirm your receipt of the information below.

Project Title: Creating the ideal home: An experimental design on housing adjustments' relationship to financial strain and residential satisfaction

Length of Study: It will take approximately 3 to 5 minutes to complete the survey.

Co-Investigators: Derek Lawson (Principal Investigator) and Ashlyn Rollins-Koons Contact for any problems/questions: Ashlyn Rollins-Koons ashlynr12@ksu.edu

IRB Chair Contact: Lisa Rubin (Chair Committee on Research Involving Human Subjects) and Brad Woods (Associate Vice President for Research Compliance) 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

Purpose of the Research: Using an experimental design via a survey, this research aims to understand how housing decisions relate to financial strain and residential satisfaction.

Risks or Discomforts Anticipated: There are no known risks associated with participating in this study.

Benefits Anticipated: Homeowners in the U.S. may benefit from gaining insight into how different methods of housing changes improve residential satisfaction and relate to financial strain.

Extent of Confidentiality: Your MTurker worker ID will be collected in this study, and it will be separated from the data file as soon as possible and destroyed as soon as the study is completed, and participants are compensated. Zip codes will not be published nor included in the published dataset. Identifiers will be removed from the identifiable private information and after such removal, the information could be used for future research studies or distributed to another investigator for future research studies without additional informed consent.

Terms of Participation: I understand this project is research, and that my participation is voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits to which I may otherwise be entitled. By clicking yes, I am indicating that I have read and understood my responsibilities for participating in this study. I hereby give my voluntary consent for participation in this project.

☐ Yes (1)

☐ No (2)

Q2 Do you own a home and have at least one dependent child?

☐ Yes (1)

☐ No (2)

Q3 Please read the following narrative.

Imagine that you currently live in a house with a mortgage. While you have liked living in your house, it has one less bedroom than you need for your family and feels overcrowded.

Q4 Please read the following narrative.

Now, imagine that you cannot change your house.

Q5 Please read the following narrative.

Now, imagine that you have decided to move to a new house with an extra bedroom. Your new monthly payment will be more expensive.

Q6 Please read the following narrative.

Now, imagine that your children will share a room to create an extra bedroom.

Q7 Please read the following narrative.

Now, imagine that you have decided to renovate your house to add an extra bedroom using a loan. Your new monthly payment will be more expensive.

Q8 Considering this scenario, please rate the degree to which you agree or disagree with the following questions.

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I find it difficult or constraining to live in this house (1)	☐	☐	☐	☐	☐
My home is adapted to my needs (2)	☐	☐	☐	☐	☐
I enjoy living in this house (3)	☐	☐	☐	☐	☐
My house is cozy (4)	☐	☐	☐	☐	☐
I have chosen to live in this house, and it would be difficult for me to live elsewhere (5)	☐	☐	☐	☐	☐

Q9 Considering this scenario, please rate the degree to which you agree or disagree with the following questions.

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I worry about the ability to pay back the debt I owe on my house. (1)	☐	☐	☐	☐	☐
In light of the debt I owe on my house, I worry about my expected financial condition five years from now. (2)	☐	☐	☐	☐	☐
I worry about where the money will come from to pay my expenses. (3)	☐	☐	☐	☐	☐

Q10 What is your age (in years)?

Q11 How do you identify yourself? (Select all that apply)

- ☐ White or Caucasian (1)
- ☐ Black or African American (2)
- ☐ American Indian/Native American or Alaska Native (3)
- ☐ Asian (4)
- ☐ Native Hawaiian or Other Pacific Islander (5)
- ☐ Hispanic, Latino, or Spanish origin (6)
- ☐ Other (please specify) (7) _____

Q12 What is your gender?

- ☐ Male (1)
- ☐ Female (2)
- ☐ Non-binary / third gender (3)
- ☐ Other (please specify) (4) _____

Q13 What is your current relationship status?

- ☐ Single (1)
- ☐ Married (2)
- ☐ Cohabiting (3)
- ☐ Separated (4)
- ☐ Divorced (5)
- ☐ Widowed (6)
- ☐ Other (please specify) (7) _____

Q14 How many children do you have who are financially dependent on you? Please include adult children, children not living at home, and step-children as well.

- ☐ 1 (1)
- ☐ 2 (2)
- ☐ 3 (3)
- ☐ 4 or more (4)

Display This Question:

If How many children do you have who are financially dependent on you? Please include adult children... = 1

Q20 What is the age of this child? Please write 0 for a child younger than 1

Display This Question:

If How many children do you have who are financially dependent on you? Please include adult children... = 2

Q21 What is the ages of these children? Please leave at 0 for a child younger than 1

Age

Child 1 ()	
Child 2 ()	

Display This Question:

If How many children do you have who are financially dependent on you? Please include adult children... = 3

Q22 What are the ages of these children? Please leave at 0 for a child younger than 1

Age

Child 1 ()	
Child 2 ()	
Child 3 ()	

Display This Question:

If How many children do you have who are financially dependent on you? Please include adult children... = 4 or more

Q23 What are the ages of these children? Please leave at 0 for a child younger than 1

	Age	Not Applicable
Child 1 ()		
Child 2 ()		
Child 3 ()		
Child 4 ()		

Display This Question:

If How many children do you have who are financially dependent on you? Please include adult children... = 4 or more

Q24 If you have more than four children, please list their ages and gender below.

- ☐ Ages (4) _____
- ☐ Genders (5) _____
- ☐ Not applicable (6)

Q25 Which of the following describes your current living arrangements? (Select all that apply)

- ☐ I am the only adult in the household (1)
- ☐ I live with my spouse/partner/significant other (2)
- ☐ I live with other family, friends, or roommates (3)
- ☐ I live with tenants (renters) (4)

Q26 What is the highest level of education you have completed?

- ☐ Some high school or less (1)
- ☐ High school diploma or GED (2)

- ☐ Some college, but no degree (3)
- ☐ Associates or technical degree (4)
- ☐ Bachelor's degree (5)
- ☐ Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS, etc.) (6)

Q27 Would you say your health in general is excellent, good, fair, or poor?

- ☐ Excellent (1)
- ☐ Good (2)
- ☐ Fair (3)
- ☐ Poor (4)

Q28 What was your total household income before taxes during the past 12 months?

- ☐ Less than \$25,000 (1)
- ☐ \$25,000-\$49,999 (2)
- ☐ \$50,000-\$74,999 (3)
- ☐ \$75,000-\$99,999 (4)
- ☐ \$100,000-\$149,999 (5)
- ☐ \$150,000 or more (6)

Q29 Which statement best describes your current employment status?

- ☐ Work full-time for an employer (1)
- ☐ Self-employed (2)

- ☐ Work part-time for an employer (3)
- ☐ Full-time student (4)
- ☐ Homemaker (5)
- ☐ Permanently sick, disabled, or unable to work (6)
- ☐ Retired (7)

Q30 What is your US Zip Code?

Q31 Please enter your MTurk Worker ID.

Q32 Here is your survey code: `${e://Field/Random%20number}`

Copy and paste this value into MTurk.

When you have copied the survey code, please click the next button to submit your survey.

Appendix B - IRB Approval

TO: Derek Lawson

Personal Financial Planning

FROM: Lisa Rubin, Chair

Committee on Research Involving Human Subjects

DATE: 06/25/2024

RE: Proposal #IRB-12207, entitled “Creating the ideal home: An experimental design on housing adjustments’ relationship to financial strain and residential satisfaction.”

MODIFICATION OF IRB PROTOCOL #IRB-12207, ENTITLED, “Creating the ideal home: An experimental design on housing adjustments’ relationship to financial strain and residential satisfaction”

EXPIRATION DATE: Exempt

The Committee on Research Involving Human Subjects (IRB) has reviewed and approved the request identified above as a modification of a previously approved protocol. **Please note that the original expiration remains the same.**

All approved IRB protocols are subject to continuing review at least annually, which may include the examination of records connected with the project. Announced in-progress reviews may also be performed during the course of this approval period by a member of the University Research Compliance Office staff. Unanticipated adverse events involving risk to subjects or to others must be reported immediately to the Chair of the IRB, and / or the URCO

It is important that your human subjects activity is consistent with submissions to funding / contract entities. It is your responsibility to initiate notification procedures to any funding / contract entity of any changes in your activity that affects the use of human subjects.

Electronically signed by Lisa Rubin on 06/25/2024 6:19 PM ET

Chapter 4 - Financial well-being and housing tenure: Explaining differences in how renters and homeowners perceive financial well-being

Introduction

Homeownership is a tool often used to promote economic mobility or seen as a sign that someone is upwardly mobile. Ownership, especially of one's home, is a strong Western ideal heralded as a mechanism to gain power, prestige, and wealth, even though it may fail to accomplish these goals (Carswell, 2024). As homeownership rates have changed throughout the years, the percentage of first-time homebuyers dropped to a record low — only 26% of all home purchasers that year (National Association of Realtors, 2022). In 2024, the percentage of first-time homebuyers went up to 32% (National Association of Realtors, 2024). Still, the U.S. housing market is fraught with challenges, as evidenced by total home sales in June 2024 hitting their lowest point in nearly 13 years (Khater et al., 2024). Despite the changes in the housing market in recent years, U.S. residents still view homeownership as a cultural norm, integral to many households' financial goals (Ackert & Mazzotta, 2021; Odermatt & Stutzer, 2022). The government also incentivizes homeownership through the tax system, favorable mortgage products, and government-sponsored enterprises such as Fannie Mae and Freddie Mac. Proposals for homebuying tax credits, increasing single and multi-family construction, and changing zoning ordinances have been touted in recent political campaigns (Torres, 2024).

In addition to being a personal financial goal for many U.S. individuals and a priority for the federal government, homeownership has also been positively related to objective and subjective financial well-being (Lim & Lee, 2021; Tharp et al., 2020). However, it is difficult to

save for a down payment on a home when monthly rent demands a large percentage of income (Airgood-Obrycki et al., 2022) and mortgage rates and housing prices remain persistently high (Joint Center for Housing Studies, 2024). A major risk is an increasing chasm between upwardly mobile homeowners and others who have been priced out of ownership. If homeownership itself is the catalyst for economic advancement and, consequently, financial well-being, then this trend is increasingly troubling. The research questions for this study are as follows:

RQ1. To what extent does homeownership relate to financial well-being?

RQ2. Is there a disconnect between the traditional objective measures of housing cost burden and how cost-burdened U.S. individuals feel?

RQ3. Does homeownership itself promote financial well-being or are housing costs and residential satisfaction equally, if not more, important?

Theoretical Framework

Financial Well-Being

Economic prosperity can be defined and measured in many ways; however, this study is interested in financial well-being, which encompasses objective indicators of a person's financial status and subjective measures that capture how a person perceives their financial circumstances. Brügggen et al. (2017) explain that while objective financial indicators "provide objective evidence of where an individual stands financially, subjective measures of financial well-being can help researchers examine peoples' perceptions about and reactions to their financial condition" (p. 229). Subjective measures can be used as proxies for financial well-being or as a component of financial well-being (Joo, 2008). Financial well-being could, therefore, include financial satisfaction, financial stress, financial attitudes, or even one's perception of their financial situation (Joo, 2008; Nanda & Banerjee, 2021; Tenney & Kalenkoski, 2019). Many

scholars have set out to create a framework for financial well-being (Shim et al., 2009) and related concepts such as financial satisfaction (Joo & Grable, 2004) and financial wellness (Joo, 2008).

In addition to the subjective nature of financial well-being, Brüggen et al. (2017) argue financial well-being should measure both one's present situation and future expectations. Financial well-being is also determined by one's financial freedom, which refers to whether a person feels financially restricted or stressed by the state of their finances (Brüggen et al., 2017). The CFPB's measure for financial well-being attends each of the main components of Brüggen et al. (2017) definition in that it asks people to self-assess the state of their current financial circumstances and how they imagine their future will be influenced by their finances. The CFPB's measure also asks respondents whether they feel their finances control their lives, which is aligned with Brüggen et al. (2017)'s description of financial freedom. For these reasons, the CFPB's measure will be used for financial well-being in this study.

The relationship between homeownership and financial well-being will be discussed in detail in the literature review, but it is helpful to discuss the other determinants of financial well-being. Demographics, such as income, marital status, and gender, are related to financial well-being (Brüggen et al., 2017; Sabri & Zakaria, 2015). Joo and Grable's (2004) model of financial satisfaction predicts that demographics, financial knowledge, financial behaviors, and financial stress are contributors to financial satisfaction. Specifically, financial behaviors are theorized to influence financial stress, which, in turn, relates to financial satisfaction.

Literature Review

Housing Tenure and Financial Well-Being

A multitude of relationships exist between home tenure decisions and financial well-being. Lim and Lee (2021) found that homeowners were more likely to report higher levels of financial well-being. Homeownership can also contribute to better solvency and emergency ratios, but it may detract from adequate investment-to-assets ratios (Rubio et al., 2022). Joo and Grable (2004) found an indirect relationship between homeownership and financial satisfaction. They determined that homeowners may experience greater levels of financial stress, which in turn lowers their level of financial satisfaction (Joo & Grable, 2004). Other studies have found the opposite effect. After the Great Recession, homeowners did not experience significantly different levels of financial stress than renters, but they did report lower levels of general stress and more financial satisfaction (Manturuk et al., 2012). Demographics, such as marital status, may also influence the relationship between homeownership and financial well-being. Divorced or single homeowners who still have a mortgage, for example, may experience reduced financial well-being and there is evidence that single renters report greater financial well-being when compared to their married counterparts (Rollins-Koons et al., under review).

While homeownership is often seen as a way to accumulate wealth, it has also been shown that those who have a higher net worth are more likely to own a home. There is also typically a diminishing marginal return when looking at how wealth relates to subjective financial well-being (Sass et al., 2015). The neoclassical theory of housing demand suggests that people make optimal housing decisions based on their income, the price of housing, and borrowing constraints (Megbolugbe et al., 1991). Therefore, individuals with higher incomes and higher net worth are more likely to own homes rather than rent (Amit et al., 2021; Goodman &

Mayer, 2018; Khorunzhina & Miller, 2022). Whether one can build wealth through homeownership may be dependent on housing market conditions, such as the real estate crash in 2008 (Wainer & Zabel, 2020). During periods of housing bust (2009-2011), children of parents who owned their homes and experienced an appreciation in housing value were more likely to get money from their parents and buy their own homes (Begley, 2019). Those whose parents rented during this period were not found to benefit in this way (Begley, 2019).

For many, buying a home requires a significant level of financing (Poppe et al., 2016). Leveraging one's assets this way may allow a homeowner to accumulate equity, but people may be motivated to take on these mortgages due to the increase in social status or to "enjoy family life, privacy, safety, freedom, independence and support for work and leisure activities," (Poppe et al., 2016, p. 63). Empirical studies have found negative associations between many kinds of debt and subjective financial well-being, including mortgages (Tharpe 2020; Will & Renz, 2023).

