Whereto Next? Analyzing livability and accessibility in the later stages of life

By

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Submitted to the Department of Urban Studies and Planning
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ABSTRACT

The global population is aging; and municipalities across the globe are striving to better understand the needs and desires of older adults in order to better serve this growing population. Yet existing transportation analyses rely on methods and measures often better suited to addressing the needs of younger generations, creating a need to refine them in order to better target the older adult population. In pursuit of that goal, this research examines the spatial manifestation of relocation decisions among older adults in Boston to serve as an entrée into better understanding their desired target destinations and to subsequently explore the accessibility of the older adult population as a whole. Filling a gap in understanding of the neighborhood-level spatial factors influencing decision-making among older adults who are relocating in retirement, this research first explores the reasons behind later-in-life relocation decisions, offering a model of decision-making based on the behavioral Stages of Change model. It then explores the spatial factors considered by older adults when choosing where to resettle, offering a comparison across different generations. And it subsequently measures walking accessibility to key destinations based on the spatial priorities previously established.

Space-time factors, such as walkability and access to transportation emerge as clear priorities among older adults who have relocated to urban areas—and older adults who have moved in the past five years boast clear improvements in walkability to their most frequent destinations. Yet the older urban adult population as a whole in the Boston Metropolitan Area still live on average in less walkable areas as compared to their younger counterparts. This research concludes with a number of design and policy recommendations to improve the walkability of the older adult population as a whole, including proposals to thicken the transportation network and to revise zoning policies in order to better connect older adults with where they want to go.

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Introduction

The global population is aging. Individuals are living longer and in better health than ever before, while declining fertility rates are simultaneously increasing the proportion of older adults within the general population. By the year 2050, there will be more individuals over the age of 65 than under the age of 15. Those aged over 100, meanwhile, will increase by an impressive 1000 percent in the intervening 30 years (United Nations 2015).

And, while these trends do not discriminate by location, cities across the globe are graying faster than their rural counterparts. The number of individuals above 65 rose by 24 percent in OECD cities in the decade between 2001 and 2011, as compared to 18 percent in non-urban areas. 14 percent of people in OECD cities were above the age of 65 in 2011 as compared to 12 percent of the population in 2001 (OECD 2015).

These statistics marry the two worlds of the ageing and the urban. While there has long been significant overlap between the two, urban ageing itself is a nascent domain that spans a number of disciplines within the realms of social and health sciences. Researchers and policymakers are striving to better understand the trends affecting aging populations in the urban realm in order to better prepare cities and communities for the future.

Beyond their role as a growing portion of the population, there are a number of reasons to design and prepare cities for older adults. Ongoing research highlights the value of older adults as a "culmination of successful human development during last century" (Plouffe & Kalache, 2010). As argued by Plouffe and Kalache, older adults serve in many ways as the memory and wisdom of a population, which, in turn, places immense value on their quality of life. Yet even beyond their value as a resource, they also represent a large and growing portion of *consumers* in cities. Were the purchasing power of all global individuals over the age of 65 measured and compared to that of global nations, the aging population would be third only to the United States and China in their power as consumers (Oxford Economics 2016). And this influence will only increase. The aging population will be a growing and influential clientele for cities and companies alike.

Further, planning and designing for the most vulnerable populations ultimately improves the city for all. A more accessible metro platform eases transportation use for older adults, children and disabled individuals; and it increases comfort for individuals of all ages and capabilities. A more walkable community with a lower reliance on cars, similarly, reduces congestion and emissions and increases the quality of life for all.

Yet this begs the question as to how to best plan and design cities for older adults. What are the appropriate policies and priorities to best serve these populations? This question spans, of course, a number of fields, adding the supplementary challenge of aggregating needs and preferences across diverse areas. The World Health Organization's (WHO) Global Age-Friendly Cities Guide serves to highlight this challenge in its wide-ranging recommendations; it offers strategies for cities to promote 'active aging' through improvements to areas as diverse as housing, safety, and community engagement. How can cities prioritize among these fields or design an improved urban experience that touches on all of the above?

Far from attempting to tackle such an immense question, this thesis seeks to offer insights into a small subset of the above challenges, albeit using tools that touch on many diverse fields. Specifically, this thesis explores the different dimensions of the concept of accessibility among older adults in the Boston Metropolitan Area. In transportation planning, accessibility is defined as the ease of reaching destinations or activities distributed in space. This thesis applies the concept of accessibility to ask: what destinations do older adults *want* to access? What destinations *should* they be able to most easily access? And how should we refine measures of accessibility for older adults with more limited mobility capabilities?

Using these new measures of accessibility, in turn, I ask, how accessible is Boston for older adults today? Where should we target policies and changes to improve this accessibility as the population of older adults continues to grow?

More directly, this thesis applies the lens of accessibility within the field of transportation to start to better understand the existing impacts of the built environment on aging individuals and to use these insights to help inform better policy and better urban design. The ability to access specific locations, after all, lies at the core of

the urban experience. While accessibility is widely acknowledged as a key measure for understanding the impacts of the built environment on quality of life, its existing forms of measurement are arguably myopic in their targets: existing tools in the realm of accessibility are significantly limited when applied to older adults.

The most common measure of accessibility involves a buffer measurement of walking or of modes of transportation around an origin point; yet older populations have key differences in their ability to walk than their younger counterparts. Level of service measurements assume primarily driving populations; older adults have a much lower percentage of drivers than other age ranges, meaning that these measurements would significantly overestimate vehicles. Many models are heavily dependent on trips to work; yet older, retired adults have very different destination preferences than a working adult.

This thesis thus seeks to supplement the accessibility literature by offering refined forms of measurement to better include the needs of older adults, while simultaneously using these refined tools to help policymakers and designers better understand the impacts of the built environment on those individuals.

Yet before measuring accessibility itself, it is first important to understand the locations that older adults might need (or want) to access. As espoused by Noémie et al in 2018, there is a significant dearth of qualitative research exploring the needs and preferences of older adults within the built environment. This thesis thus seeks to supplement existing quantitative research with a qualitative understanding of the impact of the built environment on older adults.

To achieve this, the ensuing analysis uses preferences for moving as an entrée into understanding living preferences more generally. Investigating the reasons underlying both why individuals leave one location and

subsequently select another can offer insights into amenities and services that all older adults are eager to have in closer proximity. This, in turn, helps to address the dearth in understanding within the realm of moving preferences among older adults. While there is extensive literature dividing later-in-life moving decisions into different categories of movers at the macro scale, there is still a very limited understanding of the needs and preferences among each category specifically.

Further, as outlined above, as cities grow and seek to compete with each other for key populations in this globalized world, it is important to understand the nuances inherent in the choices of older adults to move and relocate. How can cities attract this key population to increase their competitiveness? Might insights into why older adults move offer tools for cities across the globe to lure them in?

Nonetheless, instead of tackling the challenge of global insights, this thesis focuses primarily on Boston. In doing so, it aims to introduce an interdisciplinary approach (incorporating both qualitative and quantitative methods) that could be applied to other contexts to better understand the accessibility needs of older populations across the globe. Although older adults are often treated as a whole, there are significant cultural and experiential differences that make these generalizations perhaps naïve. There is thus value in developing research protocol that could be applied in different contexts and thus offer more targeted insights into different regions across the globe. Nonetheless, often a small-scale analysis of a specific urban context can offer insights that can be applied beyond the city's borders.

This thesis also undertakes the challenge of balancing normative and positive policy recommendations. In exploring individuals' preferences within the realm of moving, I first ask: what locations do individuals *want* to access? Yet policymakers also face the more challenging task of identifying what locations individuals *should* have access to in order to supplement their quality of life.

The ensuing analysis thus first explores how the built environment is built in the heads of older adults, asking: how do they perceive what is accessible and what do they view as desirable? It subsequently explores this in the context of what is indeed accessible to them today, and what other factors policymakers, advisors and older adults themselves should perhaps take into account in order to supplement quality of life. One can be isolated in rural areas, after all, but isolation can equally be a burden in dense urban areas.

Organization and Methodology

Against this backdrop, the research questions addressed in this thesis are as follows:

- What is the mental decision-making process among older adults when deciding when—and where—to move? And how might this be manifested in space?
- What spatial characteristics do individuals of different age groups take into account when deciding where to move? Do these differ across generations?
- Do older adults who move show a preference for greater walkability? And what might this mean for the accessibility preferences of the older adult population more generally?

This thesis will answer these questions over the course of six chapters. Chapter Two showcases the existing wealth of literature on a number of subjects related to the focus of this thesis, including later-in-life migration, transportation habits among older adults, and location decisions among individuals who move. It points out the gaps in understanding of the relocation habits of older adults on a neighborhood scale, and how this might relate to transportation habits.

Chapter Three draws on the insights gleaned from in-person focus groups to offer a model for the relocation decision-making process. It applies qualitative methods in order to understand the mental processes involved in making the decision to move. This, in turn, offers a framework from which to understand the role of spatial characteristics in the decision-making process, thus serving as the basis for the ensuing chapters in this thesis.

Chapter Four investigates stated preferences of individuals who have moved within the past five years, exploring which spatial characteristics they considered in making their decision with regards to where to locate. It compares priorities across different generations, finding heterogeneity of preference, and a distinct prioritization of accessibility among older adults in particular. The chapter applies a mixed methods approach, incorporating qualitative insights collected from focus groups and findings from multivariate regressions exploring the role of demographic characteristics in influencing the importance of different spatial factors in the decision-making process.