The cost of housing significantly affects one's financial well-being for both homeowners and renters. Homeownership, in general, may increase individuals' sense of financial satisfaction, but the presence of a mortgage may negatively affect one's financial satisfaction (Tharp et al., 2020). Those with a mortgage are sensitive to housing cost shocks, with negative price shocks reducing perceived financial well-being and positive shocks enhancing perceived financial well-being (Atalay & Edwards, 2022). Will and Renz (2023) compared homeowners and renters in Germany. While their initial results indicated that homeowners had greater subjective well-being than renters, when they accounted for whether the homeowner had a mortgage, subjective well-being decreased, and their income satisfaction was less than that of renters (Will & Renz, 2023).

Housing cost burden is another crucial housing element that contributes to financial well-being. Cost-burdened households — commonly defined as those who spend more than 30 percent of their income on housing (Dawkins & Jeon, 2018) — may find it more difficult to meet other financial needs such as food, bills, and medical care (Shamsuddin & Campbell, 2022). The U.S. Department of Housing and Urban Development (HUD) created the standard 30% benchmark and also defines those who spend more than 50% of their income on housing, as severely cost-burdened (Dawkins & Jeon, 2018). Low-income, single, renter, and financially illiterate households may be at a higher risk of having a high or excessive housing cost burden (Larrimore & Schuetz, 2017; Loftin, 2021).

Residential Satisfaction

In housing policy and urban planning, residential satisfaction is an important measure as it gives policymakers insight into what is necessary to make housing projects successful (Riazi & Emami, 2018). Abidin et al. (2019) define residential satisfaction as “the feeling of contentment when one has or achieved what one needs or desires in a house” (p. 2). A dissatisfied household may be more likely to move, which can result in failed housing projects (Riazi & Emami, 2018). Numerous factors contribute to residential satisfaction. In their systematic literature review of empirical studies on residential satisfaction, Abidin et al. (2019) listed a multitude of sociodemographic that have been related to residential satisfaction including age, gender, marital status, income, race, education, and work status. One’s neighborhood or physical environment (Buys & Miller, 2012; Rioux & Werner, 2011), access to transportation (Wang et al., 2019), and the type of home one lives in are just some of the many components that affect residential satisfaction (Emami & Sadeghlou, 2021). Rioux and Werner (2011) define residential satisfaction in four dimensions — satisfaction with “the local area, access to services, relations

with neighbors, and the home itself” (p. 158). This study is concerned primarily with how respondents feel about their homes and the factors related to their dwellings.

Few studies have examined the relationship between residential satisfaction and financial well-being, however, the link between residential satisfaction and well-being, in general, is well-established (Fernández-Portero et al., 2017; Mouratidis, 2020; Will & Renz, 2024). For example, Balestra and Sultan (2013) explain that neighborhood conditions such as poor air, water, high crime, and access to playgrounds or areas to walk can influence health, while the sociological characteristics of a neighborhood can influence well-being relationally. Will and Renz (2024) observed that homeownership is associated with greater residential satisfaction compared to renters, and that having a mortgage is negatively related to life satisfaction. Since financial well-being is often seen as a component of well-being (Joo, 2008), it is reasonable to suppose that residential satisfaction would also influence financial well-being. For example, a dissatisfied household may move to a new residence or invest in updating one’s current home to rectify their housing deficiencies, which can come with significant price tags.

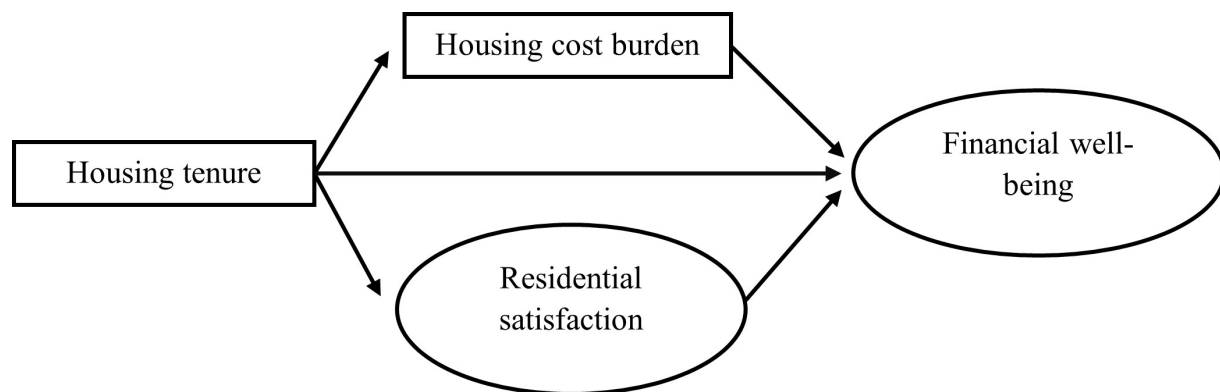
It is becoming increasingly important to understand what elements of homeownership contribute to and detract from financial well-being, especially if the first-time homeowner market is shrinking (National Association of Realtors, 2022). Buying a home can help build wealth, (Goodman & Mayer, 2018; Xu, 2015), achieve financial security (Manturuk et al., 2017), and access income later in life through mechanisms such as home equity line of credits (Pfau, 2016). But if there are specific aspects of homeownership that contribute to financial well-being, (in this study, namely housing cost burden and residential satisfaction) practitioners and policymakers can look to address these factors for renters to improve their financial well-being, in addition to supporting homeownership goals. Testing the interaction between housing cost

burden, residential satisfaction, and financial well-being will provide insight into whether homeownership is a tool for economic mobility and increased financial well-being or whether housing costs and residential satisfaction are equally consequential.

Hypothesis and Empirical Model

The conceptual model for the proposed relationships between housing tenure, housing cost burden, residential satisfaction, and financial well-being is illustrated in Figure 4.1

Figure 4.1 A conceptual model of the mediating effects of housing cost burden and residential satisfaction



Based on the literature previously discussed and the guiding theoretical framework, the following hypotheses are proposed:

- H1. Housing tenure will be negatively associated with financial well-being.
- H2. Housing tenure will be negatively associated with residential satisfaction.
- H3. Housing tenure will be positively associated with subjective housing cost burden.
- H4. Housing tenure will be positively associated with objective housing cost burden.
- H5. Residential satisfaction will be positively associated with financial well-being.
- H6. Subjective housing cost burden will be negatively associated with financial well-being.

H7. Objective housing cost burden will be negatively associated with financial well-being.

H8. Housing cost burden will mediate the relationship between housing tenure and financial well-being.

H9. Residential satisfaction will mediate the relationship between housing tenure and financial well-being.

Methodology

Data and Sample

This survey used primary data collected through Amazon's Mechanical Turk (MTurk). The sample was restricted to adults in the U.S. who either own or rent. Those who reported they neither own nor rent were excluded from the sample. These respondents were excluded as their housing may have different implications for financial well-being from those who own or rent their homes. For example, a student who lives with their parents may experience greater financial well-being because they have fewer bills, but it is not reasonable to say that these individuals should live with their parents forever to increase their financial well-being. This study does not focus on non-traditional housing arrangements, although future studies may consider these populations.

Using MTurk is as reliable and as representative, if not more so, than other survey collection methods (Zhang & Gearhart, 2020). Researchers can improve the reliability of their surveys when using MTurk by only allowing respondents who have completed at least 500 other surveys on MTurk (also called human intelligence tasks or HITs). MTurk also has an approval rating system, which is a percentage measuring how many completed HITs a worker has versus how many times their work has been rejected. This survey only recruited respondents who have

completed at least 500 other HITs and have a 95% approval rating (Peer et al., 2014). This survey did not limit the respondents to only those with master qualifications in MTurk, because there is not strong evidence that this increases the reliability of the results (Rouse, 2019). Efforts were also taken to prevent bots from being included in the data, as well as duplicate responses and fraud. Qualtrics bot detection, duplicate ID, and fraud detection were enabled in the survey. Moreover, GeoIP was used to only allow respondents with an IP address in the U.S. to complete the survey.

Respondents were paid 50 cents for completing the survey. In the pilot, the median duration was slightly above four minutes. With minimum federal wage at \$7.25 or about 12 cents a minute, 50 cents was determined to be a fair wage for this survey (Aguinis et al., 2020). The power calculation for a structural equation model indicates that at least 1,258 respondents are needed to detect an effect (Soper, 2024). This survey aimed to recruit 1,300 respondents. Before the survey was disseminated, the questionnaire was piloted to 10% of the target number of respondents (Todd, 2019) on May 30, 2024.

The pilot responses were not used as the survey was slightly modified after the pilot was completed. The survey was then disseminated using MTurk from August 5, 2024, to August 11, 2024. After removing responses that were likely to be bots, duplicate responses, fraudulent responses, respondents who spent less than a minute on the survey, and respondents who did not answer any of the questions, the final sample size was 1,222 respondents.

Dependent variable. The dependent variable for this study was the CFPB's abbreviated financial well-being scale score, a validated scale in which a respondent scores a number between 0 and 20, which is then adjusted based on age and whether the questionnaire was self-administered to a number between 19 and 90 with higher scores indicative of more financial

well-being. The scale includes five items, which are included in the survey in Appendix A. The respondent's overall financial well-being score was used as the outcome variable in this study.

Independent variables. Four housing related variables were used as predictors in this study: housing tenure, subjective housing cost burden, objective housing cost burden, and residential satisfaction. These variables are discussed in more detail herein.

Housing tenure. There were three categories for housing tenure: owning a home without a mortgage, owning a home with a mortgage, and renting. Dummy variables were created for owning a home with a mortgage and renting.

Housing cost burden. Housing cost burden was measured in two different ways with a subjective (or perceived) component and an objective (or realized) component. First, housing cost burden was measured subjectively by asking respondents to indicate whether their housing costs are a heavy burden, somewhat of a burden, or not a burden at all (Acolin & Reina, 2022). Second, respondents indicated whether their current housing costs (including utilities, taxes, and insurance) are below 30% of their income, between 30 and 50% of their income, or exceed 50% of their income, which is the standard measure of whether a household is cost-burdened (U.S. Department of Housing and Urban Development, n.d.).

Residential satisfaction. To measure residential satisfaction, Rioux and Werner's (2011) five-item, five-point Likert scale was used. The items are listed in Appendix A.

Control variables. Age was a continuous measure; however, some respondents listed their birth year, which was recoded to their age. Race was a binary variable White/Non-White. Responses for gender included male, female, non-binary/third gender. Only seven respondents indicated they were non-binary or third gender. These respondents were excluded from the study,

as there was not a high enough percentage to conduct a meaningful analysis. Future studies should consider sampling a higher percentage of these respondents.

Education was collapsed into four categories: those who had a high school diploma or did not complete high school, associate's degree, bachelor's degree, graduate or professional degree. Health was a self-reported measure where respondents could indicate if they had poor, fair, good, or excellent health. Marital status was a binary variable where 0 was married or partner households and 1 was single households, including those who were widowed, divorced, or separated. Following Chien and Mistry's (2013) method, respondents were assigned a cost-of-living index based on the Economic Policy Institute's 2024 family budget calculator. This calculator indicates how much income a family would need to maintain an acceptable living standard. Based on the family budget calculator, the median family income was \$86,100 a year for a two-parent, two-child household. This was assigned a cost-of-living index of 1.

Respondent's pre-tax income was collected, and it was log-transformed to standardize and adjust for the skewness of the data. Respondents were asked about their work status, and it was collapsed into a binary variable of employed (full- or part-time) or not employed (including retired, disabled, students, homemaker).

Data Analysis

Data was coded using Stata/SE 17.0, and descriptive statistics are reported. Then, the data was analyzed using structural equation modeling (SEM) in MPlus 8.8 to investigate the direct and indirect relationships hypothesized in Figure 4.1. First, a CFA was constructed to verify the factor structure used to measure residential satisfaction. Next, a reduced regression model was used to examine whether there is sufficient evidence that housing tenure and financial well-being are related to justify testing mediation. Following the reduced regression model, a full structural

model using bias-corrected bootstrapping procedure was used to test the indirect and direct effects of the model. Two thousand bootstraps are used to test the indirect effects. Full information maximum likelihood (FIML) was used to estimate missing data, which provides a maximum likelihood estimation for missing values by taking into consideration all the observed information from the data. FIML is the default method for handling missing data in MPlus and one of the recommended methods for addressing item-level missingness to reduce bias and report accurate standard errors (Newman, 2014).

Results

Descriptive Statistics

The descriptive statistics for this study are reported in Table 4.1. About 16% of the sample owned a home and did not have a mortgage, 53% were mortgage holders, and 32% were renters. On the 16-point summed residential satisfaction scale, the average score was 11.15 (SD = 2.98). The majority of respondents reported that their housing costs were a somewhat or heavy burden (nearly 85%) compared to the 15% who said their housing costs were not a burden at all. Interestingly, however, 44% of the sample said they spend less than 30% of their income on housing, meaning they would not meet HUD's definition of a cost-burdened household.

Table 4.1 Descriptive statistics

Variables	Prop (%)	M (SD)
Housing tenure		
Own without mortgage	15.79	
Own with mortgage	52.50	
Rent	31.72	
Residential Satisfaction		11.15(2.98)
Subjective housing cost burden		
Not a burden at all	15.31	
Somewhat a burden	62.10	
A heavy burden	22.59	
Objective housing cost burden		

Variables	Prop (%)	M (SD)
Less than 30% on housing	44.31	
Between 30% to 50% of income on housing	47.01	
50% or more of income on housing	8.67	
Age		39.40(12.72)
Race		
White	83.78	
Non-White	16.22	
Gender		
Male	53.90	
Female	46.10	
Education		
High school or less	15.21	
Associate's degree	9.40	
Bachelor's degree	59.83	
Graduate or professional degree	15.57	
Health		
Poor	1.01	
Fair	11.56	
Good	62.38	
Excellent	25.05	
Marital Status		
Married/Partner	80.39	
Single (including widowed, divorced, separated)	19.61	
Cost of living index		1.26(.25)
Income		\$88,842.40(148,838.10)
Employed	90.43	

The average age was about 39 years old ($SD = 12.72$), and only 16% of respondents reported a race other than White. There were slightly more males in the sample (54%) and 87% of respondents said they were in good or excellent health. The mean cost of living index was 1.26 ($SD = .25$), and the average income was about \$88,842. Ninety percent of the respondents were employed either full- or part-time.

Confirmatory Factor Analysis

After examining the factor loadings, one of the items used in the residential satisfaction scale was dropped due to poor factor loading (-.20). Respondents may have been confused by this item as it was negatively worded, (“I find it difficult or constraining to live in this house”) whereas the other items were positively worded. The original scale used positive wording but based on feedback before piloting, this item was changed for this study due to lack of comprehension among respondents. Future research may need to examine the reliability of this item on the residential satisfaction scale. However, the remaining four items had a Cronbach’s alpha of .74 and factor loadings above .40 (see Table 4.2). The CFA also demonstrated good model fit ($\chi^2 [2] = 4.243, p = .1199$; RMSEA = 0.029; CFI = 1.00; SRMR = 0.009; TLI = 1.00) based on common standards for SEM model fit (Kline, 2016).

Table 4.2 Standardized factor loadings for residential satisfaction

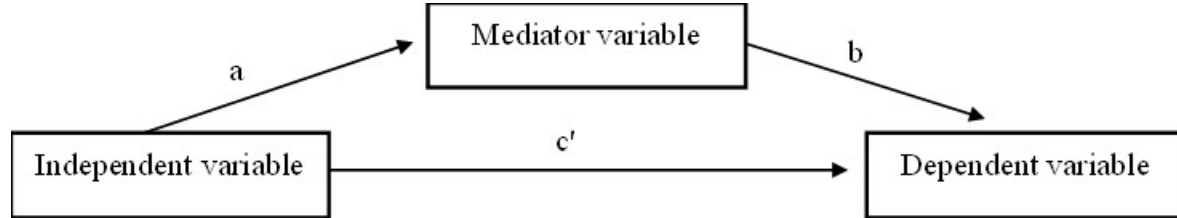
Item	Factor Loading
My home is adapted to my needs. (hneeds)	.61
I enjoy living in this house. (henjoy)	.70
My house is cozy. (hcozy)	.70
I have chosen to live in this house, and it would be difficult for me live elsewhere. (hchoose)	.49
Standardized Alpha	.74

Reduced Regression Model

Baron and Kenney’s (1986) four-step mediation test is commonly used to test mediation as it is simple and straightforward, but there are criticisms of this method including that it may lower power (Jenatabadi, 2015) and does not consider the non-normal distribution of indirect effects (Rijnhart et al., 2021). To test mediation, Baron and Kenney (1986) argue that there should be a significant c' path to then test for mediation (See Figure 4.2 for the simple mediation model from Baron and Kenny (1986). Other researchers, however, have argued that this

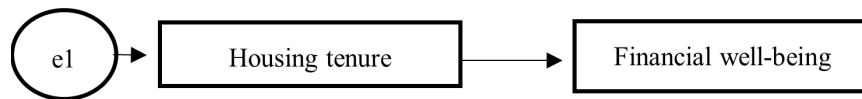
prerequisite fails to consider variables that only have an effect through another variable and the necessity at times for more complex models (Loeys et al., 2015; O'Rourke & MacKinnon, 2018).

Figure 4.2 Standard mediation model



Based on prior literature and the theoretical understanding of what constitutes financial well-being, this study uses Gunzler et al. (2013) recommendation to start with a reduced regression to examine the relationship between the independent variable of interest (housing tenure) and the dependent variable (financial well-being). If the null hypothesis is rejected that there is no relationship between the variables, examining mediation may be appropriate. The reduced regression model was examined in this study as a robustness check before running the bootstrap model. The reduced regression model included all controls on financial well-being (see Figure 4.2) and did not include the potential mediators (Gunzler et al., 2013). The model was just identified, so model fit statistics were not available.

Figure 4.3 Reduced regression model



The results are presented in Table 4.3. Renters were expected to have less financial well-being than those who owned a home without a mortgage ($\beta = -0.18, p < 0.001$). Owning a home with a mortgage had a negative relationship to financial well-being compared to those who owned a home without a mortgage ($\beta = -0.08, p = .039$).

Table 4.3 Results of the reduced regression model

<i>Parameter Estimate</i>			
	<i>B (SE B)</i>	<i>β (SE β)</i>	<i>p</i>

Housing tenure (Rent) → Financial well-being	-4.42(.97)	-.18(.04)	<.001
Housing tenure (Own with mortgage) → Financial well-being	-1.84(.89)	-.08(.04)	.039
Age → Financial well-being	.09(.03)	.10(.03)	.001
Race → Financial well-being	1.16(.86)	.04(.03)	.180
Gender → Financial well-being	-2.02(.63)	-.09(.03)	.001
Education → Financial well-being	1.15(.35)	.09(.03)	.001
Health → Financial well-being	2.80(.52)	.16(.03)	<.001
Marital Status → Financial well-being	-2.07(.81)	-.07(.03)	.008
Cost of living → Financial well-being	.13(1.26)	.003(.03)	.917
Log income → Financial well-being	.02(.16)	.04(.03)	.881
Employ → Financial well-being	-2.14(1.13)	-.06(.03)	.058

Full Structural Model

To examine the structural model, bias-corrected bootstrapping was used to test the total (the combination of direct and indirect effects), direct, and indirect effects. Bootstrapping is a non-parametric test, which addresses the non-normality of an indirect effect (Streukens & Leroi-Werelds, 2016), and bias-corrected bootstrapping has been shown to limit the possibility of a Type-1 error (refer to MacKinnon et al. (2004) seminal work on testing indirect effects). It also provides an estimate of the indirect effect along with 95% confidence intervals (Carrión et al., 2017). The modification indices indicated that the model may improve by correlating objective and subjective measures of housing cost burden and whether one enjoys their house with whether their housing meets their needs. One may feel more cost-burdened if they spend more of their income on housing costs. These correlations were included in the model, and the change in X^2 was greater than 3.84, indicating an improvement in model fit ($\chi^2_{dif} = 122.774$; $df_{dif} = 1$). (See Equation 4.1).

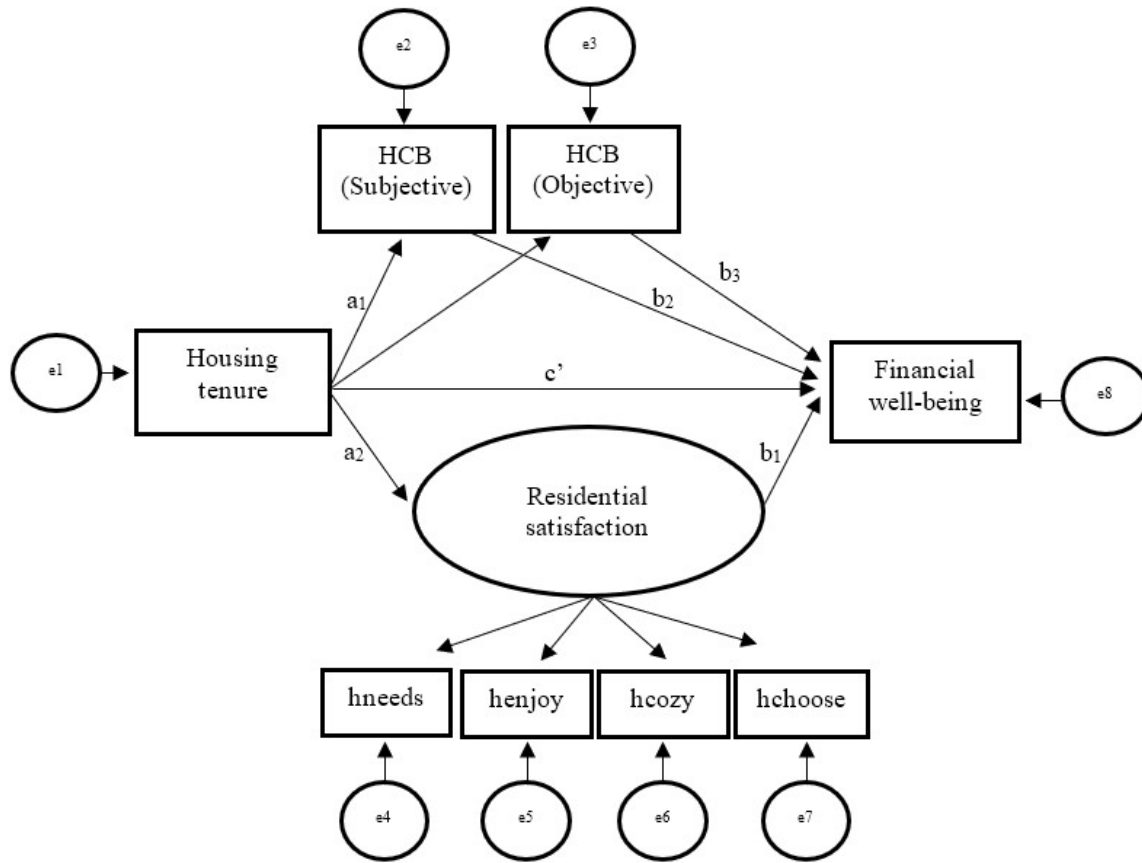
Equation 1 χ^2 test comparing models

$$\chi^2_{dif} = \chi^2_{simple} - \chi^2_{complex}$$

$$df_{dif} = df_{simple} - df_{complex}$$

The full structural model is illustrated in Figure 4.4. There were many considerations when assessing model fit. First, the χ^2 test was significant, however, χ^2 may be biased when faced with a large sample size (Peugh & Feldon, 2020). There is much debate as to how to accurately assess model fit (Kline, 2018). Some researchers suggest χ^2 is the only indicator that should be considered (see Hayduk et al. (2007) as referenced in Kline, (2018)), whereas others find that other goodness-of-fit measures make up for some of χ^2 limitations (Byrne, 2012). Other researchers have suggested assessing fit is unproductive at best due to the unfeasibility of finding a perfect model and that perhaps finding the best model amongst alternatives would be more helpful to researchers (Corrêa Ferraz et al., 2022). Other metrics such as root mean squared error of approximation (RMSEA), standardized root mean squared residual (SRMR), comparative fit index (CFI), and the Tucker-Lewis index (TLI) are commonly reported as alternatives to measure goodness-of-fit (Byrne, 2012, Kline, 2018). Peugh and Feldon (2020) describe these indices as a spectrum indicating poor to better fit, and Byrne (2012) suggests that researchers must use discretion when discussing the plausibility of the model.

Figure 4.4 Structural mediation model



Note. HCB = housing cost burden.

Taking into consideration the sensitivity of X^2 to large sample sizes, the non-significant X^2 reported in the CFA, the support for these relationships as components of financial well-being as theorized by Brüggén et al. (2017) and documented by prior literature, and the indication from other goodness of fit measures that the model does exhibit good model fit (RMSEA = 0.052; CFI = .922; SRMR = 0.038; TLI = .834), the model is considered empirically adequate to conduct the mediation analyses. Twenty-six percent of the variance in financial well-being was explained by the model ($R^2 = .26$). Direct effects are reported in Table 4.4.

Table 4.4 Unstandardized, standardized, and p values for bias-corrected bootstrap model in Figure 3

Parameter Estimate			
	B (SE B)	β (SE β)	p
Structural Model			
Housing tenure (Rent) → Residential satisfaction	-.19(.06)	-.15(.05)	.001

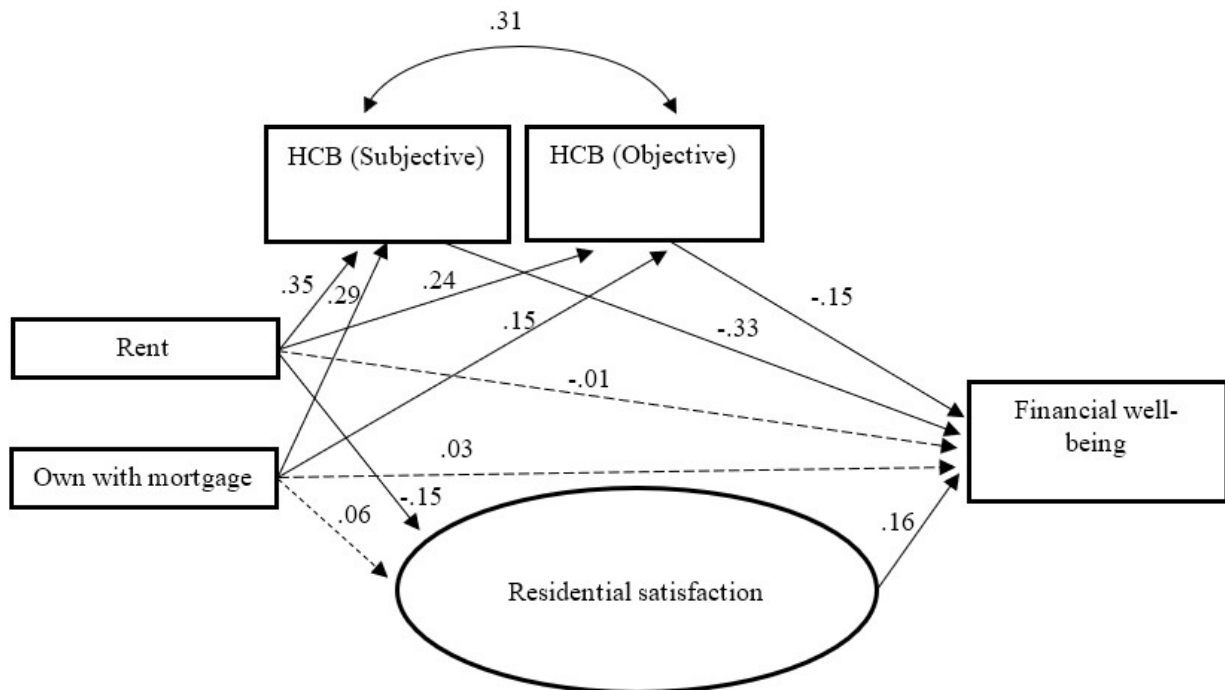
<i>Parameter Estimate</i>	<i>B (SE B)</i>	<i>β (SE β)</i>	<i>p</i>
Housing tenure (Own with mortgage) → Residential satisfaction	.07(.05)	.06(.04)	.198
Housing tenure (Rent) → Subjective HCB	.47(.05)	.35(.04)	<.001
Housing tenure (Own with mortgage) → Subjective HCB	.35(.05)	.29(.04)	<.001
Housing tenure (Rent) → Objective HCB	.33(.06)	.24(.04)	<.001
Housing tenure (Own with mortgage) → Objective HCB	.19(.05)	.15(.04)	<.001
Housing tenure (Rent) → Financial well-being	-.17(1.0)	-.01(.04)	.863
Housing tenure (Own with mortgage) → Financial well-being	.57(.90)	.03(.04)	.527
Residential Satisfaction → Financial well-being	3.08(.66)	.16(.03)	<.001
Subjective HCB → Financial well-being	-5.99(.58)	-.33(.03)	<.001
Objective HCB → Financial well-being	-2.56(.48)	-.15(.03)	<.001
Subjective HCB with Objective HCB	.11(.01)	.31(.03)	<.001
Significant Controls			
Age → Residential satisfaction	-.01(.002)	.15(.04)	<.001
Gender → Residential satisfaction	.10(.04)	.09(.03)	.011
Education → Residential satisfaction	.05(.02)	.08(.04)	.025
Health → Residential satisfaction	.16(.04)	.19(.04)	<.001
Age → Subjective HCB	-.01(.002)	-.11(.03)	.001
Health → Subjective HCB	-.10(.03)	-.10(.03)	.002
Log Income → Subjective HCB	-.02(.01)	-.05(.03)	.042
Gender → Objective HCB	.06(.04)	.06(.03)	.037
Education → Objective HCB	-.04(.02)	-.06(.03)	.054
Health → Objective HCB	-.11(.03)	-.10(.03)	.002
Marital status → Objective HCB	.10(.03)	.09(.03)	.008
COL index → Objective HCB	.139(.07)	.05(.03)	.053
Gender → Financial well-being	-1.96(.59)	-.10(.03)	.001
Education → Financial well-being	.78(.35)	.06(.03)	.024
Health → Financial well-being	1.51(.51)	.08(.03)	.004
Marital status → Financial well-being	-1.87(.82)	-.07(.03)	.022

Note: $\chi^2(46) = 195.813$, $p < .001$; TLI = .834; CFI = .922; RMSEA = .052; SRMR = .038

Renters had less residential satisfaction than those who owned their homes without a mortgage ($\beta = -0.15$, $p = 0.001$). Both renters ($\beta = 0.35$, $p < 0.001$) and those who own houses with a mortgage ($\beta = 0.29$, $p < 0.001$) were predicted to have a greater subjective housing cost burden than those who own a house without a mortgage. Renters ($\beta = 0.24$, $p < 0.001$) and homeowners with a mortgage ($\beta = 0.15$, $p < 0.001$) were also more likely to report being objectively cost-burdened by their housing than homeowners without a mortgage. Residential

satisfaction and both measures of housing cost burden were significantly related to financial well-being. Residential satisfaction was associated with increased financial well-being ($\beta = 0.16$, $p < 0.001$), whereas housing cost burden was associated with decreased financial well-being ($\beta = -0.33$, $p < 0.001$ for subjective housing cost burden and $\beta = -0.15$, $p < 0.001$ for subjective housing cost burden). Subjective and objective housing cost burden were positively correlated, indicating that there is a relationship between feeling cost-burdened by housing and experiencing being cost-burdened by housing. The main effects are also shown in Figure 4.5.