Chapter Five offers an accessibility analysis within the City of Boston. Drawing on the affirmation of a desire for walkability learned in Chapter Four, the chapter measures walkability using a gravity measure to determine the number of key destinations within immediate walking destination among older adults who have recently moved as opposed to the older adult population as a whole. It finds that older adults who have moved show a distinct preference for greater walkability, yet that the older adult population as a whole lives in areas that are on average less walkable as compared to their younger counterparts.

This thesis closes with a discussion of next steps that municipal officials and other stakeholders can pursue given the findings of the thesis. The results to the aforementioned research questions offer both a new research strategy for understanding preferences based on moving patterns, as well as insights into how generations might differ in their spatial needs and desires.

Ageing is a global phenomenon. Albeit a growing area of research, there are still distinct limitations to our understanding of the preferences and needs of older adults. And there are notably a number of undergirding assumptions—such as willingness to walk or housing preferences—that might not be as accurate as they might seem when investigated in depth. This thesis attempts to challenge a number of those assumptions and to offer policy recommendations for addressing the true needs of older adults. And, in doing so, it aspires to encourage changes that might increase the quality of life—and perhaps even longevity—of a growing and vibrant population.

02

Literature Review

Scholars and policymakers have long been interested in understanding the relocation decisions of older adults. The ability to understand or even influence these decisions could have significant economic consequences for local communities. At the very least, it offers the tools for localities to provide a good quality of life for all citizens.

This is an area of research that falls squarely into a number of different disciplines; the literature review itself could thus be a thesis in its own right. Due to our research purposes, we limit the literature review to precedents in literature related to the larger concepts addressed as part of this thesis. Different sections of the document will in turn dive more deeply into other fields of literature that are pertinent for the specific analysis undertaken within that section.

I thus explore, most importantly, prior literature on relocation decisions among older adults as well as literature on travel behavior of older adults; the combination of the two literatures, after all, serves as the crux of this thesis. I also touch on the literature on aging in place as a result of its richness and applicability as a contrast to the focus of this thesis. The findings of this thesis are arguably intricately intertwined with aging in place, as the goal is ultimately to understand how older adults

approach prioritizing specific neighborhood characteristics in their decision to move, and what this might tell us about the interaction of older adults with their surrounding environment.

Later-in-life migration

In 1987, Litwak and Longino published a seminal article proposing a life-course model of later-in-life migration to explain older adults' relocation decisions. The article sparked a new field of research exploring the implications of life-stage-oriented moves as well as the resultant implications for regional population shifts (Warnes 1992a; Wilmoth 2010; Lovegreen, Kahana, and Kahana 2010; von Riechert, Cromartie, and Arthus 2013). The model proposes that as individuals age, their migration decisions are motivated by different life cycle changes that they are experiencing.

The first stage, as outlined by Litwak and Longino, consists of *amenity* movers. These individuals are typically the "young old;" they possess greater means and are likely to be more highly educated, married and in relatively good health (Dorfman & Mandich 2016). Amenity movers are no longer tied down by professional obligations and have the luxury of making relocation decisions based on preferences. Their moves are thus generally of longer distances (in

pursuit of the proper amenity cluster); they are typically attracted to low-density environments with less congestion, natural amenities and low-cost housing (Plane 2005).

After the amenity mover, according to Litwak and Longino, comes the *assistance-seeking* or *return* migrant. These are the individuals in need of informal care-giving; they are likely older, poorer, and perhaps disabled (Litwak and Longino 1987). This form of migration usually happens after a pivotal life event, such as the death of a spouse or a significant decline in health (Warnes 1992b). These migrants are sometimes dubbed 'return' migrants in the literature on the subject, since they are apt to move closer to adult children or family members who are able to serve as caregivers.

The final category consists of major disability movers. These individuals move at the very end of life; such moves are associated with elderly adults who have a severe disability that requires a shift into a formal care institution (Warnes 1992a).

Ensuing research has investigated regions in the U.S. that are most successful at attracting different forms of later-life migration. Litwak and Longino initially highlighted Florida and Arizona as the principal locations for amenity-seeking adults; this finding has since been corroborated by a number of studies (Litwak and Longino 1987; Bradley 2011). Yet the number of retirement destinations in the U.S. continues to grow, with a particular emphasis on the Sunbelt.

Frey (2011) found that the top ten metropolitan regions with the fastest growing older adult populations (consisting of those 65 and older) are located in the southern and western regions of the U.S. Research suggest that this growth is primarily driven by amenity-seeking migrants relocating to communities that align with their preferences. Ioannides and Zabel, for example, found that proximity to friends and similar groups of people can serve as a significant

driver of the relocation decisions for amenity-seeking adults. Dorfman and Mandich, meanwhile, found that older adults are more likely to move to communities with a higher percentage of other older adults as a result of the perceived ease of making social connections (Dorfman & Mandich 2016).

Yet researchers have also discovered other motivators behind relocation decisions. Dorfman & Mandich (2016), for example, found that older adults making relocation decisions typically desire a warm climate. Other studies have found that colder communities with higher seasonal temperature variation and frequent cloudy days are more likely to result in *out*-migration. Research shows that older migrants have a preference for communities with bookstores, popular restaurants, historic neighborhoods, access to cultural amenities and recreational opportunities among other amenities (Clark and Hunter 1992; Haas and Serow 1997). Some studies have additionally found that access to healthcare is important; nonetheless, others have found that the importance diminishes in mid-sized and larger urban areas (Chen 2008; Dorfman & Mandich 2016).

Yet this begs the question of how these preferences translate into the choice of a specific location within a larger area. Do older adults prioritize living within walking distance of a bookstore? Or might they measure out the driving distance to the local hospital in considering where to purchase a home? The form of access to key destinations for older adults—whether by car or by walking or using an alternative mode of transportation—is the direct result of their chosen location within a larger area. And these decisions, in turn, have significant implications for city planners seeking to maximize the quality of life for all citizens.

In early 2018, Noémie et al published a literature review of studies exploring the many factors influencing housing decisions among

older adults. Their goal was to highlight the research that went beyond traditional migration and environmental press theories (the latter is outlined in the aging in place section below). They notably found that there is a significant dearth of research focusing on the built and natural environment. And they proposed using a framework developed by Despres and Lord (Figure 1) to expand the conversation beyond its current discipline-limited borders and instead focus on the meta-concept of home as divided into six dimensions outlined in the figure below. This framework will be used and critiqued throughout this research to serve as a way to dive more deeply into a variety of factors that might affect the location decisions of older adults.

It is also important to note that Noémie et al (2018) recommend expanding the qualitative research methods applied to this field of research. They found that most studies relied on quantitative methods and those that were indeed qualitative largely failed to capture the emotions and values associated with location decisions as a result of their reliance on economic and health-related factors. This thesis attempts to fill that gap.

Figure 1. *Dimensions of home based on Despres and Lord (2005).*

Home as . . .		
Psychological dimensions Mirror of the self Place to personalize Personal control Physical and psychological security Physiological and physical comfort **Social dimensions** Locus of socialization Privacy and refuge Indicator of social status Desirable social composition Access to human resources	**Economic dimensions** Ownership Financial investment Savings and inheritance Affordable housing **Material dimensions** Network of urban places Urban territory Services and commercial facilities Nature and greenery Housing type Space around the house Safety and universal accessibility Personal belongings	**Temporal dimensions** Familiar setting Attachment and memories **Space-time dimensions** Anchor Center of daily life Territory of mobility Settlement-identity Proximity and accessibility

Walkability among older adults

Travel behavior is a well-trodden field of academic literature, although travel behavior as it relates to older adults is perhaps more sparse. For the purposes of this research, our emphasis is on alternative modes of transportation as we are primarily exploring urban areas and how certain decisions with regards to location choice among relocating adults might limit their ability to easily access key destinations as they age.

Research has shown that higher levels of utilitarian walking is associated with a number of factors including proximity to destinations, mixed land use, proximity to public transit and street connectivity (Baran et al. 2008; Giles-Corti and Donovan 2002; Lee and Moudon 2006; Saelens and Sallis 2003). While the findings for recreational walking are more mixed, studies have found that factors such as perceived attractiveness, perceived safety and hilliness can all affect an individual's likeliness to walk (Lee and Moudon 2006; Alfonzo et al. 2008; Giles-Corti and Donovan 2002).

These findings have notably been corroborated with regards to elderly adults. King et al. (2003) found that there was a positive correlation among older women between physical activity and walkable destinations (ones that were both convenient and with a high perceived walkability), for example. Other research has found that neighborhood factors such as safety and distance to destinations can affect walk trip

frequencies (Cao et al 2010). Nonetheless, other studies have found that the built environment was not a significant factor in explaining the lifestyles of sedentary older adults (Nagel et al. 2008). Zegras et al (2012) explored these behaviors extensively as they relate to age-restricted communities in order to better understand how the design of communities might affect trip-making among older adults. While limited to suburban communities, the studies found that age-restricted communities were indeed associated with greater activity among residents than non-age-restricted suburban locations.

In exploring travel behavior among older adults, there have also been a number of studies connecting accessibility and quality of life. Research has found, for example, that walkability is associated with fewer depressive symptoms among adults within a more walkable neighborhood. Other studies have found connections between time spent in outdoor green spaces and feelings of social integration and belonging (Kweon et al 1998).

This thesis seeks to understand travel behavior as it relates to the decision to relocate for older adults. How might their desire for proximity to certain land uses or certain amenities affect location choices? How does walkability factor among their priorities in deciding where to move? How might understanding the amenities and services that older adults value most highly offer insights into strategies for better designing the built environment to give them the tools to access those services and amenities? And, significantly, if older adults do indeed express a preference for walkability, do they end up in neighborhoods that are indeed more walkable?

Aging in Place

Over the past 40 years, the concept of 'aging in place' has gained traction among scholars and policymakers alike. As defined by the US Centers for Disease Control and Prevention, aging in place is "the ability to live in one's own home and community safely, independently, and comfortably, regardless of age, income, or ability level." More directly, it is the ability of older adults to stay in their existing residences with access to the goods and services they need to support them in doing so. Studies on moving decisions among older adults have largely concluded that migration rates decline with age; that older adults do indeed prefer staying and aging in their existing residences (Wagner 1989; Bucher and Heins 2001). According to some surveys, more than 80 percent of older adults wish to continue their current residences (Kramer 2016).

These findings have spawned a number of studies and initiatives aimed at better understanding and supporting individuals who choose to remain in their residence. These efforts are largely oriented around health and care services for old-old individuals. Instead of encouraging older adults to move into nursing homes with more centralized care, scholarship is increasingly exploring opportunities for decentralized care in communities where older adults can choose to age in place and continue to reap the benefits or pre-existing social and physical networks.

Lawton and Nahemow (1973) penned the seminal work in this body of literature, examining the types of living environments that might allow for aging in place, with a particular focus on housing and its connection to physical limitations. Yet their work and subsequent studies have largely focused on installing new technology or amenities that would support care for frail or old-old individuals. There is thus a gap in understanding young-old individuals—an age group that is becoming increasingly important with an accompanying increase in life expectancy. How might aging in place relate to young-old amenity-focused individuals?

While this thesis is focused explicitly on older adults who have chosen to relocate, the findings might offer key insights for studies exploring

the realm of aging in place as well. Understanding the amenities that older adults seek out when choosing to relocate can help local governments to understand what amenities those who choose to age in place might want access to as well.

There is also a gap in the literature with regards to the relationship between the choice to migrate and the choice to age in place. There exists perhaps a false dichotomy between the two fields. As life expectancy increases, so to do the opportunities to do both: to migrate in retirement and to subsequently age in place once a new residency is successfully established.

Location decisions

It is of course also important to explore prior research on where individuals choose to locate within an urban area from the perspective of the population more generally. There is notably an extensive body of literature surrounding the structure of urban equilibria and how transportation factors into a city's density curve. Most famously, the Alonso-Muth-Mills model argues that individuals are incentivized to reduce the cost of commuting to a city's central business district (CBD). Yet it is not possible for everyone to live close to the CBD and so the price and density of housing serve to adjust the market. The demand for housing close to the CBD drives up the cost of land in the center of the city and thus some individuals choose a higher commuting cost in exchange for lower land costs (and larger housing) further away from the urban core (Alonso 1964; Mills 1967; Muth 1969).

Yet the Alonso-Muth-Mills model and its resultant body of literature have a number of limitations. First and foremost, for our purposes, they are based on trade-offs between wages and amenities—a trade-off that is less pertinent to older adults. The model also assumes a homogeneity of income and housing options; the housing needs of older adults are

very different from their younger counterparts. Third, the model assumes a mono-centric city, which in turn assumes a homogeneity of preferences for being close to a city center where the highest percentage of jobs are housed. Yet this assumption doesn't hold among a population that doesn't need to access jobs—and with preferences for different amenities than the working population. The model doesn't explain, for example, an older adult who desires to be close to a family member (far from the city center), but is unable to find a one-story house in that vicinity and thus locates in the closest area with the housing stock to suits his or her needs (Kulish et al 2012).

Other studies do focus on the importance of housing characteristics in driving moving decisions or on home buyers' preferences. Kunsch et al (2005), for example, propose a push-pull model of migration patterns based on micro-level features—the housing needs of an individual—and macro-level features—the characteristics of a particular area, such as supply and price.

Yet like their Alonso-Muth-Mill brethren, these studies ultimately belie the complexity of the decision as to where to live. Moving decisions are invariably influenced by a number of factors beyond a simple analysis housing or transportation costs, ranging from social to physical to economic to environmental ones. Yet the majority of the studies on the subject, including the ones noted above, focus on a single aspect of the larger whole.

A Centre for Cities research series offered an intriguing attempt to rectify this through a large-scale survey exploring wide-ranging factors that drove location choice among individuals across Great Britain (Thomas 2015). Their analysis compares expressed preferences across different age groups and subsequently offers a number of case studies to better understand the manifestation of these preferences. This thesis seeks to build on the

Centre for Cities survey by offering a deep-dive into a subpopulation of the survey and using the findings to analyze if the population has achieved what they professed their preferences to be. And in doing so, it seeks to offer a new model for thinking about location choice within urban areas—one that takes a more complex slate of preferences and opportunities into account.

Discussion

The gaps in literature outlined in the above section are numerous and certainly impossible to satisfy over the course of a single thesis. Yet a close examination of the literature proves this field to be ripe for further research.

Specifically, I seek to supplement the research on later-in-life migration to incorporate the micro-scale decision-making among amenity-seeking older adults. While the literature currently offers a rich picture of types and features of macro-scale moves, we know very little about what neighborhood characteristics the growing population of amenity movers are seeking out. Understanding this, in turn, might help us better understand the preferences among older adults as a whole; what local features might they value most? This has the potential to help decision makers prioritize certain investments and policies to help improve the quality of life for this growing population.

This thesis also notably seeks to offer a new strategy for understanding locational decisions among older adults. More directly, I explore how older adults choose where to live. Drawing on a diverse history of literature collected from a number of different fields, it aims to acknowledge the complexity of decision-making involved in location choice. I thus explore the decision-making process itself and the diverse built environment factors that older adults consider when deciding where to move.

Finally, an analysis that seeks to understand the features of the built environment that older adults seek to live close to lends itself naturally to a deeper look at walkability in these neighborhoods. While much of the literature on walkability confirms that walking is indeed healthy for older adults and that older adults walk more when they live in more walkable neighborhoods, we still know very little about preferences among older adults for walking and how walking might factor into their preferred (or most frequent) destinations.

The areas of research discussed above thus serve as a key foundation for this thesis as it explores migration choices among older adults, while drawing on different fields of research and applying different tools to offer a more complete picture.

03

Understanding Moving Decisions: Mapping Mental Processes and Trigger Events

Introduction

While the literature on later-in-life moves has been growing in recent years, it still remains an emerging field of research. Much effort and exploration has been dedicated to aging in place instead; understanding how to optimize environments to support individuals' decisions to stay in their homes as long as possible. Research on moving, meanwhile, has largely been focused on big concept decisions. Many studies explore the nuances of moving at different stages of life. According to the Litwak and Longino model, for example, later-in-life movers are either seeking amenities, assistance or care as they progress in age (Litwak & Longino 1987).

Yet there is arguably immense value in diving into the nuance of the decision to move during the later stages of life. Why do older adults select specific neighborhoods to move to? What amenities and characteristics were they in pursuit of? The answers to these questions might offer new insights into the needs of older adults, which, in turn, could be used to supplement the quality of life of individuals aging in place as well. More directly, understanding the reasons behind moving decisions can serve as an entrée into understanding the living preferences of older adults more generally.

This first chapter draws on the findings of a series of focus groups conducted at MIT's AgeLab to explore the motivations behind location choice among older adults in the Boston Metropolitan Area. As part of the focus groups, participants were asked to walk facilitators through their decisions to move and to highlight the amenities and characteristics of their current neighborhood that most attracted them to that neighborhood. Drawing on the insights gleaned from these groups, this chapter proposes a decision-making model for later-in-life moves, to help better explain the mental process that older adults undergo when relocating. It subsequently translates this model to incorporate the role of space within this decision-making process, exploring the role that different spatial scales play at different points in the decision-making process.

Methodology and Participant Overview

Focus Groups
Focus groups served as the primary method to explore the motivation behind later-in-life moving decisions among older adults. As opposed to surveys whose questions may limit the feedback to be gained, this qualitative focus group approach accounted for the complexity of moving decisions by allowing participants to express more in-depth, open-ended answers. Further, group interactions offered the opportunity for participants to make

connections and explore concepts that might not have arisen in other forms of study.

The guide for the focus groups, as found in Appendix B, was carefully crafted and reviewed by experts to achieve both subject exploration (finding out about the importance of different factors from the target population) and systematic research (collecting in-depth data on specific accessibility-related research questions).

It is important to note that the intention of focus groups was to gain an in-depth understanding of key, complex, social issues as opposed to offering findings that are statistically representative of a broader population. These findings teased out during qualitative interviews can subsequently be studied more in-depth in a quantitative manner, as will be explored in subsequent chapters of this thesis. Although there are limitations inherent to focus group research, such as the potential for group think, these limitations can be minimized with the careful crafting of focus group guides and vigilant moderation.

For our purposes, we conducted two focus groups with 16 individuals (n=16) to serve as a proof of concept of the research methodology; we would recommend expanding the focus group population for future studies on this subject. All participants had moved within the past five years. 9 percent of participants were long distance movers (from a different state), 59 percent of participants were regional movers (from a different region within the state), and 32 percent had moved locally (either within the same city or within the same neighborhood). All participants had settled in the Boston Metropolitan Area. Appendix C outlines the characteristics of participants, including gender, income, age, and race, among others.

The population was notably higher income and more educated than the general population. I acknowledge the resultant limitations to the universality of our findings, yet hope to rectify

this in future studies on the subject. Nonetheless, research has shown that later-in-life movers tend to be both more educated and higher income, and we have thus perhaps captured a representative population of movers, if not a representative population of older adults as a whole.