Figure 4.5 Full structural model for the effects of housing tenure, housing cost burden, and residential satisfaction on financial well-being



Note. Standardized estimates reported. For clarity, the control variables are not shown, but significant results are presented in Table 4.4. Solid lines = significant paths; dashed lines = non-significant paths.

Residential satisfaction, both housing cost burden measures, and financial well-being were regressed on each control variable. Older individuals appeared to have more residential satisfaction ($\beta = 0.15, p < 0.001$) and perceived their housing costs were burdensome ($\beta = -0.11, p = 0.001$). Self-reported health status was also associated with greater residential satisfaction and negatively associated with housing cost burden (both in an objective and subjective sense). Those who had higher incomes were less likely to be subjectively cost-burdened ($\beta = -0.05, p = 0.040$), and those who live in high cost of living areas were more likely to report spending 30% or more of their income on housing ($\beta = 0.05, p = 0.053$). Those who were not married were more likely to report spending 30% or more of their income on housing costs ($\beta = 0.09, p = 0.008$). Women had higher residential satisfaction scores ($\beta = 0.09, p = 0.011$) and lower financial well-being scores than men ($\beta = -0.10, p = 0.001$)

Mediation Results

Following the examination of the direct effects, Table 4.5 reports the results of the total and indirect effects of the parallel mediated model, meaning there is no path between mediators (Agler & De Boeck, 2017). The results from the mediation analysis seem to indicate there is total mediation between housing tenure and financial well-being, as the direct path from housing tenure to financial well-being was not significant. Table 4.5 also includes the confidence intervals as recommended by MacKinnon et al. (2004) to assess the significance of indirect effects when using bias-corrected bootstrapping procedures.

Table 4.5 Results of indirect and total effects

<i>Effects</i>	<i>B (SE B)</i>	<i>β (SE β)</i>	<i>p</i>	<i>B 95% CI</i> [LL, UL]	<i>β 95% CI</i> [LL, UL]
Housing tenure (Rent) → Financial Well-being					
Total indirect	-4.24(.58)	-.18(.02)	<.001	[-5.44, -3.19]	[-.23, -.14]
Total effects	-4.42(1.10)	-.19(.05)	<.001	[-6.48, -2.20]	[-.27, -.09]
Housing tenure → Residential Satisfaction → Financial well-being	-.57(.22)	-.02(.01)	.008	[-1.07, -.21]	[-.05, -.01]
Housing tenure → Subjective HCB → Financial well-being	-2.82(.42)	-.12(.02)	<.001	[-3.69, -2.07]	[-.15, -.09]
Housing tenure → Objective HCB → Financial well-being	-.85(.22)	-.04(.01)	<.001	[-1.33, -.49]	[-.06, -.02]
Housing tenure (Own with mortgage) → Financial Well-being					
Total indirect	-2.41(.47)	-.11(.02)	<.001	[-3.40, -1.52]	[-.15, -.07]
Total effects	-1.84(1.00)	-.08(.05)	0.062	[-3.71, .11]	[-.17, .01]
Housing tenure → Residential Satisfaction → Financial well-being	.21(.17)	.01(.01)	0.219	[-.09, .57]	[-.004, .03]
Housing tenure → Subjective HCB → Financial well-being	-2.12(.35)	-.10(.02)	<.001	[-2.90, -1.50]	[-.13, -.07]
Housing tenure → Objective HCB → Financial well-being	-.50(.16)	-.02(.01)	0.001	[-.87, -.25]	[-.04, -.01]

Note. *B* represents the unstandardized coefficients, and *β* reflects the standardized coefficients. LL and UL stand for lower and upper

limit of the confidence intervals.

The indirect effects from rent → residential satisfaction → financial well-being, rent → subjective housing cost burden → financial well-being, and rent → objective housing cost burden → financial well-being were significant. Compared to homeowners without mortgages, renters' financial well-being decreased .02 standard deviations via their level of residential satisfaction, .12 standard deviations via their subjective housing cost burden, and .04 standard deviations via their actual or objective housing cost burdens.

Total effects from rent to financial well-being were also significant, but the direct effect (refer back to Table 4.3) was not significant. The indirect effects from owning a home with a mortgage to financial well-being were also significant. Owning a home with a mortgage → subjective housing cost burden → financial well-being and owning a home with a mortgage → objective housing cost burden → financial well-being were significant. Homeowners who had a mortgage had financial well-being scores of .10 standard deviation lower than homeowners with a mortgage via their subjective housing cost burden levels, and .02 standard deviations via their objective housing cost burden levels. The direct effect from owning a home with a mortgage to financial well-being was not significant.

Discussion

Owning a home has often been correlated with increased financial well-being, and the results of this study supported this claim in the reduced regression model. Both homeowners with mortgages and renters were predicted to have less financial well-being than homeowners without mortgages (H1). Moreover, this result underscores the importance of examining homeowners with and without mortgages as two distinct groups or at least including one's mortgage or lack thereof as a control (Herbers & Mulder, 2017). The presence of a mortgage can

add an additional strain on financial resources, which may inhibit financial freedom from reduced disposable income (Waldron & Redmond, 2016).

The relationships between housing tenure and residential satisfaction and housing cost burden were also examined, and homeowners without mortgages were expected to have more residential satisfaction than renters. The presence of a mortgage did not appear to relate to overall residential satisfaction, thereby partially supporting H2. One residential satisfaction theory by Galster (1985) argues that people seek to improve residential satisfaction by adapting either their perception of the situation or letting the dissatisfaction manifest and prompt action to move from or modify the dwelling (Mohit & Al-KhanbashiRaja, 2014). However, “these options may be relatively limited, e.g., by lack of purchasing power,” (Mohit & Al-KhanbashiRaja, 2014, p. 52). Renters especially may not be able to afford these alterations due to the increasing wealth and income gaps between renters and homeowners (Choi & Zinn, 2024). External constraints such as lease agreements with set time frames, deposits, and restrictions on dwelling changes may also prevent renters from making these changes. There is also concern that renters are more likely to live in low-quality housing than those who own their housing, which could contribute to the decreased residential satisfaction renters experience (Chisholm et al., 2018).

Owners with mortgages and renters were expected to have a greater subjective and objective housing cost burden than owners without mortgages. These findings supported H3 and H4. According to the U.S. Bureau of Labor Statistics, housing was the largest expenditure in consumers’ budgets (Meyers et al., 2023). Owners without mortgages do not have this line item, which may explain why they have less objective and subjective housing cost burdens (Herbers & Mulder, 2017; Kimberlin, 2019).

Respondents with more residential satisfaction reported an increase in financial well-being, supporting H5, while respondents with larger housing cost burdens (subjective and objective) had less financial well-being, which supported H6 and H7. Those who have more residential satisfaction may have higher quality dwellings that require less renovations or repairs, which could mean they have more financial freedom (Meltzer & Schwartz, 2015). On the other hand, those with less residential satisfaction may be forced to spend their funds on improving their homes, which could limit financial freedom and financial well-being. Similarly, a larger housing cost burden can impact both security and freedom (the two components of CFPB's financial well-being scale). The more one spends on their housing, the less they may be able to save, which could mean they are less prepared to handle a financial shock, meet their financial goals, or freely make financial choices (Gjertson, 2014; Westbrook, 2023).

The results of the indirect effects indicated that the three hypothesized mediators (residential satisfaction, subjective housing cost burden, and objective housing cost burden) fully mediated the relationship between housing tenure and financial well-being. One of the advantages of SEM is the ability to test the mediators simultaneously and examine the effects of each indirect path rather than just the total indirect effects. Upon analyzing the results of each of these paths, residential satisfaction did not mediate owning a home without a mortgage's relationship with financial well-being. These results add credence to the notion that ensuring that people have high-quality and affordable housing may be more important than promoting a specific type of housing. A summary of the hypothesized relationships and the outcomes are presented in Table 4.6.

Table 4.6 Hypotheses summary

Hypothesis	Analysis	Results
H1. Housing tenure will be negatively associated with financial well-being.	Reduced SEM Model	Supported

Hypothesis	Analysis	Results
H2. Housing tenure will be negatively associated with residential satisfaction.	Full SEM Model	Partially supported
H3. Housing tenure will be positively associated with subjective housing cost burden.	Full SEM Model	Supported
H4. Housing tenure will be positively associated with objective housing cost burden.	Full SEM Model	Supported
H5. Residential satisfaction will be positively associated with financial well-being.	Full SEM Model	Supported
H6. Subjective housing cost burden will be negatively associated with financial well-being.	Full SEM Model	Supported
H7. Objective housing cost burden will be negatively associated with financial well-being.	Full SEM Model	Supported
H8. Housing cost burden will mediate the relationship between housing tenure and financial well-being.	Full SEM Model	Supported
H9. Residential satisfaction will mediate the relationship between housing tenure and financial well-being.	Full SEM Model	Partially supported

One of the research questions for this study considered whether there were any disconnects between perceived and realized housing cost burden. The results of the control variables indicate that this may be the case. For example, older respondents perceived their housing costs as less burdensome, but there was not a significant relationship between age and objective housing cost burden. Perhaps older respondents may not feel the effects of their housing cost burden because they have more in savings to cover these expenses rather than paying all housing costs out of their current income (Bennett et al., 2022; Shamsuddin & Campbell, 2021).

The housing cost burden ratio is often criticized as a measure due to its failure to account for how affordability feels for those with different incomes (Ezennia & Hoskara, 2019). For instance, someone with \$200,000 of annual income and \$60,000 of housing costs would have a 30% housing cost burden. This 30% ratio may feel very different than a person who makes \$70,000 a year and spends \$21,000 on housing. Including a subjective measure of housing cost burden mitigates this problem. In this study, high-income earners seem to perceive their housing

costs as less burdensome regardless of whether they are cost burdened. The opposite seems to be true for gender differences and housing cost burden. Women are more likely to be cost-burdened than men, but there is no evidence they are more likely to *feel* cost-burdened than men.

Implications

Homeownership is an important aspect of U.S. culture, and policymakers are continuing to examine how to help more residents achieve homeownership. Homeowners enjoy many benefits, but the importance of homeownership on financial well-being may be overstated. First, policymakers need to examine how mortgages impact financial well-being. With high mortgage interest rates and house prices, homeownership may be unreasonably expensive for new homebuyers (Joint Center for Housing Studies, 2024). Financial planners can help their clients evaluate whether buying a home makes sense financially or if it would negatively impact financial well-being. Moreover, financial planners should be familiar with the different home-buying strategies and housing programs available to their clients. For example, California has a voucher program called, “California Dream for All” that first-generation and first-time homebuyers may be eligible for (California Housing Finance Agency, n.d.). More generally, financial planners may want to help their clients consider creative strategies. IRAs are typically thought of as retirement-saving vehicles. However, there are provisions to use up to \$10,000 penalty-free for a first-time home purchase (which, in this case, means the individual has not owned a home in the last two years). There are also many lenders (including local lenders) who have mortgage options — sometimes even conventional mortgages — available without private mortgage insurance for those who cannot put 20% down on a home. Financial planners can help their clients evaluate such strategies.

Policymakers have come up with many possible proposals to increase homeownership rates. In a review of housing affordability policies in the U.S., Ezennia and Hoskara (2019) identified low housing supply and a shortage of high-quality affordable housing as major barriers to addressing the housing affordability problem. A failure to address rental affordability will inevitably impede efforts to improve homeownership rates. One effort the government has considered is reinstituting a federal tax credit for first-time homebuyers. Research has shown that first-time homebuyer tax credits increase homeownership rates (Berger et al., 2019). However, there is some concern that new homeowners who take advantage of these programs may find themselves in a housing situation they cannot afford and may be more susceptible to foreclosure (Hembre, 2018). Homeownership can provide many positive financial outcomes, including wealth-building and financial security (Goodman & Mayer, 2018), and policymakers should continue to grapple with improving these rates. However, research should continue to investigate differences in financial well-being for various housing tenures and what factors explain these differences. The preliminary findings of this study suggest that mortgage-holding homeowners and renters may have reduced financial well-being because of decreased residential satisfaction and/or greater perceived or actual housing cost burdens. Policymakers should consider the quality and affordability of housing for all residents rather than using homeownership as a panacea to improve financial well-being.

Limitations and Future Research

While mediation analyses typically are used to evaluate causality, this study does not claim to have discovered causal relationships. Instead, this study is a starting point for future research that should continue to examine why there are strong relationships between homeownership and financial well-being indicators. For instance, Will and Renz (2023)

observed that mortgages could lower income satisfaction. This lower income satisfaction may be a result of a greater housing cost burden. Atalay and Edwards (2022) also found that mortgage-holding homeowners' financial well-being uniquely benefited from increased housing market prices. These studies indicate the complex nature between housing tenure and financial well-being.