It is also important to note that we were targeting the young old as part of this study. All participants were below the age of 75 and nearly half were below the age of 65. As a result, almost all participants were in good health and thus best represent amenity movers—the population that we were seeking to target as one that promises to grow in size and importance alongside life expectancy.

The conversations held within the focus groups were subsequently qualitatively coded and analyzed using both quantitative (looking at the frequency with which certain issues arose) as well as qualitative (teasing out the nuance in participants' answers and extrapolating insights) methods.

Analysis

"But once we decided that, OK, let's go look at actual land. Bang! We ended up moving."

Modeling decision-making
How does one characterize the very complex process of deciding to move? All participants within the focus groups shared very diverse motivations and influences on their decisions to relocate. As the above quote indicates, in many ways it is even difficult to characterize the moment of decision itself; far from being able to break down his decision into the characteristics that struck him with regards to the house that he ultimately purchased, the participant instead sums it up with a simple "Bang!" to describe the experience.

Yet a closer analysis of the narratives woven by participants ultimately evinces a number of shared characteristics of relocation decision-

making. The narrative as explained by all participants begins with an initial willingness to move (often initiated by a trigger event as described below) and then proceeds through a sequence of steps in which individuals consider the amenities and the characteristics that they are looking for in a new location, and then ultimately seek out a house or apartment that shares at least some of those characteristics.

This sequence is laid out in Figure 1 below. Based on Prochaska & DiClemente's *Stages of Change Model*, Figure 1 offers a framework for modeling and analyzing complex moving decisions among older adults. Introduced in the 1980s, the Stages of Change Model was first applied to help individuals quit smoking by offering insights into the sequence of instigating changes in behavior (Prochaska & DiClemente 1984). It has since been applied more broadly to other forms of behavior ranging from abusive relationships to travel mode choice (Khaw & Hardesty 2009; Mundorf et al 2018). It is notably well-suited for exploring moving decisions as the choice to move catalyzes a significant change for individuals and serves as a complex, multi-faceted decision that would be well-served by breaking it down into different stages. These stages, in turn, have the potential to offer the tools for researchers to understand how this decision-making process parallels other aspects of the moving choice, such as spatial location, as will be explored later in this thesis.

Significantly, as shown in Figure 1 below, there is the potential for 'relapse' once the moving cycle is entered—the *Lifestyle Adaptation* phase flows naturally back to *Pre-Contemplation*. Nearly all individuals who participated in the focus groups indicated that their move—in many cases originally intended as final—was in fact temporary. Participants listed a number of amenities and characteristics that were suboptimal at their current new locations that were likely to instigate another move at some point in the future. This is perhaps not surprising as we start to see the timeline of the

'young old' expand: individuals are living longer than ever before resulting in larger time period during which they could move (and move again) to optimize their retirement.

There is thus a unique opportunity at the *Lifestyle Adaptation* step in the below model. It is notably two-pronged: happiness at the *Lifestyle Adaptation* step can be maintained both internally, if the prior steps in the model are properly executed by individuals—ie individuals properly consider the locational amenities and characteristics that they require and that exist at their new location—and externally, if their new location maintains and expands the locational amenities and characteristics needed and required by these new tenants. Should this be properly fulfilled, there is the potential for maintaining the new population and removing them from the moving cycle until another trigger event arises. Yet if not, a relapse—or new move—is likely.

As one participant explained: "Well, once you start that process, I found for me, it kind of keeps going. I don't feel like it's a done deal that I have this condo in Waltham. I think, you know, I -- I had a process. I wanted to get settled. I did that. But now I find myself rehashing some of those choices and thinking about, well, what am I going to do next?"

This is perhaps particularly interesting for cities seeking to capture the growing population of amenity-seeking older adults. These individuals are often perceived as an economic boon to cities and an inability to maintain a population of amenity-seeking older adults would indicate that a city is not properly fulfilling its obligation to maintaining quality of life for all of its citizens.

Trigger events
The question quickly follows of how one ultimately enters the decision-making cycle. Each individual's narrative within the focus groups was imbued with a form of 'trigger event' that helped to launch the decision-

Figure 1. *Transtheoretical model of relocation decision-making.*
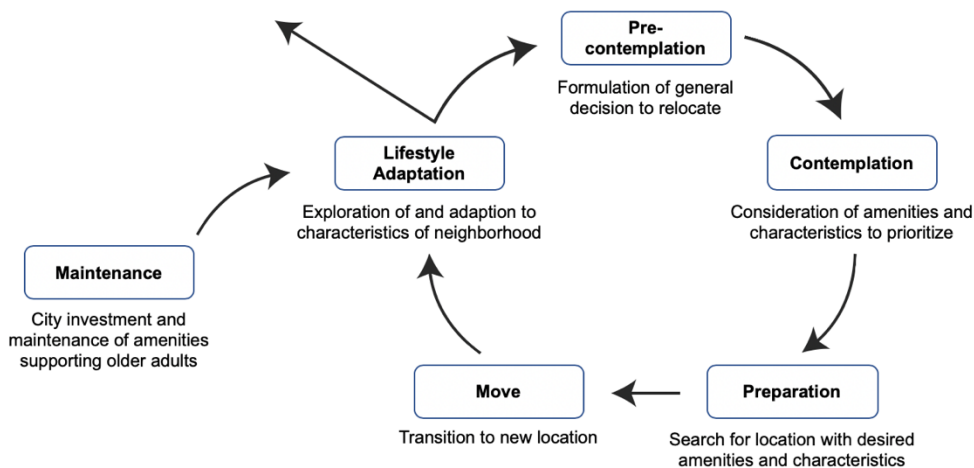
making process and, significantly, determined the timeline of the decision-making. More directly, trigger events initiate the process and determine if the circle is contracted or expanded. The form of trigger event can result in individuals either glossing over significant steps in the process or can force their hand on desired amenities and characteristics. The trigger events, as extracted from focus group participants, can be categorized in three buckets: cultural shift, tragic event, and solution first.

Cultural shift
Often overlapping with new life stages, cultural shifts indicate a break in the status quo. The most frequent cultural shift that arose during focus groups was the departure of children from the home: "My youngest son was entering college. My other two daughters were already out and moved out. We knew that we weren't going to need the big house anymore and that's when we wanted to go." Participants subsequently described the slow, methodical process of making the decision to move. These individuals were the ones to most clearly outline each step in Figure 1 in their narrative. Cultural shifts are the least pressing trigger event; they allow individuals to

reflect on the change and to carefully consider the options for the next steps in the process.

Tragic event
Tragic events that catalyze the decision to move can be either direct or indirect. In some cases, it could be a direct injury or a death in the family that results in the need to shift. In other cases, it could be the witnessing of a tragic event occurring to someone else and this, in turn, sparks concern and a desire to move to avoid a similar fate: "A friend of ours fell down the stairs and almost died. You know, so we're looking around us and we're seeing what's happening. And we're thinking, well, this hasn't happened to us yet but it could." These events generally require a faster decision time, contracting the decision-making cycle. They also notably push to the forefront specific priorities with regards to amenities and locational decision-making that are directly deduced from the tragic event. Individuals might prioritize housing characteristics, for example, in order to avoid a dangerous fall; or they might prioritize proximity to family following an unexpected death.

Solution first
Invariably difficult to quantify, this category emerges among individuals who make an unexpected move. They are often unaware as to the motivation behind the move, filling in a justification ex post facto. More directly, it is a solution chasing a problem. As explained by one participant: "We noticed we were looking, and then we stopped looking. And then we noticed we were looking again. […] It crept up on both of us. And then if you're looking and you find something, then you get to know, oh, am I really doing this?" While the decision-making process is still undertaken in this category, it is considerably contracted and often glossed over. Since individuals aren't fully aware of the initial problems in need of a solution, they are also not able to fully consider the amenities and characteristics that might address those problems.

There are also a number of exogenous factors that affect the clarity and speed of the decision-making process beyond the trigger event itself. There were several individuals who participated in the focus groups who had undertaken a long-distance move; several of them had done so as a result of a cultural shift. Yet while this afforded them the reflection time that accompanies a cultural shift move as outlined above, the lack of familiarity with the specific characteristics and amenities of the new region (as compared with individuals who undertook a regional or local move) meant that those individuals were less able to effectively identify a well-suited location with the characteristics and amenities that they had identified in the *Contemplation* stage. More generally, it appeared that longer distance moves resulted in the prioritization of overarching characteristics, such as proximity to family or proximity to the beach and were less able to clearly identify an area that would

fulfill smaller-scale priorities, such as proximity to daily activities.

Spatial manifestation
This, significantly, brings up the overlap of the decision to move for both spatial and non-spatial reasons and the manifestation of that decision in space. The decision to move is invariably complex and includes a long list of factors, including economic, social and personal reasons. Yet the result is invariably rooted in space. How might we thus translate the role of space into the decision-making process?

Figure 2 below presents a simple model for thinking about the spatial manifestation of the moving decision. In the *Pre-Contemplation* stage, individuals start considering the overall region in which they might want to live. As outlined in existing literature on the subject, a regional shift is generally connected with a contemplation of overarching desired amenities. It is thus most pronounced for individuals undergoing a cultural shift: now that they have the opportunity to instigate a larger transition, what might their priorities be? As one participant explained: "Even though it's out of state and it's far away, you can do these things now that you've been waiting, you know, decades to be able to do." The *Pre-Contemplation* stage is notably less pronounced for local moves, as individuals who choose to move in their immediate vicinity generally have a more targeted, specific spatial reason for doing so.