Primary data has many advantages, including the ability to structure a survey to directly answer a research question. However, there are disadvantages. The results of the study may not be generalizable, as the sample was predominantly White and employed. Moreover, housing cost burden was originally intended to be a continuous variable calculated by dividing annual housing costs by annual income. However, possibly due to the wording of the question or respondents' misunderstanding, there were many unreliable responses to monthly housing costs (e.g., monthly costs such as \$1, \$15, and \$3,000,000 were reported). Respondents' self-reported percentage of income spent on housing costs was used instead and income was controlled for. Future studies should consider ways to improve clarity for housing cost questions to collect reliable responses.

Future studies may also want to consider how to best measure residential satisfaction. Smrke et al. (2018) provide a comprehensive overview of the many different scales used for residential satisfaction. Numerous scales exist for measuring residential satisfaction, and it proves challenging to locate one with both high reliability and validity and that serves the purpose of this study (Smrke, et al., 2018). For example, many scales ask about neighborhood quality, which is not an area of interest in this study. Moreover, some of the other scales available had upward of 20 items, with two having more than 100 (Smrke et al., 2018). In aiming to keep the survey length between five and 10 minutes to improve the likelihood that respondents will complete the survey (Revilla & Ochoa, 2017), a scale with fewer items was needed. The

scale selected (Rioux & Werner, 2011) included questions directly related to the dwelling unit and apartment and reported a strong alpha in the original paper (.86). However, the scale was designed specifically with a sample of older French citizens. This may have limited its effectiveness with U.S. audiences of all ages.

There may be other possible mediator variables and housing tenures to analyze. This study examines three different types of housing tenure (rent, own home with mortgage, own home without mortgage) but findings may be different for those who have a living arrangement with an employer, such as a farm or hotel employee. Future studies may also want to analyze the differences between renters who have subsidies and those who do not examine the impact on their financial well-being. Finally, there may be other mediating effects between housing tenure and financial well-being. One such possible mediator is financial knowledge. Financial knowledge has been shown to relate to financial well-being in many ways. Those with more financial knowledge may be better able to withstand financial shocks (Philippas & Avdoulas, 2019), experience less financial stress (Zhang & Fan, 2022), and have greater levels of financial well-being, in general (Zhang & Chatterjee, 2023). Financial knowledge is also an important determinant of homeownership, especially considering the financial risk of a mortgage (Gathergood & Weber, 2017; van Ooijen and van Rooij, 2016). Research should continue to explore these explanatory variables.

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Appendix A - Survey

Informed Consent Form

This survey is designed for adults residing in the U.S. Your feedback is important to help financial planners and policymakers better understand the importance of housing tenure and financial well-being. Below you will find the informed consent information required by the institutional board for ethical research. Please confirm your receipt of the information below.

Project Title: Financial well-being and housing tenure: Explaining differences in how renters and homeowners perceive financial well-being

Length of Study: It will take approximately 7 to 10 minutes to complete the survey.

Co-Investigators: Derek Lawson (Principal Investigator) and Ashlyn Rollins-Koons Contact for any problems/questions: Ashlyn Rollins-Koons ashlynr12@ksu.edu

IRB Chair Contact: Lisa Rubin (Chair Committee on Research Involving Human Subjects) and Brad Woods (Associate Vice President for Research Compliance) 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

Purpose of the Research: This research aims to understand differences in financial well-being between homeowners and renters.

Risks or Discomforts Anticipated: There are no known risks associated with participating in this study.

Benefits Anticipated: Homeowners in the U.S. may benefit from gaining insight into how homeownership, housing cost burden, and residential satisfaction influence financial well-being.

Extent of Confidentiality: Your MTurker worker ID will be collected in this study, and it will be separated from the data file as soon as possible and destroyed as soon as the study is completed and participants are compensated. Zip codes will not be published nor included in the

published dataset. Identifiers will be removed from the identifiable private information and after such removal, the information could be used for future research studies or distributed to another investigator for future research studies without additional informed consent.

Terms of Participation: I understand this project is research, and that my participation is voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, or loss of benefits to which I may otherwise be entitled. By clicking yes, I am indicating that I have read and understood my responsibilities for participating in this study. I hereby give my voluntary consent for participation in this project.

- ☐ Yes
- ☐ No

Q1 Which one of the following best describes your housing situation?

- ☐ I own my home
- ☐ I rent
- ☐ I do not currently rent or own

Q2 What is your age (in years)?

Q3 How do you identify yourself?

- ☐ White or Caucasian
- ☐ Black or African American
- ☐ American Indian/Native American or Alaska Native
- ☐ Asian
- ☐ Native Hawaiian or Other Pacific Islander
- ☐ Hispanic, Latino, or Spanish origin
- ☐ Other (please specify) _____

Q4 What is your gender?

- ☐ Male
- ☐ Female
- ☐ Non-binary / third gender
- ☐ Other (please specify) _____

Q5 What is your current relationship status?

- ☐ Single
- ☐ Married
- ☐ Cohabiting
- ☐ Separated
- ☐ Divorced
- ☐ Widowed
- ☐ Other (please specify) _____

Q6 How many children do you have who are financially dependent on you? Please include children not living at home, and step-children as well.

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4 or more

Q7 How many people, including yourself, live in your household?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6 or more

Q8 Which of the following describes your current living arrangements? (Select all that apply)

- ☐ I am the only adult in the household
- ☐ I live with my spouse/partner/significant other
- ☐ I live with other family, friends, or roommates
- ☐ I live with tenants (renters)

Q9 What is the highest level of education you have completed?

- ☐ Some high school or less
- ☐ High school diploma or GED
- ☐ Some college, but no degree
- ☐ Associates or technical degree
- ☐ Bachelor's degree
- ☐ Graduate or professional degree (MA, MS, MBA, PhD, JD, MD, DDS, etc.)

Q10 Would you say your health in general is excellent, good, fair, or poor?

- ☐ Excellent
- ☐ Good
- ☐ Fair
- ☐ Poor

Q11 Which statement best describes your current employment status?

- ☐ Work full-time for an employer
- ☐ Self-employed
- ☐ Work part-time for an employer
- ☐ Full-time student
- ☐ Homemaker
- ☐ Permanently sick, disabled, or unable to work
- ☐ Retired

Q12 What was your total household income before taxes during the past 12 months?

Q13 What is your US Zip Code?

Q14 How well does this statement describe you or your situation?

	Completely	Very well	Somewhat	Very little	Not at all
Because of my money situation, I feel like I will never have the things I want in life	☐	☐	☐	☐	☐
I am just getting by financially	☐	☐	☐	☐	☐
I am concerned that the money I have or will save won't last	☐	☐	☐	☐	☐

Q15 How often does this statement apply to you?

	Always	Often	Sometimes	Rarely	Never
I have money left over at the end of the month	☐	☐	☐	☐	☐
My finances control my life	☐	☐	☐	☐	☐

Q16 How did you take this questionnaire?

- ☐ I read the questions
- ☐ Someone read the questions to me

Display This Question:

If Which one of the following best describes your housing situation? = I own my home

Q17 Do you currently have any mortgages on your home?

- ☐ Yes
- ☐ No
- ☐ Prefer not to say

Display This Question:

If Which one of the following best describes your housing situation? = I own my home

Q18 When was the origination date of your mortgage [year]?

Q19 Including mortgage/rent, utilities, insurance, and property taxes, about how much do you spend each month on housing?

Q20 Considering your housing, please rate the degree to which you agree or disagree with the following statements.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I find it difficult or constraining to live in this house	☐	☐	☐	☐	☐
My home is adapted to my needs	☐	☐	☐	☐	☐
I enjoy living in this house	☐	☐	☐	☐	☐
My house is cozy	☐	☐	☐	☐	☐
I have chosen to live in this house, and it would be difficult for me to live elsewhere	☐	☐	☐	☐	☐

Q21 How would you describe the financial burden of the total housing cost

- ☐ A heavy burden
- ☐ Somewhat a burden
- ☐ Not a burden at all

Q22 Please select the statement that best describes your housing cost (mortgage/rent, utilities, insurance, and property taxes):

- ☐ My housing cost is less than 30% of our household's total income
- ☐ My housing cost is between 30% to 50% of our household's total income
- ☐ My housing cost is greater than 50% of our household's total income

Q23 On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7

Q24 Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?

- ☐ More than \$102
- ☐ Exactly \$102
- ☐ Less than \$102
- ☐ Do not know
- ☐ Refuse to answer

Q25 Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

- ☐ More than today
- ☐ Exactly the same
- ☐ Less than today
- ☐ Do not know
- ☐ Refuse to answer

Q26 Please tell me whether this statement is true or false. “Buying a single company’s stock usually provides a safer return than a stock mutual fund.”

- ☐ True
- ☐ False
- ☐ Do not know
- ☐ Refuse to answer

Q27 Please enter your MTurk Worker ID.

Q28 Here is your survey code: [\\${e://Field/Random%20number}](#)

Copy and paste this value into MTurk.

When you have copied the survey code, please click the next button to submit your survey.

Appendix B - IRB Approval

TO: Derek Lawson

Personal Financial Planning

FROM: Lisa Rubin, Chair

Committee on Research Involving Human Subjects

DATE: 06/25/2024

RE: Proposal #IRB-12206, entitled “Financial well-being and housing tenure: Explaining differences in how renters and homeowners perceive financial well-being.”

MODIFICATION OF IRB PROTOCOL #IRB-12206, ENTITLED, “Financial well-being and housing tenure: Explaining differences in how renters and homeowners perceive financial well-being”

EXPIRATION DATE: Exempt

The Committee on Research Involving Human Subjects (IRB) has reviewed and approved the request identified above as a modification of a previously approved protocol. **Please note that the original expiration remains the same.**

All approved IRB protocols are subject to continuing review at least annually, which may include the examination of records connected with the project. Announced in-progress reviews may also be performed during the course of this approval period by a member of the

University Research Compliance Office staff. Unanticipated adverse events involving risk to subjects or to others must be reported immediately to the Chair of the IRB, and / or the URCO

It is important that your human subjects activity is consistent with submissions to funding / contract entities. It is your responsibility to initiate notification procedures to any funding / contract entity of any changes in your activity that affects the use of human subjects.

Electronically signed by Lisa Rubin on 06/25/2024 6:18 PM ET

Chapter 5 - Conclusion

Research is inundated with the effects of homeownership, but the causal interpretations drawn from these studies may not fully explain how homeownership relates to financial well-being. For example, homeowners may overestimate the happiness and satisfaction purchasing a home will bring and houses that are a financial burden may negate the positive effects of homeownership (Odermatt & Stutzer, 2022). Predatory lending practices and low-quality homes may hurt a homeowner's financial condition (Zaviska & Gerber, 2016). Instead, Zaviska and Gerber (2016) suggest, "We should not ask simply whether homeownership ... is consequential for various outcomes, but the conditions under which different constellations of housing status exert effects" (p. 16). This dissertation has attempted to answer this research call by examining how homeowners' decisions regarding their current housing relate to residential satisfaction and financial strain. It also tests the mediating effects of other housing measures on financial well-being for three types of housing tenures. Financial well-being is a multi-faceted concept, measured in many ways by different researchers. Objective and subjective indicators for financial strain, housing cost burden, and financial well-being are used in this study to draw different conclusions about how housing decisions relate to a household's financial situation or condition.

The first essay used the 2022 Survey of Consumer Finances (SCF), a triennial national survey. The sample was restricted to homeowners, which included 2,832 respondents. The SCF was chosen for this study because it includes high-quality responses for households' balance sheets, which allow for objective indicators of financial strain (late payments, debt-to-income ratio, and asset-to-debt ratio) and questions for two out of the three housing adjustments proposed by Morris and Winter's (1975) theory of family housing adjustment. Primary data from

933 respondents was collected for essay two to run an experiment testing Morris and Winter's (1975) theory. A scale developed by Rioux and Werner (2011) was used to measure residential satisfaction, and financial strain was measured with a scale from Hibbert et al. (2014) who defined financial strain as a stressor caused by future circumstances. Primary data was also collected for essay three, which used the Consumer Financial Protection Bureau's (2015) abbreviated financial well-being scale to measure financial well-being. The sample for essay three had 1,222 respondents.

Essay One

Morris and Winter's (1975) theory of housing adjustments argues that when a family faces a housing deficiency, they will adjust using one of three methods to increase residential satisfaction. Therefore, essay one analyzed whether homeowners' housing adjustment choices — specifically residential mobility and residential adaptation — related to their financial strain using the 2022 SCF. The findings did not support the hypotheses that residential mobility and adaptation would be negatively associated with financial strain.

The results of the logistic regression indicated that residential mobility was not significantly related to financial strain. Moreover, those who had made an improvement or addition to their home were predicted to have less financial strain than those who had not made an improvement or addition to their home. This was the opposite of the hypothesized relationship. Residential adaptations may alleviate financial strain as wealth is accumulated from an increased housing value (Caloia & Mastrogiacomo, 2022; Sodini et al., 2023).

Essay Two

To expand on the findings from essay one, essay two used an experimental design and primary data to include all three measures of housing adjustments and residential satisfaction.

Prior literature has suggested there may also be a relationship between these adjustments, residential satisfaction, and financial strain (Anderson et al., 2014; Samuel et al., 2019; Shamsuddin & Campbell, 2021). To test these relationships, data was collected from Amazon's Mechanical Turk (MTurk) to examine whether housing adjustments, as proposed by Morris and Winter's (1975) theory of family housing adjustment, impacted the level of financial strain a household experiences and whether financial strain related to residential satisfaction.

Results of the MANOVA did not indicate that the treatments affected both residential satisfaction and financial strain, however, the ANOVA and Tukey's HSD test showed that the treatments may influence residential satisfaction. Specifically, family adaptation and residential mobility appear to improve residential satisfaction. The OLS regression results indicate that financial strain is related to residential satisfaction, albeit differently from the negative hypothesized relationship. Homeowners with more financial strain may have spent more money to increase their residential satisfaction.

Essay Three

The purpose of essay three was to identify factors that may explain why literature has consistently shown financial well-being differences among homeowners and renters. Moreover, prior research has indicated that the presence of a mortgage may negatively impact financial well-being (Will and Renz, 2023; Tharp et al., 2020). This study, therefore, examined three housing tenures — non-mortgage-holding homeowners, mortgage-holding homeowners, and renters. Essay three used primary data collected through MTurk to examine the relationship between housing tenure and subjective financial well-being and the mediating effects of housing cost burden and residential satisfaction between housing tenure and financial well-being. The results indicated that mortgage-holders and renters were predicted to have less financial well-

being than non-mortgage holders. However, there was evidence that housing cost burden (both subjective and objective) and residential satisfaction fully mediated this relationship. Residential satisfaction was also positively related to financial well-being, and subjective and objective housing cost burden was negatively related to financial well-being.

Implications

The American Dream may include homeownership, but younger generations may perceive the American Dream to be relevant to their lives anymore (Scott et al., 2024). Homeownership still provides plenty of benefits, including wealth (Acolin et al., 2021), tax benefits (Thomas, 2021), and financial security (Manturuk et al., 2017). Yet, some have challenged the idea of a homeownership society, arguing that housing policies have failed to deliver the promises homeownership makes to many (Arundel & Ronald, 2021). Moreover, as the priorities of a nation change and a greater understanding is reached as to why homeownership has these positive effects, there may also be a need to adjust policies to align with younger generational values (Scott et al., 2024). While homeownership may still be an important and worthy goal, consumption appears to no longer be the chief value of U.S. individuals. Prioritizing well-being (financial and otherwise) may better reflect the American dream younger generations feel is worthy to pursue (Scott et al., 2024). Homeownership should be seen as a mechanism to help individuals increase their well-being through increased financial security, housing affordability, or improved housing quality.

One growing concern among researchers and policymakers is the racial homeownership divide. Intergenerational wealth transfers often indicate how much economic inequality exists in a society (Chu et al., 2024). For example, Blanden et al. (2023) found that increasing intergenerational home ownership may widen the economic inequality experienced by those

whose parents do not own a home in the U.K. In the U.S., Black households have the lowest likelihood of homeownership, with a 24% gap in homeownership likelihood (Farahi & Jiao, 2024). The authors found that educational attainment is a promising possibility for improving this gap, as higher levels of education may help individuals identify and act against discriminatory housing practices. Intergenerational wealth transfers in the U.S. may further the racial homeowner divide, as Black young adults are less likely to receive wealth transfers, downpayment assistance, or even have their parents cosign with them (Choi et al., 2018). Choi et al. (2018) suggest many avenues for improving homeownership rates for young individuals in the U.S. including increasing awareness of homebuying assistance opportunities among young adults, redefining “housing counseling” as “homeownership preparation,” instituting a tax-free account (like a Section 529 plan for college) with government matching or tax credits and including other information in mortgage qualifications such as rental payment history.

Home improvement costs have risen concurrently with the of buying a home or renting (Joint Center for Housing Studies, 2023). Despite this worrisome trend, it appears from these studies that housing adjustments are not negatively associated with financial strain. Maintaining a home and increasing residential satisfaction in an owned home may not pose as great a financial burden, even with the increase in labor and material costs. Moreover, residential mobility and family adaptation are two mechanisms for which homeowners could improve residential satisfaction, which was positively related to financial well-being in essay three. In line with considering how these factors relate to well-being, residential adaptation, residential mobility, or family adaptation changes may allow homeowners to make their house a home. Mackay and Perkins (2019) explain this concept as such, “... with home interpreted as a secure,

peaceful, and private setting—a place to escape from everyday pressures and freely express individuality” (p. 114).

Although there was not a negative relationship between housing adjustments and financial strain, low-income homeowners or homeowners with financial constraints may find it difficult to make housing adjustments in the first place. Programs such as the Section 504 Home Repair program may help low-income homeowners renovate (USDA Rural Development, n.d.). This program offers grants or 1% fixed-interest loans to eligible homeowners. Elderly low-income homeowners may be eligible as well to use the funds to adjust their homes for health or safety reasons.

Future research should continue to explore whether housing adjustments are related to financial strain. In essay one, there was a positive relationship between residential adaptation and financial strain, but the experiment in essay two did not reveal any significant relationships between housing adjustments and financial strain. This may be due to the cross-sectional nature of the data. It may take time for housing adjustments to affect a homeowner’s financial condition. For example, a homeowner who puts money into a renovation or moves to a new house might not experience the price appreciation from their house until they sell or tap into home equity. A family who makes a family adaptation may save money over the long run from not having to pay for an expensive renovation or move. Studies that examine housing choices over time may observe whether these relationships exist and if there is any interaction between housing adjustments and residential satisfaction on financial strain.

The results from essay three suggest that residential satisfaction is also an important contributor to financial well-being. Research should continue to investigate why higher levels of residential satisfaction are associated with more financial well-being. For example, better

housing quality — an important component of residential satisfaction (Fernández-Portero et al., 2017) — is associated with better health and well-being outcomes in general (Howden-Chapman et al., 2022), which could provide households with more freedom in their finances. Zumbro (2014) found that low-income households derive more life satisfaction from homeownership than high-income households. These households may especially benefit from targeted policies or programs to improve residential satisfaction.

With the many positive aspects of homeownership discussed herein, essay three showed that housing cost burden has a mediating effect on financial well-being. Zumbro (2014) also found that if homeownership presents a significant financial burden, homeownership can negatively impact life satisfaction. The number of cost-burdened renters and homeowners increased at a concerning rate in 2022, and, while low-income renters were most likely to be severely cost-burdened, moderate-income renter households are especially affected as they do not qualify for public support (Whitney, 2024). Traditional measures of housing cost burden as a ratio of cost to income may preclude innovative policies that target these groups. Airgood-Obrycki et al. (2022) explain that traditional ratios of housing cost burden only suggest two policy interventions — lowering housing costs or increasing wages. A residual income approach evaluates what standard of living a household can maintain after accounting for housing costs, which opens a variety of other methods for easing housing cost burden. In addition to lowering housing costs and increasing wages, policymakers can approach the other side of consumer costs by implementing measures to reduce other household expenditures such as healthcare, food, childcare, etc. (Airgood-Obrycki et al., 2022).

For homeowners, the affordability problem goes beyond mortgage and interest rates. An uptick in natural disasters may lower homeownership rates (Sheldon & Zhan, 2019) and increase

home insurance premiums (Horn & Webel, 2024). In some cases, insurers have completely backed out of markets prone to natural disasters. Horn and Webel (2024) suggest that funding hazard mitigation actions could help improve the affordability of homeowners insurance. Future research should investigate how natural disasters and the subsequent impact on insurance prices relate to financial well-being.

Financial planners also have a role to play in helping their clients achieve their housing goals, maintain housing affordability, and improve residential satisfaction. Financial planners could help their clients with financial goal clarity, which can improve clients' saving behaviors (Tomar et al., 2021). Financial planners should ask their clients about their current housing situation and incorporate costs, location, and future goals as part of a financial plan, which could increase goal clarity. Encouraging homeownership goals, intentional saving behavior, and strong credit management skills may help consumers make more cost-effective housing choices. Finally, researchers should study how confident and competent financial planners are at providing advice related to real estate, renting, or other housing decisions and whether it impacts their clients' financial and housing behaviors.

Conclusion

This dissertation is intended to help explain the circumstances under which housing decisions are associated with financial well-being and residential satisfaction. Financial well-being and residential satisfaction are complex constructs that are often measured and defined differently by many researchers. How these measures are conceptualized may alone influence whether housing decisions are related to it. For example, in essay one, residential adaptation was found to be related to objective indicators of financial strain. In essay two, however, residential adaptation was not related to a self-reported scale for financial strain. Rather than trying to claim

objective or subjective measures are better for measuring financial well-being, this dissertation argues that both aspects should be included to gain an overall understanding of how housing decisions relate to financial well-being.

Only three types of housing tenure (non-mortgaged homeownership, mortgaged homeownership, and renting) were studied in this dissertation, but there are many more that future researchers could explore. Housing adjustments, housing cost burden, and residential satisfaction also prompt additional conversations regarding methods to promote high-quality, affordable housing that improves financial well-being and does not add additional financial strain to U.S. households' lives. Through these three essays, this dissertation has provided evidence that housing adjustments do positively relate to residential satisfaction and do not appear to negatively impact financial strain. It also provides context for homeownership's positive relationship to financial well-being by showing the relationship between having a mortgage and financial well-being and the mediating relationship between housing cost burden and residential satisfaction.

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Appendix A – Chapter 2 Statistical Programming

The following code was used in Stata/SE 17.0 for Chapter 2.

```
*****
clear all
use "D:\User Data\Ashlyn\ DISSERTATION\Essay 1\SCF22C.dta", replace
gen logincome = ln(income)

gen ihsnw=networth
replace ihsnw=asinh(networth)
*****create weight variables*****
*generate population normalized (relative) weight
*1. get average of population weight (x42001)
    sum x42001
*2. generate a new weight variable (nwgt) by dividing x42001 by
product of average weight multiplied by number of implicates (i.e., 5)
    gen nwgt=0
    replace nwgt = x42001 / (22268.03*5)
*define new weight variable - we will use this for unweighted analyses
    gen wt5=.2
*****sample coding*****

*Sample restriction to just homeowners
/*  homeownership class: 1=owns ranch/farm/mobile home/house/condo/
coop/etc., 2=otherwise;
%IF (&YEAR GE 1995) %THEN %DO;
    IF (X508 IN (1 2)|X601 IN (1 2 3)|X701 IN (1 3 4 5 6 8)|
        (X701=-7 & X7133=1)) THEN HOUSECL=1;
%END;
%ELSE %DO;
    IF (X508 IN (1 2)|X601 IN (1 2 3)|X701 IN (1 3 4 5 6)) THEN
        HOUSECL=1;
%END;
ELSE HOUSECL=2; */

/*X701          Now I have some questions about your home.

                Do you (and your family living here) own this (house
and lot/apartment/ranch/farm), do you pay rent, do you own it as a
part of a condo, co-op, townhouse association, or something else?

                IF THE PROPERTY IS OWNED THROUGH A TRUST THE
                PEU SET UP, TREAT IT AS OWNED BY THEM.

                NPEU IN THIS HOUSEHOLD:
                IF OWNERSHIP IS SHARED WITH NPEU, CODE "OWNS ONLY
                PART".
                IF NPEU OWNS ALL, CODE "Neither owns nor rents" OR
```

```

        "Pays rent".

        1.      *Owns or is buying/land contract
        2.      *Pays rent
        3.      *Condo
        4.      *Co-op
        5.      *Townhouse Association
        6.      *Retirement Lifetime Tenancy
        8.      *OWNS ONLY PART
            -7.      *Neither owns nor rents
        0.      Inap. (R lives in MH: X501=2; R lives on
farm
                    and farm is operated as a business:
                    X501=4 or 5 and X503=1)*/

gen ownhome = 0
    replace ownhome = 1 if x701 == 1
    tab ownhome

*****Variable coding*****
**OUTCOME FINANCIAL STRAIN
*loan delinquency: household had any payments more than 60 days past
due in last year
tab late60 if late60 == 1 [iweight = wt5]

/* create asset to debt ratio*/
gen asset2dbt = asset / debt
    sum asset2dbt
    gen astrain = 0
    replace astrain = 1 if asset2dbt < 1
    tab astrain [iweight = wt5]

/* debt to income ratio
* compute ratio of monthly payments to monthly income;
* NOTE: for ADJINC=YES, income already inflated to same dollars as
payments;
%LET CPIADJ89=(&CPIADJ*(1886/&CPIBASE));
PIRTOTAL=(TPAY/MAX((INCOME/12),(100/&CPIADJ89)));*/

    sum pirtotal

gen dstrain = 0
    replace dstrain = 1 if pirtotal > .36
    tab dstrain [iweight= wt5]

**Generate financial strain if they are either late 60 days, have
leverage ratio less than 1, or asset2inc ratio less than .25
gen finstrain = 0
    replace finstrain = 1 if late60 == 1 | asset2dbt < 1 | pirtotal >
.36
    tab finstrain [iweight = wt5]

```

```

**Residential mobility
*X7136      We are interested in your view of the chance
*           that you will be staying at your current address for
the
*           next two years.  Using any number from zero to 100,
where
*           zero equals no chance and 100 equals absolutely
certain,
*           what do you think the chances are that you will be
living
*           at your current address two years from now?

*           INTERVIEWER: ROUND TO CLOSEST NUMBER DISPLAYED.

*           0.      NO CHANCE OF STAYING (Recoded to -1)
*           10.
*           20.
*           30.
*           40.
*           50.      50-50 CHANCE
*           60.
*           70.
*           80.
*           90.
*           100.     ABSOLUTELY CERTAIN TO STAY
*
*           NOTE: CARD 6 contains the following information:
*           The numbers 0, 10, 20, ..., 100 in a horizontal row
bounded
*           by dark lines.  Below 0 is printed "Absolutely no
chance";
*           in the space below 20 and 30 is printed "Possible but
not
*           likely"; below 50 is printed "50-50 chance"; in the
space
*           below 70 and 80 is printed "Likely but not certain";
and
*           below 100 is printed "Absolutely certain."
*Reverse code so 0 = 100 percent chance of staying and all others
equal chance of moving
gen resmobile = 0
    replace resmobile = 1 if x7136 != 100
    tab resmobile
*Reverse code so 0 = 100 percent chance of staying and 100 =
absolutely certain to move
gen resmobile2 = 0
    replace resmobile2 = 1 if x7136 == 90
    replace resmobile2 = 2 if x7136 == 80
    replace resmobile2 = 3 if x7136 == 70
    replace resmobile2 = 4 if x7136 == 60
    replace resmobile2 = 5 if x7136 == 50

```

```

        replace resmobile2 = 6 if x7136 == 40
        replace resmobile2 = 7 if x7136 == 30
        replace resmobile2 = 8 if x7136 == 20
        replace resmobile2 = 9 if x7136 == 10
    replace resmobile2 = 10 if x7136 == -1

**Housing adaptation
/*X1201          Have you (and your family living here) ever made any
major
                additions or done extensive remodeling to this
property?

                1.      *YES
                5.      *NO
                0.      Inap. (does not own any part of HU:
X508^=(1, 2)
                and X601^=(1, 2, 3) and X701^=(1, 3, 4, 5,
                6, 8) and X7133^=1)*/

gen houseadapt = 0
    replace houseadapt = 1 if x1201 == 1
    tab houseadapt [iweight=wt5]

*****CONTROLS*****
*cost of rennovation
gen renocost = x1202
gen logreno =ln(renocost)
sum logreno

gen one=1
    bysort yy1 logreno: egen noimplicate=sum(one)
    sum noimplicate
/*4 category marital/sex status: 1=married, 2=partner, 3=singlefemale,
4=singlemale
X8023(#1)      (Are you/Is your [RELATIONSHIP] currently married or
X105(#2)      living with a partner, separated, divorced,
X111(#3)      widowed, or (have you/has [he/she]) never been
married?
X117(#4)
X123(#5)      (NOTE: if R lives with a partner who is financially
X129(#6)      interdependent, this variable is always coded '2' for
the
X135(#7)      head and partner. The legal marital status of R and
of the
X205(#8)      partner are given by X7372 and X7018 respectively.)
X211(#9)
X217(#10)     1.      *MARRIED
X223(#11)     2.      *LIVING WITH PARTNER
X229(#12)     3.      *SEPARATED
                4.      *DIVORCED
                5.      *WIDOWED
                6.      *NEVER MARRIED