The *Contemplation* stage, meanwhile overlaps with both the regional and general area decisions. Should individuals be in the dense city center? Or are they eager for a suburban location? Should proximity to public transit be considered? In the words of a participant: "Then it was, OK, now we really have to focus. But we still were thinking about -- is it Providence? Is it Portland? You know, is it Boston area? And looking at all of those, and there were just more options staying in the Boston area."

Figure 2. *Spatial manifestation of transtheoretical model of relocation decision-making.*
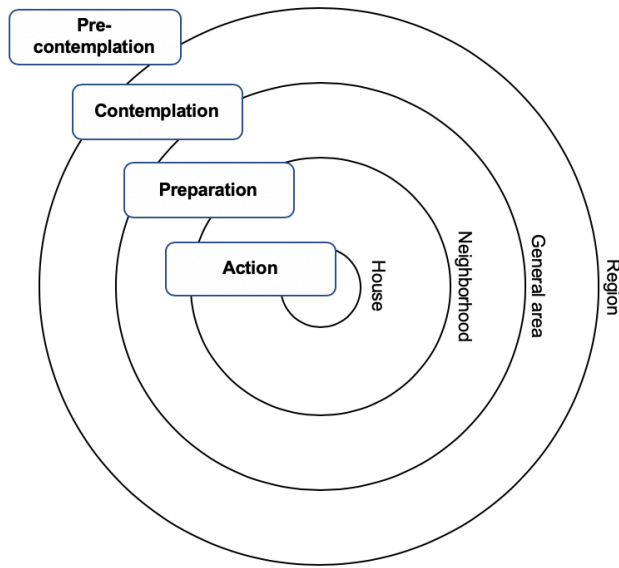
This thinking becomes more localized in the *Preparation* stage. At this point, individuals are actively thinking about where they might move and are exploring the neighborhoods that might best present the characteristics that they desire. "You grab a cup of coffee and you drive around and you bop into these places. You get a feel with walk -- neighborhoods on a nice day trying to get a feel of what the neighborhood was like and where things were, like a grocery store, or restaurant or whatever. And then we really just kind of narrowed it right down to a very small section."

And finally, in the *Action* stage, individuals identify the specific home to purchase within the neighborhood(s) that they have identified. Interestingly, this decision overlaps with both neighborhood and general area decisions because there are a lot of external influences that factor into the final housing decision that might result in individuals recalibrating their prior locational decisions, including (perhaps most importantly) financial limitations. While the process prior to this step can be fluid, focus group participants reported an *Action* process that was perhaps anything but fluid; it has the potential to rupture the prior steps taken. We will return to this in later chapters to explore how the importance of financial decisions and housing characteristics at the latest stage in the process interferes with key spatial decision-making—such as proximity to key destinations—prior to the move itself. "You know, we learned a lot about managing cash and things. And that whole context, you know, haunted us and made us think let's go a little slow. We don't have to go quick, you know. We'll make this work."

Conclusion and Implications

The above models will serve as a basis for the ensuing chapters; they offer a method of examining the motivations behind relocation and the process of making that decision to move. Chapters Two and Three, meanwhile, explore what sorts of features individuals are most eager to have in close proximity; and we return to the models examined in this chapter to attempt to understand why those features might not ultimately be manifested in the locations that individuals end up living.

It is perhaps surprising that almost all focus group participants expressed a willingness (and in some cases an eagerness) to move again. One might think that individuals who have selected a more optimal place to live—one more aligned with their current needs—might be eager to stay in that location. Yet it appeared that managing one move in some ways broke a barrier of fear; participants noted that moving seemed a lot less intimidating once they had their first big move behind them. And they, in turn, seemed much more in tune with what characteristics they would be eager to see in a new location were they to move again.

This arguably has significant implications for cities seeking to better serve existing populations—or ones eager to attract new individuals. Identifying the characteristics that are most appealing to older generations can help cities better design neighborhoods to align

23

with those desired characteristics. This is a concept that will be explored further in Chapter Four.

Further, the decision-making process outlined in Figure 1 identifies at which point in the process different factors might be considered. This is perhaps important for family members or financial advisors who might be eager to influence the decisions of the older adults considering the move. Family members, for example, might be wise to start a conversation during the *Pre-Contemplation* stage, in which individuals are first starting to consider their target region. Financial advisors, meanwhile, might be wise to engage prior to the *Action* stage, such as during the *Preparation* stage or even the *Contemplation* stage. An advisor might be able to better intervene and help steer individuals towards areas that might better align with their financial capabilities during those stages.

And, as will be explored in Chapter Four, older adults contemplating moving themselves might be wise to self-reflect what characteristics they are considering at which stage in the process. Certain factors such as financial priorities might loom large at the end and might undermine the prioritization of quality of life factors such as accessibility and proximity that arise earlier in the decision-making process.

Finally, when focus group participants explained their process for decision-making and the factors that they took into account, it is perhaps interesting to consider what subjects did not arise. At the very end of the focus groups, for example, the moderators conducted a speed round in which individuals listed the three destinations that they visited most frequently. The results included destinations such as restaurants, churches, and gyms. Yet none of those destinations had arisen earlier in the conversation. While these destinations play an important role in the lives of the participants, they didn't indicate active consideration of proximity to these destinations and the influence of these locations on the final moving decision, instead focusing on larger-scale (although perhaps less frequent) destinations. In subsequent chapters, I will be analyzing and examining access to these more frequently visited destinations and will explore more deeply the implications of not considering every-day accessibility in deciding where to relocate.

04

Exploring the Importance of Spatial Characteristics in Relocation Decisions

Introduction

Chapter Three explores the relocation decision-making process: how individuals experience the process of deciding to move and what motivates them to do so. Drawing on existing theory to offer a model for the mental process of making the decision to move, Chapter Three projects how this decision-making process might be manifested in space and how this might affect the prioritization of different factors at different stages in the process.

The following chapter will now explore the factors themselves. What are the built environment characteristics that might sway an individual's choice to relocate? And how do those factors relate to one another? I draw on a series of in-person focus groups and responses to an online questionnaire to delve into the motivations behind locating within a specific neighborhood.

I find that the density of the final destination (to which individuals move) is significant in understanding the factors that they prioritized in their move. Further, I find that the value of accessibility increases over time; that older age groups value accessibility more highly in relation to other factors as do their younger counterparts. And, significantly, across a wide array of demographic factors, age is most significant in determining what factors

individuals value most highly; that our preference for certain factors changes over time.

Methodology

This chapter applies a mix of both data sources and methods. The framework for the research relies on a list of 22 factors that individuals might consider when choosing to relocate. As discussed in the literature review, these factors were drawn from prior literature on the subject. In particular, they are based on a framework proposed by Despres and Lord (2005), which looks at older adults' housing decisions through the meta-concept of home. Despres and Lord break the meaning of 'home' into six different dimensions: psychological, social, economic, material, temporal, and space-time. Drawing from other spatial location decision-making surveys, such as the Centre for Cities Urban Demographics Survey, the following analysis divides spatial relocation decision factors among these six dimensions and supplements with additional spatial factors as necessary to ensure that all dimensions were accurately represented (Thomas 2015; Noemie et al 2018). A list of the factors and their dimensions can be found in Appendix A.

Devised and introduced by William Stephenson in the mid-20th century, Q methodology has been applied as a mixed qualitative/quantitative

research method in a wide range of research fields (Lee 2017). Q methodology is a data collection method in which participants rank order cards, each with a printed word or statement. Typically performed on small samples, it is important to note that Q methodology is intended to understand the dimensions of a subjective phenomenon from an individual's perspective. The goal is thus to better understand typologies and the dimensions behind decisions among individuals who share common viewpoints as opposed to offering the proportional distribution of opinions across an entire population (Lee 2017).

Over the course of two focus groups, 16 participants were given an envelope with all 22 factors and were asked to read through each of the factors and to create two piles: one with (ranked) factors that they took into consideration when deciding on their final location and the other with factors that they didn't take into consideration when deciding on their final location. They subsequently explained their rationale behind including each factor, before handing the ranked factors over to the moderators.

This QSort conducted among focus group participants was then supplemented with an online questionnaire disseminated to a large audience. Potential participants to the survey were screened according to whether or not they had moved in the past 5 years; 191 individuals who had indeed moved to the Boston Metropolitan Area in the past 5 years completed the survey. The questionnaire, as found in Appendix D, asked individuals to indicate the importance of each of the 22 factors on a Likert scale from "not important at all" to "extremely important."[1] It is important to note that this is a very different exercise than the QSort, which requires that individuals rank the factors and thus establish a relationship between the

factors; to prioritize among them. In the questionnaire, individuals were simply asked to indicate a level of importance to each individual factor. The way that the factors appeared in the online survey was randomized. The differences between the results of the QSort and those of the questionnaire will be explored at length below.

Sample

It is important to note that neither the sample for the focus group nor the sample for the online survey are fully representative of the general population. Appendix C offers an overview of the demographic characteristics of each group. As opposed to aiming to be definitive in their widespread applicability, the results of this thesis are intended to offer initial insights into potential trends that should be explored in greater depth with a more representative sample.

As noted above, two focus groups were conducted with a total of 16 individuals who had moved to the Boston Metropolitan Area within the past five years. 100 percent of the individuals who participated fall into the "Boomer" generation. The results from the online questionnaire, meanwhile, reflect 191 respondents from a range of age groups who had moved within the past five years. 57 percent of the respondents to the online questionnaire fall into the "Boomer" generation, which will be the focus of this analysis.

In examining the demographic characteristics of both the online questionnaire and the focus groups, albeit not representative of the generation population, the two groups evince similarities to each other. As explored in greater depth in Appendix D, both groups are skewed female (up to 75 percent), the majority listed

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[1] Based on feedback from participants, several of the factors included in the focus group QSort were changed for the online questionnaire. The option of 'taxes' was removed because of its lack of direct spatial applicability.

None of the factors which were changed across the two groups are included in the ensuing comparisons across the two.

their race as "White," and they are well-educated (in most cases, more than 50 percent of participants had a post-graduate degree). Interestingly, the number of divorcees among participants was surprisingly high, ranging from nearly 50 percent among focus group participants who had moved to suburban locations to less than 20 percent among the online questionnaire participants who had moved to suburban locations.[2] There was notably a mix of incomes across respondents in all groups.

Analysis

Location
Initial analysis of the factors that were prioritized among focus group participants and those prioritized among online questionnaire respondents proved incongruent. Figure 1 below shows the ranking of the factors among QSort participants, calculated based on the location of each factor on each participant's list of priorities. Figure 2, meanwhile, shows the average score across the online questionnaire respondents who fall into the "Boomer" generation, based on their indication of the level of importance for each of the factors enumerated. The rank correlation of the factors across the two lists is only 0.36.

As part of the focus group and the online questionnaire, however, participants and respondents had indicated the kind of location to which they had moved, classifying it as urban, suburban, or rural. An analysis of the scores as broken down by these locational distinctions tells a very different story from the overall score: the rank correlation of respondents who had moved to an urban location within the two groups was an impressive 0.61.

As indicated in Figure 3 below, there are distinctive similarities in preference among individuals who moved either to or within an urban area. The highest scores across both groups are connected to transportation or accessibility, such as Walkability, Access to Certain Modes of Transportation, and Overall Convenience. Interestingly, there is also largely agreement on the factors that are of limited importance relative to the other factors, such as Yard or Outdoor Space and Parking. These are factors that urban dwellers can't control; respondents might have cared less initially about these factors, which made urban areas a more natural fit.

It is perhaps interesting to consider whether individuals who have chosen urban areas emphasize a preference for the factors that describe their new residence so as to reduce cognitive dissonance; they are affirming their decision to move to an urban area in so doing. Urban areas are more walkable, so it might be natural for an individual to express a preference for walkability after moving to an urban area. Yet analysis of the results showed no difference among individuals who had moved locally as compared to individuals who had moved regionally. There are also a number of other factors on the list that might describe an urban area (such as size of house) where there is divergence across urban respondents in the two groups. Further, the willingness to move again that was explored in Chapter Three would seem to indicate that individuals are perhaps not seeking to affirm their choice of new location, but are quite open to moving again to better optimize their choice based on the flaws that they discover.

Finally, the greatest divergence across the two groups can be found in categories that are more abstract concepts, such as Independence, Safety and Quality of Life. I would argue that these divergences are a result of the difference in

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[2] Appendix C is broken down by urban and suburban demographic characteristics for both focus group participants and online questionnaire respondents as the

chapter explores comparisons across different locational categories.

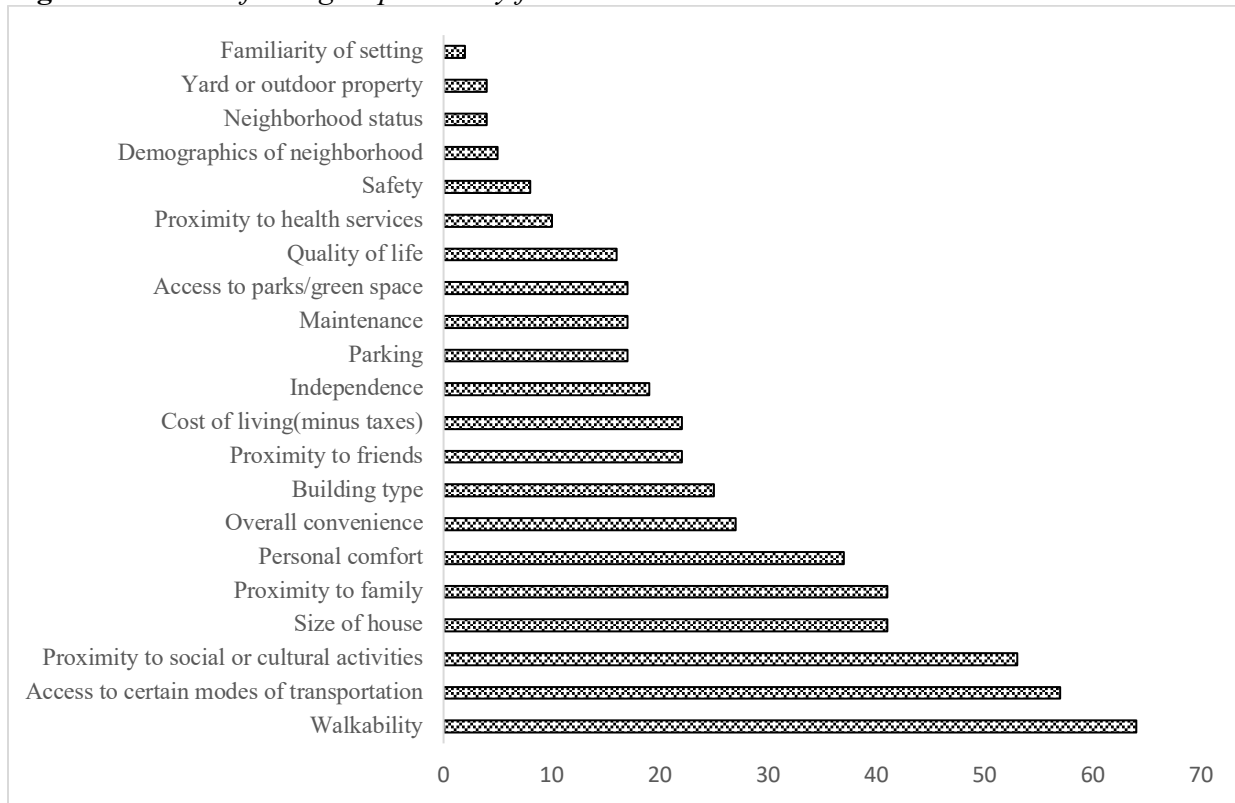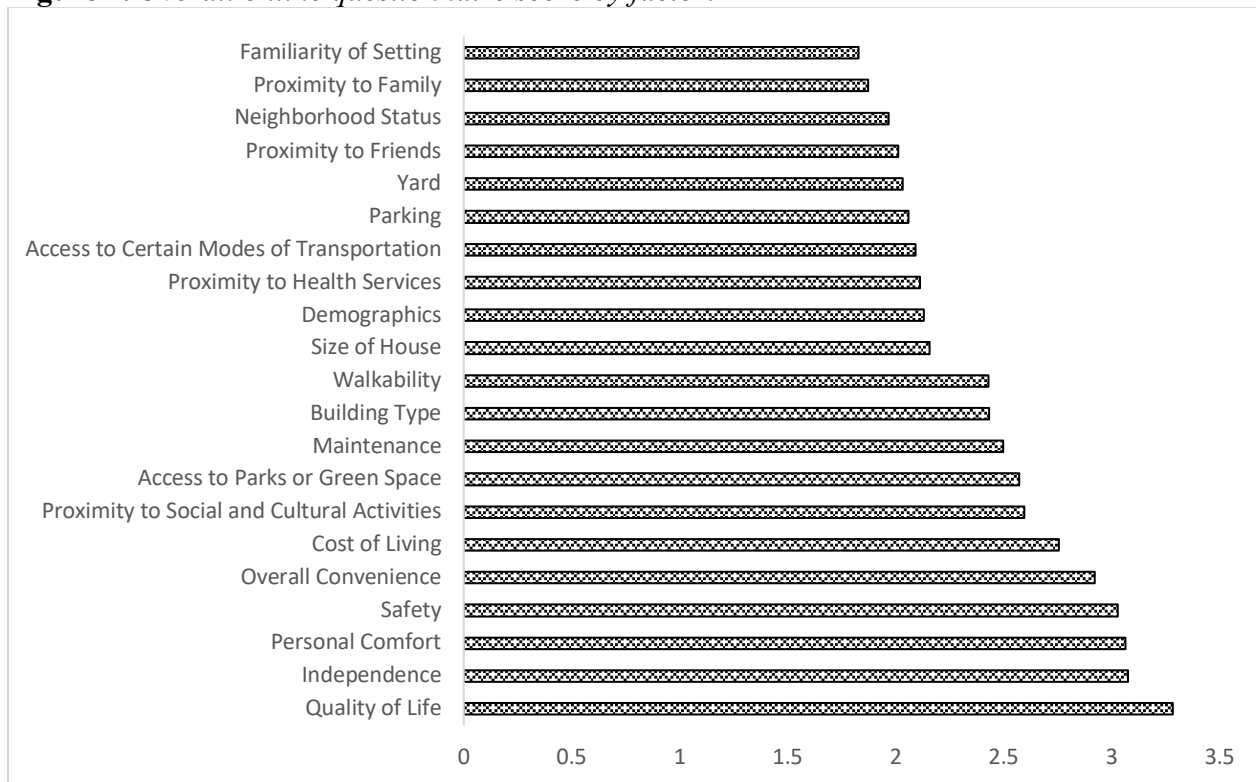**Figure 1.** *Overall focus group score by factor.*

Figure 2. *Overall online questionnaire score by factor.*

methods across the two surveys. Focus group participants often mentioned these in their narratives when explaining their ranking, but explained that in the context of prioritizing factors, they were subsumed by more direct, concrete factors that affected the decision to move. One focus group participant, for example, noted that Quality of Life "is to me very similar to Walkability." In other words, when forced to prioritize in the QSort as opposed to the general indication of importance within the online questionnaire, more abstract factors are subsumed by more concrete spatial factors; or they are replaced by a 'proxy' factor.