```

```

0.      Inap. (person age 17 or less: No Further
persons);*/

gen relation=x8023
replace relation=x105 if x8000==1

gen marital= .
    replace marital= 0 if relation==1 | relation==2
    replace marital = 1 if relation == 6 | relation==3 | relation==4
| relation==5

/*# of children living outside home/house/condo/X5910
Now I'd like to ask some questions about your family living
elsewhere. Altogether, including children from
previous
marriages and adopted children, how many sons and
daughters
do you (or your {husband/wife/partner/spouse}) have
who do
not live with you?

INCLUDE ONLY LIVING CHILDREN/STEP-CHILDREN

NUMBER:
    -1.      None

*****
ORIGINALLY ALLOWED VALUES: [0,...,25]

IF < 0 OUT OF RANGE: ILLEGAL VALUE ERROR MESSAGE

IF >= 11: UNLIKELY VALUE ERROR MESSAGE

*****
FOR THE PUBLIC DATA SET, TOP-CODED AT 10

*****/
gen outsidechild = x5910
    replace outsidechild = 0 if x5910 == -1
    replace outsidechild = 1 if x5910 >= 1
    tab outsidechild
*Children living at home
gen chome = kids
    replace chome = 0 if kids == 0
    replace chome = 1 if kids >= 1

*generate respsex
gen respsex=x8021
replace respsex=x103 if x8000==1
*generate age
*respondent age
gen respage=0

```

```

replace respage=x19 if x8000==1
replace respage=x14 if x8000==5
*work status
/*Working status of respondent. Categories are Unemployed, Part-time,
Full-Time, and Retired
X6670 X6671 X6672 X6673 X6674 X6675 X6676 X6677 (#1)
X6678 X6679 X6680 X6681 X6682 X6683 X6684 X6685 (#2)

```

```

                IN PERSON VERSION:
                (SHOW CARD 19)
                We are interested in your
(husband/wife/partner/spouse)'s
                present job status. (Are you/Is he/Is she/Is he or
she)
                working now, temporarily laid off, unemployed and
looking
                for work, on sick leave, disabled and unable to work,
retired,
                a student, a homemaker, or something else?

                1.    *WORKING NOW/SELF-EMPLOYED; job accepted
and
                waiting to start work
                2.    *TEMPORARILY LAID OFF; seasonal work and
not
                working now
                3.    *UNEMPLOYED AND LOOKING FOR WORK
                4.    *STUDENT; job training
                5.    *HOMEMAKER; never worked; misc. out of the
labor
                force n.e.c. (including prison)
                6.    *DISABLED
                7.    *RETIRED (FULL, PARTIAL, OR TEMPORARY)
                8.    *ON SICK LEAVE OR MATERNITY LEAVE
                10.   *VOLUNTEER WORK
                11.   *ON VACATION/OTHER LEAVE OF ABSENCE
                13.   On sabbatical/extended leave and expecting
to
                go back to job
                15.   *ON STRIKE
                16.   *OTHER NOT WORKING AND NOT LOOKING FOR WORK
                (X6670 only)
                0.    Inap. (/no further responses; /no
spouse/partner)

```

```

                FOR THE PUBLIC DATA SET, CODE 8 IS COMBINED WITH
                CODE 6; CODES 11, 13 AND 15 ARE COMBINED WITH
                CODE 1

```

```

*****/
gen respsimplework=x6670
replace respsimplework=x6678 if x8000==1

gen respworking=0
replace respworking=x4511 if respsimplework==1
replace respworking=x5111 if (respsimplework==1 & x8000==1)

*0=unemployed, 1 = disabled, 2 = retired, 3 = part-time 4 = full-time
gen respwork=0
    replace respwork=0 if (x8000==1 & x6678==6)
    replace respwork=0 if (x8000==5 & x6670==6)
    replace respwork=1 if (x8000==1 & x6678==7)
    replace respwork=1 if (x8000==5 & x6670==7)
    replace respwork=2 if respworking==2
    replace respwork=2 if respworking==1

tab respwork

*education
*education of respondent
/*
X5931(#1)      What is the highest level of school completed or the
highest
X6111(#2)      degree you have received?

(husband/wife/
level of
completed?

I'd like to ask you some questions about your
partner/spouse)'s background. What is the highest
school or the highest degree (he/she/he or she)
completed?

RECORD THE HIGHEST LEVEL OF EDUCATION COMPLETED, NOT
THE
TIME IT TOOK TO COMPLETE IT. DO NOT INCLUDE TRADE
SCHOOLS
AS COLLEGE.

1.      *1st, 2nd, 3rd, or 4th grade
2.      *5th or 6th grade
3.      *7th and 8th grade
4.      *9th grade
5.      *10th grade
6.      *11th grade
7.      *12th grade, no diploma
8.      *High school graduate - high school diploma
or equivalent
9.      *Some college but no degree
10.     *Associate degree in college -
occupation/vocation program

```

```

11.      *Associate degree in college - academic
program
12.      *Bachelor's degree (for example: BA, AB,
BS)
13.      *Master's degree ( for exmaple: MA, MS,
MENG, MED, MSW, MBA)
14.      *Professional school degree (for example:
MD, DDS, DVM, LLB, JD)
15.      *Doctorate degree (for example: PHD, EDD)
-1.      *Less than 1st grade
0.      Inap. (no spouse/partner)

*****
FOR THE PUBLIC DATA SET, CODE 15 IS COMBINED WITH
CODE 14;*/

gen resped=x5931
replace resped=x6111 if x8000==1

*where 0 = less than hs or hs, 1 = some college or aa 2 = ba 3 =
postgrad
gen byte respedcat=recode(resped,7,8,11,12,13)
tabulate respedcat, generate (resped)
replace respedcat = 0 if respedcat == 7 | respedcat == 8
replace respedcat = 1 if respedcat == 11
replace respedcat = 2 if respedcat == 12
replace respedcat = 3 if respedcat == 13

*label racecl4 variable to use
label define racecl4 1 "white non-Hispanic" 2 "Black African-
American" 3 "Hispanic or Latino" 4 "Other"
label values racecl4 racecl4

tab racecl4 [iweight=wt5]

/*6030(#1)      Would you say your (husband/wife/partner/spouse)'s
health
X6124(#2)      in general is excellent, good, fair, or poor?

1.      *Excellent
2.      *Good
3.      *Fair
4.      *Poor
0.      Inap. (no spouse/partner)*/

gen resphealth = x6030
replace resphealth = x6124 if x8000 == 1
recode resphealth (1 = 4) (2 = 3) (3=2) (4 = 1)

logit finstrain i.resmobile i.houseadapt i.marital i.outsidechild
i.chome i.respsex c.respage i.respwork i.respedcat i.racecl4
i.resphealth if ownhome== 1, or

```

```

logit finstrain i.resmobile c.logreno i.marital i.outsidechild i.chome
i.respsex c.respage i.respwork i.respedcat i.racecl4 i.resphealth if
ownhome== 1 & noimplicate == 5
mi estimate: logit finstrain i.resmobile i.houseadapt i.marital
i.outsidechild i.chome i.respsex c.respage i.respwork i.respedcat
i.racecl4 i.resphealth if ownhome== 1
mi estimate: logit finstrain i.resmobile c.logreno i.marital
i.outsidechild i.chome i.respsex c.respage i.respwork i.respedcat
i.racecl4 i.resphealth if ownhome== 1 & noimplicate == 5
logit finstrain i.resmobile i.houseadapt i.marital i.outsidechild
i.chome i.respsex c.respage i.respwork i.respedcat i.racecl4
i.resphealth if ownhome== 1
lroc

```

Appendix B – Chapter 3 Statistical Programming

The following code was used in the initial data clean up phase in Stata/SE 17.0 for Chapter 3.

```
*****
clear all
use "D:\User Data\Ashlyn \Essay2\Data folder\Creating the ideal home -
Revised_July 19, 2024_14.52.dta", clear

*encode q2, gen(screen)
label drop screen
    replace screen = 0 if screen == 1
    replace screen = 1 if screen == 2

    **residential satisfaction scale**
encode q8_1, gen (hdif)
    label drop hdif
    recode hdif (5=0) (3=1) (1=2) (2=3) (4=4)
    tab hdif

encode q8_2, gen (hneeds)
    label drop hneeds
    recode hneeds (5=0) (3=1) (1=2) (2=3) (4=4)
    tab hneeds
    tab q8_2

encode q8_3, gen (henjoy)
    label drop henjoy
    recode henjoy (5=0) (3=1) (1=2) (2=3) (4=4)
    tab henjoy
    tab q8_3

encode q8_4, gen (hcozy)
    label drop hcozy
    recode hcozy (5=0) (3=1) (1=2) (2=3) (4=4)
    tab hcozy
    tab q8_4

encode q8_5, gen (hchoose)
    label drop hchoose
    recode hchoose (5=0) (3=1) (1=2) (2=3) (4=4)
    tab hchoose
    tab q8_5

    **financial strain scale**

encode q9_1, gen (whdebt)
    label drop whdebt
    recode whdebt (5=0) (3=1) (1=2) (2=3) (4=4)
```

```

    tab whdebt
    tab q9_1

encode q9_2, gen (wfincon)
    label drop wfincon
    recode wfincon (5=0) (3=1) (1=2) (2=3) (4=4)
    tab wfincon
    tab q9_2

encode q9_3, gen (wexpense)
    label drop wexpense
    recode wexpense (5=0) (3=1) (1=2) (2=3) (4=4)
    tab wexpense
    tab q9_3

**demographics**
gen age = q10
    replace age = 65 if q10 == 1959
    replace age = 56 if q10 == 1968
    replace age = 52 if q10 == 1972
    replace age = 46 if q10 == 1978
    replace age = 40 if q10 == 1984
    replace age = 35 if q10 == 1989
    replace age = 33 if q10 == 1991
    replace age = 25 if q10 == 1999
    sum age

encode q11, gen (race)
    label drop race
    replace race = 0 if race == 6
    replace race = 1 if race == 1 | race == 2 | race == 3 | race == 4
| race == 5
    replace race = . if q11_7_text == "nothing" | q11_7_text ==
"prefer not to disclose"
    tab race

encode q12, gen (gender)
    label drop gender
    recode gender (2=0) (1=1)
    replace gender = . if q12_4_text == "prefer not to disclose"
    drop if gender == 3
    tab gender

encode q13, gen (marital)
    label drop marital
    replace marital = 0 if marital == 1 | marital == 3
    replace marital = 1 if marital == 6 | marital == 7 | marital == 2
| marital == 5
    replace marital = . if marital == 4
    tab marital
    tab q13

```

```

encode q14, gen (finkid)
    label drop finkid
    recode finkid (1=0) (2=1) (3=2) (4=3)
    tab finkid

encode q25, gen (housecomp)
    label drop housecomp
    recode housecomp (2=0) (1=1) (3=2) (4=3)
    tab housecomp
    tab q25

encode q26, gen (education)
    label drop education
    recode education (6=0) (4=1) (5=2) (1=3) (2=4) (3=5)
    tab education
    tab q26

encode q27, gen (health)
    label drop health
    recode health (4=0) (2=1) (3=2) (1=3)
    tab health
    tab q27

encode q28, gen (income)
    label drop income
    recode income (6=0) (3=1) (4=2) (5=3) (1=4) (2=5)
    tab income
    tab q28

encode q29, gen (employ)
    label drop employ
    replace employ = 0 if employ == 1 | employ == 2 | employ == 3 |
employ == 4
    replace employ = 1 if employ == 5 | employ == 6 | employ == 7
    tab employ
    tab q29

encode fl_12_do, gen (group)
    label drop group
    recode group (1=0) (2=1) (3=2) (4=3)
    tab group
    tab fl_12_do*/

save "D:\User Data\Ashlyn \Essay2\Data folder\clean data.dta", replace
*****

```

This code was used for additional variable coding and analysis.

```

*****
clear all

```

```

use "D:\User Data\Ashlyn\OneDrive - NorCal Financial
Group\Documents\Grad School\DISSERTATION\Essay2\Data folder\clean data
updated.dta", clear

*drop if respondents did not meet screening criteria = 7 respondents
drop if screen == 0

*recode education to three categories, some college or less,
associates or bachelors, and post doc
replace education = 0 if education == 0 | education == 1 | education
== 2
replace education = 1 if education == 3 | education == 4
replace education = 2 if education == 5
tab education

*recode housecomp to combine renters w/ living with family or friends
replace housecomp = 2 if housecomp == 2 | housecomp == 3
tab housecomp

*create dummy variables for groups
gen control = 0
    replace control = 1 if group == 0
gen fadapt = 0
    replace fadapt = 1 if group == 1
gen radapt = 0
    replace radapt = 1 if group == 2
gen rmobile = 0
    replace rmobile = 1 if group == 3

*create new ID variable
egen newid = group(responseid)
*look at factors
recode hdif (4=0) (3=1) (2=2) (1=3) (0=4)
factor hdif hneeds henjoy hcozy hchoose
alpha hdif hneeds henjoy hcozy hchoose

gen ressat = hneeds + henjoy + hcozy + hchoose

factor whdebt wfincon wexpense
alpha whdebt wfincon wexpense

gen finstrain = whdebt + wfincon + wexpense
/**Descriptive stats
sum ressat
sum finstrain
tab1 gender race marital education income employ finkid housecomp
tab1 gender race marital education income employ finkid housecomp if
group == 0
tab1 gender race marital education income employ finkid housecomp if
group == 1
tab1 gender race marital education income employ finkid housecomp if
group == 2

```

```

tab1 gender race marital education income employ finkid housecomp if
group == 3
sum colindex
sum colindex if group == 0
sum colindex if group == 1
sum colindex if group == 2
sum colindex if group == 3
sum age
sum age if group == 0
sum age if group == 1
sum age if group == 2
sum age if group == 3
sum heatlh
sum health if group == 0
sum health if group == 1
sum health if group == 2
sum health if group == 3*/

*****COMPARATIVE ANALYSIS*****
*IVs COL, age, gender, race, marital, education, income, employment,
kids, household comp, health
anova colindex group
anova age group
*gender is sig .046
tab gender group, chi2
tab gender group if group == 0 | group == 1, chi2
tab gender group if group == 0 | group == 2, chi2
tab gender group if group == 0 | group == 3, chi2
tab gender group if group == 1 | group == 2, chi2
tab gender group if group == 1 | group == 3, chi2
tab gender group if group == 2 | group == 3, chi2

**BONFERRONI'S ADJUSTMENT = .05/6 = .0083. ONLY THE DIFFERENCE BETWEEN
GROUP 0 AND GROUP 3 IS SIGNIFICANT
tab race group, chi2
tab marital group, chi2
tab education group, chi2
tab income group, chi2
tab finkid group, chi2
tab health group, chi2
tab housecomp group, chi2
**Manova
manova finstrain ressat = group

**Anova
anova finstrain group
pwcompare group, group mcompare(tukey)

anova ressat group
pwcompare group, group mcompare(tukey)

```

```

*regression analysis
*check for aux variables
replace finkid = 2 if finkid == 2 | finkid == 3
pwcrr ressat finstrain fadapt radapt rmobile colindex age gender race
marital education income employ finkid housecomp health
*none above threshold of .4
*set wide
mi set wide
*observe which variables have missing values
mdesc ressat fadapt radapt rmobile education housecomp income marital
employ finkid health gender race age colindex
mi misstable summarize ressat fadapt radapt rmobile education
housecomp income marital employ finkid health gender race age colindex
*impute missing values
mi register imputed education housecomp income marital employ finkid
health gender race age colindex
mi impute chained (ologit) education income finkid (mlogit) housecomp
(logit) marital employ gender race (regress) health age colindex,
augment add(10) rseed (53421)

mi estimate: regress ressat fadapt radapt rmobile i.education
i.housecomp i.income marital employ i.finkid health gender race age
colindex if ressat != .

*check R2
regress ressat fadapt radapt rmobile education i.housecomp income
marital employ finkid health gender race age colindex if ressat != .
*MODEL 2
mi estimate: regress finstrain fadapt radapt rmobile i.education
i.housecomp i.income marital employ i.finkid health gender race age
colindex if finstrain != .
regress finstrain fadapt radapt rmobile i.education i.housecomp
i.income marital employ i.finkid health gender race age colindex if
finstrain != .
*regression 3 with financial strain as a predictor
mi estimate: regress ressat finstrain fadapt radapt rmobile
i.education i.housecomp i.income marital employ i.finkid health gender
race age colindex if ressat != .

regress ressat finstrain fadapt radapt rmobile i.education i.housecomp
i.income marital employ i.finkid health gender race age colindex if
ressat != .