Yet, interestingly, the same agreement of the importance of various locational factors does not hold across suburban respondents among the two groups. As shown in Figure 4 below, there were significant disagreements between suburban respondents in the focus group and those who took the online survey. The rank correlation across the two was a meager 0.02.

Interestingly, the greatest divergence can be seen with regards to forms of transportation. Suburban online questionnaire respondents indicated that different forms of transportation were largely not very important to them when making the decision with regards to where to locate. This could perhaps be an indication that suburban participants in the focus group were swayed by their urban counterparts who vocally affirmed the importance of transportation in their final decisions. The greatest agreement can be seen in areas such as maintenance and cost of living (both of heightened importance) as compared to proximity to friends and neighborhood status (both of limited importance). Perhaps the prioritization of certain factors such as cost of living can lead a wide array of individuals to the suburbs with a diversity of preferences for other factors, including transportation. In other words, the predominance of certain factors in the decision-making process among those who settle in the suburbs might make for a mix of individuals

with more diverse preferences for other factors than their urban counterparts.

For the purposes of this thesis, I will focus on respondents who moved to urban locations in subsequent analyses. This is both a result of our ultimate end goal (to help municipalities better understand how to plan and design for different age groups) and the natural tendencies of our data. Nonetheless, I would recommend further research in the diversity of preferences expressed among suburban respondents. It is perhaps interesting to consider how the above findings relate to the Alonso-Muth-Mills model explored as part of the literature review. According to the model, those who value a shorter commute to the central business district (CBD) choose to pay a premium to locate closer to the CBD and those who choose a larger home or a lower cost of living locate further from the CBD, yet pay the additional price of a longer commute (Alonso 1964; Mills 1967; Muth 1969). So, too, we find that those who have chosen to move to urban areas value walkability and access to transportation, while their suburban counterparts value it less-so.

Nonetheless, it is important to note that the older adults surveyed are not necessarily seeking to be close to the city center (they do not need to access the jobs located there), but rather are seeking to be closer to other destinations that are more diffuse throughout the urban area, such as family or social activities. A dense transportation network in the CBD thus doesn't apply to their scenario, since they value proximity, but to different subareas within the urban network.

Age
The array of respondents to the online questionnaire allows for a deeper analysis of how preferences for different factors might differ across age groups. In order to explore the differences in prioritization across age groups, Figure 5 teases out the nuances of importance attributed to different factors across five

Figure 3. *Z-Score comparison of urban movers across focus group and online questionnaire participants.*
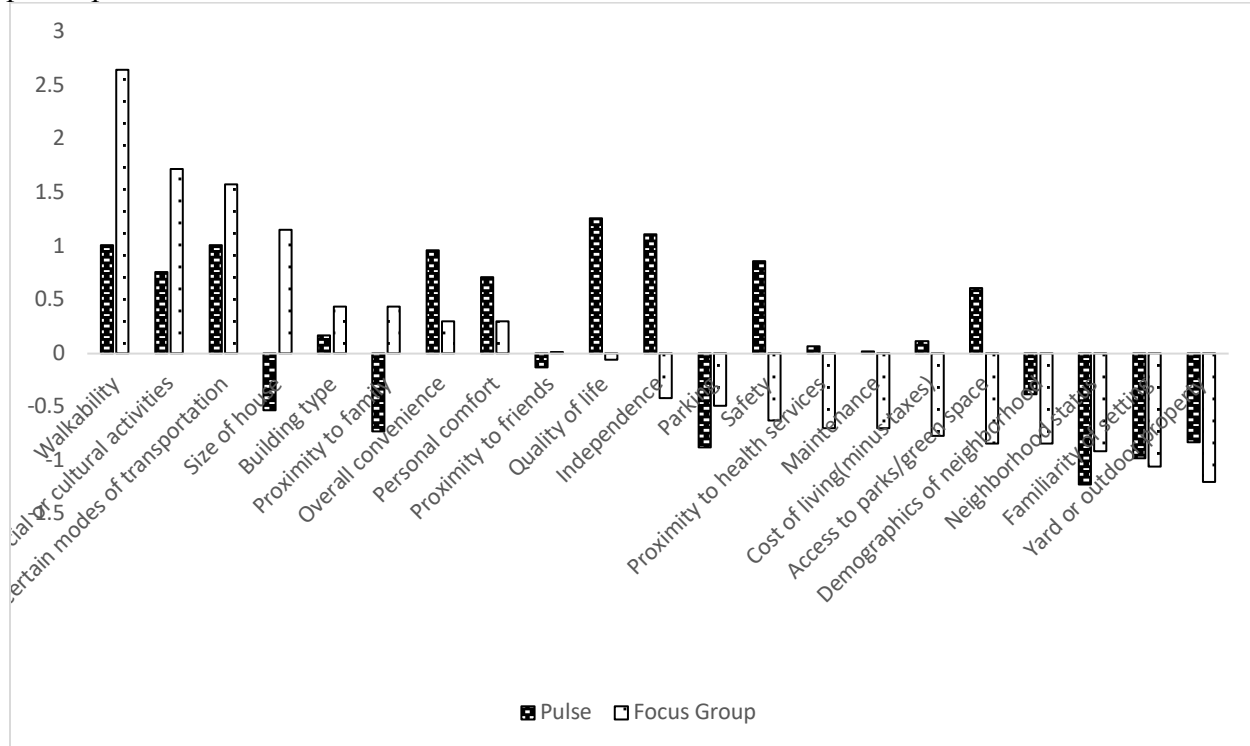
generations: Generation Z, Millennials, Generation X, Boomers, and the Silent Generation.

It is important to note that the average score given to all factors was higher among Generation Z respondents and among Boomer respondents. This finding is interesting in its own right: perhaps these generations consider a wider array of factors more seriously due to the luxury of more time and fewer clear priorities. Millennials and Generation X might be more focused on career development or family planning and thus prioritizing the factors that pertain to either or both. Yet for our research purposes, we examine the relative importance attributed to each factor within each age group. Further, for ease of analysis, we aggregate the factors according the dimensions of home as outlined by Despres and Lord (2005). A more extensive overview of the results can be found in Appendix E.

As shown in Figure 5 below, the relative importance of each dimension changes from

generation to generation. Unsurprisingly, economic factors prove significant for the younger generations. Interestingly, there is an overall parity of the different dimensions among Generation X respondents; no one dimension dominates, yet social is clearly the least important dimension as careers or immediate families are perhaps prioritized over proximity to friends or activities. Space Time, or factors related to travel, meanwhile, are most important for the Boomer generation and also prove significant for the Silent Generation. And, significantly, those generations also value the personal dimension, which includes proximity to health services and personal comfort.

Significantly, while the aggregated dimensions do indeed offer insights into the relative importance of different factors, they perhaps belie the nuances within each dimension; they have the potential to undervalue a dimension if one of the factors within that dimension proves less significant to that age-group.

Figure 4. *Z-Score comparison of suburban movers across focus group and online questionnaire participants.*
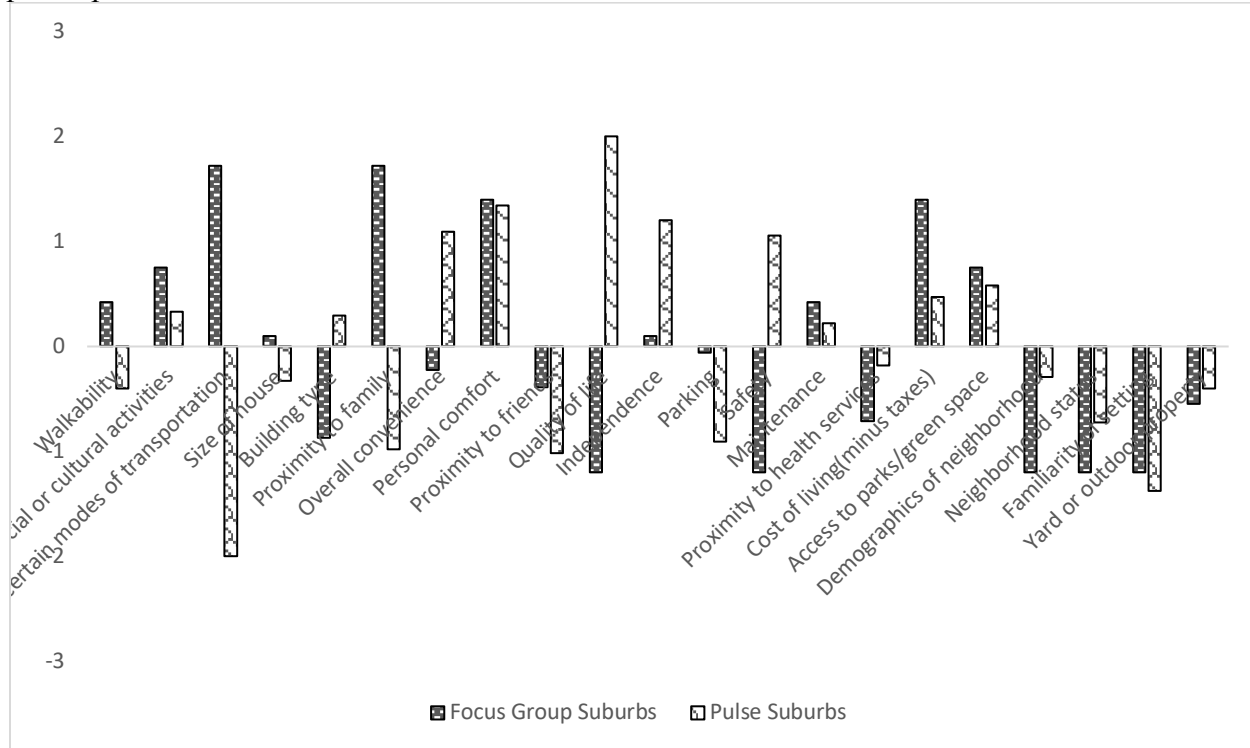

Appendix E thus shows a more thorough ranking of the different factors for urban populations across different generations.