```

Appendix C - Chapter 4 Statistical Programming

The following code was used in the initial data clean up phase in Stata/SE 17.0 for Chapter 4.

Stata

```
*****
clear all
use "D:\User Data\Ashlyn\DISSERTATION\Essay 3\finwell.dta", clear

*gen housing tenure where 0 = own home and 1 = rent
encode q2, gen(htenure)
label drop htenure
    replace htenure = 0 if htenure == 1
    replace htenure = 1 if htenure == 2
**demographics**
gen age = q3
    replace age = 64 if q3 == 1960
    replace age = 59 if q3 == 1965
    replace age = 54 if q3 == 1970
    replace age = 47 if q3 == 1977
    replace age = 44 if q3 == 1980
    replace age = 39 if q3 == 1985
    replace age = 34 if q3 == 1990
    replace age = 33 if q3 == 1991
    replace age = 32 if q3 == 1992
    replace age = 28 if q3 == 1996
    replace age = 27 if q3 == 1997
    replace age = 26 if q3 == 1998
sum age

encode q4, gen (race)
label drop race
    replace race = 0 if race == 7
    replace race = 1 if race == 2 | race == 3 | race == 4 |
race == 5 | race == 6 | race == 1
tab race

encode q5, gen (gender)
label drop gender
recode gender (2=0) (1=1) (3=2)
tab gender
*marital where 0 = married/cohabitating 1 = single 2 =
widowed/divorced/separated
encode q6, gen (marital)
label drop marital
    replace marital = 0 if marital == 1 | marital == 3 |
q6_7_text == "engaged and living together" | q6_7_text == "In a
committed relationship and plan to live together soon"
```

```

        replace marital = 1 if marital == 6
        replace marital = 2 if marital == 7 | marital == 2 |
marital == 5
        replace marital = . if q6_7_text == "prefer not to say"
        tab marital

    encode q7, gen (finkid)
        label drop finkid
        recode finkid (1=0) (2=1) (3=2) (4=3) (5=4)
        tab finkid
    encode q8, gen (housetotal)
        label drop housetotal
        recode housetotal (1=0) (2=1) (3=2) (4=3) (5=4) (6=5)
        tab housetotal

    encode q9, gen (housecomp)
        label drop housecomp
        replace housecomp = 0 if housecomp == 2
        replace housecomp = 1 if housecomp == 1
        replace housecomp = 2 if housecomp == 3 | housecomp == 4
        tab housecomp

    encode q10, gen (education)
        label drop education
        replace education = 0 if education == 6 | education == 5 |
education == 4
        replace education = 1 if education == 1
        replace education = 2 if education == 2
        replace education = 3 if education == 3
        tab education

    encode q11, gen (health)
        label drop health
        recode health (4=0) (2=1) (3=2) (1=3)
        tab health

    encode q28, gen (income)
        label drop income
        recode income (6=0) (3=1) (4=2) (5=3) (1=4) (2=5)
        tab income
        tab q28

    encode q12, gen (employ)
        label drop employ
        replace employ = 0 if employ == 1 | employ == 2 | employ ==
3 | employ == 4
        replace employ = 1 if employ == 5 | employ == 6 | employ ==
7

        tab employ

    gen income = q13
        **financial strain scale**

```

```

encode q15_1, gen (moneysit)
    label drop moneysit
    recode moneysit (1=0) (5=1) (3=2) (4=3) (2=4)
    tab moneysit
    tab q15_1

encode q15_2, gen(getby)
    label drop getby
    recode getby (1=0) (5=1) (3=2) (4=3) (2=4)
    tab getby
    tab q15_2

encode q15_3, gen(wontlast)
    label drop wontlast
    recode wontlast (1=0) (5=1) (3=2) (4=3) (2=4)
    tab wontlast
    tab q15_3

encode q16_1, gen(moneyleft)
    label drop moneyleft
    recode moneyleft (1=0) (3=1) (5=2) (4=3) (2=4)
    tab moneyleft

encode q16_2, gen(fcontrol)
    label drop fcontrol
    recode fcontrol (1=0) (3=1) (5=2) (4=3) (2=4)
    tab fcontrol

encode q17, gen (readq)
    label drop readq
    recode readq (1=0) (2=1)
    tab readq

encode q18, gen(mortgage)
    label drop mortgage
    recode mortgage (1=0) (2=2) (3=1)
    tab mortgage

gen hcost = q20

**residential satisfaction scale**
encode q21_1, gen (hdif)
    label drop hdif
    recode hdif (5=0) (3=1) (1=2) (2=3) (4=4)
    tab hdif
    tab q21_1

encode q21_2, gen (hneeds)
    label drop hneeds
    recode hneeds (5=0) (3=1) (1=2) (2=3) (4=4)
    tab hneeds

```

```

    tab q21_2

encode q21_3, gen (henjoy)
    label drop henjoy
    recode henjoy (5=0) (3=1) (1=2) (2=3) (4=4)
    tab henjoy
    tab q21_3

encode q21_4, gen (hcozy)
    label drop hcozy
    recode hcozy (5=0) (3=1) (1=2) (2=3) (4=4)
    tab hcozy
    tab q21_4

encode q21_5, gen (hchoose)
    label drop hchoose
    recode hchoose (5=0) (3=1) (1=2) (2=3) (4=4)
    tab hchoose
    tab q21_5

**housing cost burden
encode q22, gen (hburden)
    label drop hburden
    recode hburden (2=0) (3=1) (1=2)
    tab hburden

encode q23, gen (hburden2)
    label drop hburden2
    recode hburden2 (3=0) (1=1) (2=2)
    tab hburden2
    tab q23

**financial knowledge**
gen subfinknow = q24
    recode subfinknow (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) (7=6)
    tab subfinknow

encode q25, gen(interest)
    label drop interest
    replace interest = . if interest == 1 | interest == 5
    replace interest = 0 if interest == 4
    replace interest = 1 if interest == 2
    replace interest = 2 if interest == 3
    tab interest

encode q26, gen(inflation)
    label drop inflation
    replace inflation = . if inflation == 1 | inflation == 5
    replace inflation = 0 if inflation == 4
    replace inflation = 1 if inflation == 2
    replace inflation = 2 if inflation == 3

encode q27, gen (stock)

```

```

        label drop stock
        replace stock = . if stock == 1 | stock == 3
        replace stock = 0 if stock == 4
        replace stock = 1 if stock == 2
        tab stock
    save "D:\User Data\Ashlyn\DISSERTATION\Essay 3\clean
finwell.dta", replace
*****

```

This code was used for additional variable coding and analysis.

```

*****
clear all
use "D:\User Data\Ashlyn\DISSERTATION\Essay 3\clean finwell.dta",
clear
*Create finwell scale
*Financial Well-Being Scale (CFPB abbreviated)
J41_1) Because of my money situation, I feel like I will never have
the things I want in life
J41_2) I am just getting by financially
J41_3) I am concerned that the money I have or will save won't last
1-5 where 1 does not describe me at all and 5 describes me completely
J42)33 How often do these statements apply to you?
J42_1) I have money left over at the end of the month
J42_2) My finances control my life
1-5 where 1 is never and 5 is always */
recode moneyleft (0=4) (1=3) (2=2) (3=1) (4=0)

gen fwb5_never = moneysit

gen fwb2_getby = getby

gen fwb4_concern = wontlast

gen fwb10_left = moneyleft

gen fwb8_control = fcontrol

alpha fwb5_never fwb2_getby fwb4_concern fwb10_left fwb8_control
factor fwb5_never fwb2_getby fwb4_concern fwb10_left fwb8_control
gen finwell = fwb5_never + fwb2_getby + fwb4_concern + fwb10_left +
fwb8_control

**standardize fin well score using pfwb
gen age18_61 = 0
    replace age18_61 = 1 if age <= 61
    tab age18_61

gen self = 0
    replace self = 1 if readq == 0

```

```

gen fwb1_exp = .
gen fwb3_secure = .
gen fwb6_enjoy = .
gen fwb7_behind = .
gen fwb9_strain = .

**NOTE THAT THIS WILL TAKE A LONG TIME TO RUN
pfbw FBW

*test normality
swilk fwb
robvar fwb, by(htenure2)
robnova fwb htenure2
**Kwallis
kwallis fwb, by(htenure2)
*identify outliers
extremes income
drop if income == 1.00e+07

*gen loginc = ln(income)

**gen fin knowledge scale**
gen intl = 0
    replace intl = 1 if interest == 0

gen inflate = 0
    replace inflate = 1 if inflation == 2

gen stocks = 0
    replace stocks = 1 if stock == 1

gen finknow = intl + inflate + stock
tab finknow

alpha intl inflate stock

*check factor loadings for res sat scale
factor hdif hchoose hneeds hcozy henjoy
alpha hdif hchoose hneeds hcozy henjoy

factor hchoose hneeds hcozy henjoy
alpha hchoose hneeds hcozy henjoy

*create res sat scale
*gen ressat = hchoose + hneeds + hcozy + henjoy

*create housing tenure variable
gen htenure2 = .
    replace htenure2 = 0 if mortgage == 0
    replace htenure2 = 1 if mortgage == 1
    replace htenure2 = 2 if htenure == 1

```

```

*create dummy variables for housing tenure
gen nomortgage = 0
    replace nomortgage = 1 if mortgage == 0
    replace nomortgage = 0 if mortgage == 1

gen rent = 0
    replace rent = 0 if nomortgage == 1
    replace rent = 1 if htenure2 == 2
    replace rent = . if htenure2 == .

gen ownmortgage = 0
    replace ownmortgage = 1 if htenure2 == 1
    replace ownmortgage = 0 if nomortgage == 1
    replace ownmortgage = . if htenure2 == .
*recode COLindex where 0 = .
*create dummies for HCB

gen burden = .
    replace burden = 0 if hburden2 == 0
    replace burden = 1 if hburden2 == 1

gen eburden = .
    replace eburden = 0 if hburden2 == 0
    replace eburden = 1 if hburden2 == 2

*create dummy variables for house comp
gen sphcomp = .
    replace sphcomp = 0 if housecomp == 1 | housecomp == 2
    replace sphcomp = 1 if housecomp == 0

gen alonecomp = .
    replace alonecomp = 0 if sphcomp == 1
    replace alonecomp = 1 if housecomp == 1

gen otherscomp = .
    replace otherscomp = 0 if sphcomp == 1
    replace otherscomp = 1 if housecomp == 2

gen nmarital = .
    replace nmarital = 0 if marital == 0
    replace nmarital = 1 if marital == 1 | marital == 2

gen COL = index
    replace COL = . if index == 0
drop if gender == 2

save "D:\User Data\Ashlyn\DISSERTATION\Essay 3\mplus export.dta",
replace
clear
**export to mplus
use "D:\User Data\Ashlyn\DISSERTATION\Essay 3\mplus export.dta"

```

```

keep newid fwb finknow subfinknow htenure2 hburden hburden2
ressat employ health race gender age loginc education nmarital
housecomp COL housetotal hchoose hneeds hcozy henjoy alonecomp
otherscomp burden eburden rent ownmortgage nomortgage income

mvencode newid fwb finknow subfinknow htenure2 hburden hburden2 ressat
employ health race gender age loginc education nmarital housecomp COL
housetotal hchoose hneeds hcozy henjoy alonecomp otherscomp burden
eburden rent ownmortgage nomortgage income, mv(-99)

save "D:\User Data\Ashlyn\DISSERTATION\Essay 3\Mplus finwell FWB.dta",
replace

export delimited using "D:\User Data\Ashlyn\DISSERTATION\Essay
3\mplusexport.csv", replace

```

Mplus

The following code was used for the final bias-corrected bootstrap mediation model in

Mplus.

```

TITLE: BC Bootstrap Mediation Model

DATA:
File is "D:\User Data\Ashlyn\DISSERTATION\
  Essay 3\mplusexport.csv";

VARIABLE:
NAMES ARE age race
Gender housetotal
Housecomp education
health
employ income
hneeds henjoy
hcozy hchoose
hburden hburden2
subfinknow
fwb
finknow
ressat newid
COL loginc
htenure2 nomortgage
burden eburden
nmarital ownmortgage
alonecomp otherscomp
rent;

USEVARIABLES ARE
Hneeds henjoy

```

```

Hcozy hchoose
Hburden fw b
employ newid
rent ownmortgage
hburden2 age
race gender
education
health nmarital
COL loginc;

MISSING ARE ALL (-99);
      Idvariable IS newid;

ANALYSIS:
TYPE IS General;
ESTIMATOR IS ML;
ITERATIONS = 10000;
CONVERGENCE = 0.00005;
COVERAGE = 0.05;
BOOTSTRAP = 2000;

MODEL:
    !CFA
    ressat by hneeds
    henjoy
    hcozy
    hchoose;
    !PATHS
    hburden on rent ownmortgage;
    hburden2 on rent ownmortgage;
    fw b on rent ownmortgage;
    ressat on rent ownmortgage;
    fw b on hburden hburden2 ressat;

    !controls
    fw b on age race gender
    education health nmarital
    COL loginc employ;
    hburden on age race
    gender education
    health nmarital
    COL loginc
    employ;
    hburden2 on age
    race gender
    education health
    nmarital vCOL
    loginc employ;
    ressat on age
    race gender
    education health
    nmarital COL

```

```
loginc employ;

!correlation
hburden with hburden2

Model Indirect:
    fwb IND rent;
    fwb IND ownmortgage;

OUTPUT:
sampstat STDYX CINTERVAL(BCBOOTSTRAP);
```