There are a number of interesting trends that can be discerned from the more detailed enumeration of factors. Abstract factors, such as Quality of Life, for example, play a significant role across generations; it is perhaps natural to affirm the importance of Quality of Life, but it might not play a primary role if participants had in fact ranked the importance of factors as focus group participants were prompted to do. Interestingly, Proximity to Social and Cultural Activities grows in importance for the Boomer Generation and for the Silent Generation. As they grow older, individuals are interested in greater ease of access to activities, which, in turn, has implications for the locations of older adult-

oriented housing. Others' opinions, meanwhile, hold limited importance across generations.

Building Type evinces only limited importance for respondents from most generations, with the exception of Generation X. Generation X is perhaps most likely to be searching for housing large enough for a family. Nonetheless, focus group participants emphasized the lack of housing that fit their needs. As explained by one focus group participant, for example, "We were hoping to go to more of a one-level living situation, going out into the future, but we couldn't find the amount of space that we needed on one level." These sentiments were echoed by a number of participants in both focus groups. Perhaps this is thus not of great importance initially, but becomes more so when individuals are forced to identify the specific housing unit that they intend to purchase or rent.
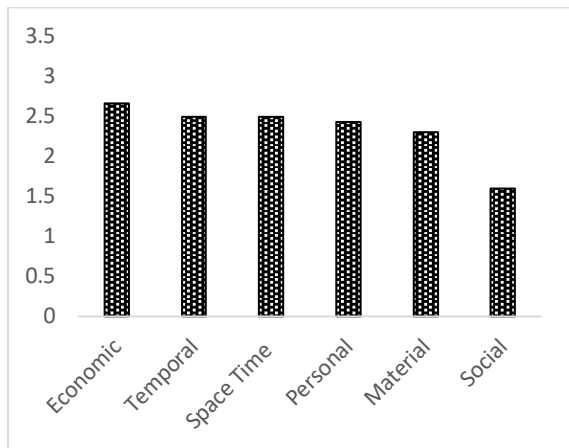
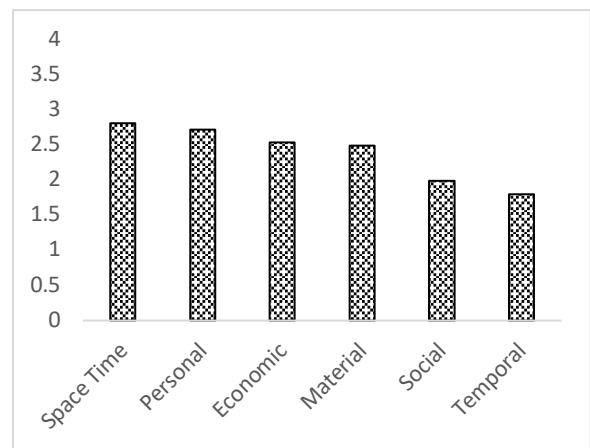**Figure 5.** *Average score for each dimension of 'home' across five age groups.*
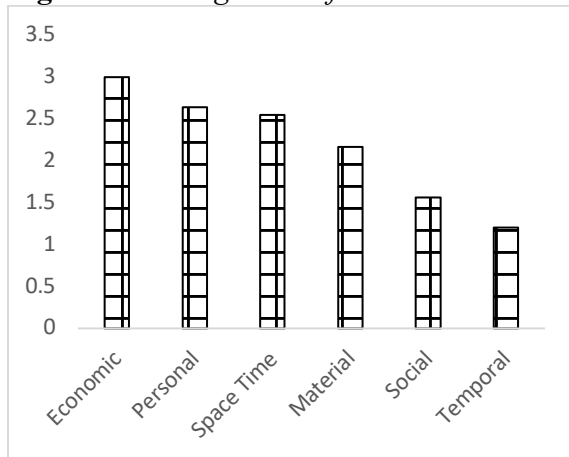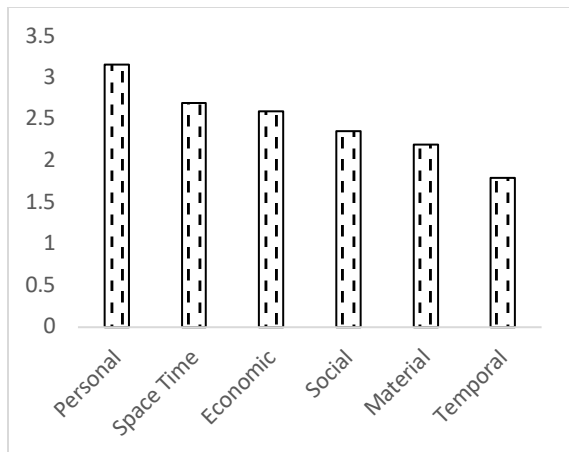

Generation: Gen Z
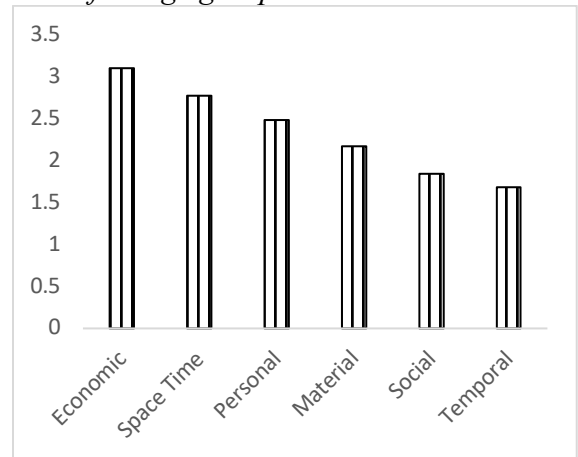
Generation: Millennial

Generation: Gen X

Generation: Boomer

Generation: Silent Generation

Demographics

An analysis of the demographic characteristic of respondents, meanwhile, allows us to delve a little more deeply into how demographics might influence the importance attributed to each factor. To explore this, we ran a regression model to determine if we could predict the

responses to each individual factor based on a wide variety of demographic characteristics, including age, gender, education, income, race, relationship status and household size. The full results can be found in Appendix F.

The results proved overall quite intuitive in many cases, thus perhaps undergirding the validity of the analysis.[3] A greater household size, for example, is associated with a lower value placed on such factors as neighborhood status and quality of life. In other words, individuals with larger families are more likely to prioritize locations where they can house their family, as opposed to nuances in the kind of neighborhood or in their lifestyle. Individuals who are employed full-time, meanwhile, place less importance on being close to family; they likely have less time for engaging with family members outside of their home.

The importance of greater access to certain modes of transportation, meanwhile, proved significant for individuals with higher education levels. Perhaps they have a greater number of destinations that they seek to access; or perhaps they place a higher value on alternative modes. Divorcees, interestingly, place a lower importance on proximity to social and cultural activities.

It is interesting to note that there were not many significant differences among older adults in the importance placed on the different factors based on gender. The correlation for the score attributed to walkability is significant within the regressions that were run across all generations: men are less likely to indicate a preference for walkability. This is born out among older adult men as examined in Figure 6, which shows the differences in the average score attributed to the different factors as divided by gender. Figure 6 also shows that men are less likely to place importance on Building Type, Access to Green Space, and Proximity to Friends as compared to

women. Nonetheless, the overall rank correlation across the two genders is an impressive 0.76.

It is important to note the specific factors for which age is significant, as outlined in the results of individual regressions. Independence, for example, is more important to retired individuals. The Silent Generation, meanwhile, is more likely to cite Maintenance as an important reason that they considered. Unsurprisingly, Proximity to Health Services is more important for both the Boomer Generation and the Silent Generation. And, interestingly, the Boomer Generation was more likely to indicate that the demographics of the neighborhood were important for them.

Discussion

There are a number of trends discussed above that are intuitive and others that are somewhat surprising. The finding that the importance placed on certain factors diverges by density of an individual's final location falls perhaps somewhere in between. Why do individuals who move to urban locations place a greater importance on certain factors and individuals who move to suburban locations place a greater importance on others? Does this divergence exist before the decision-making process begins? Or is there a compromise (or advantage) inherent in choosing to move to the urban context, for example, and thus individuals incorporate the natural characteristics of their chosen destination into their choice structure? Conversely, perhaps individuals who value certain factors more highly rationally consider their locational options and settle on the kind of area that best addresses those factors. The fact that there would seem to be much greater agreement among urbanites as to what factors they value might indicate that individuals who prioritize

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[3] Nonetheless, it would still be important to increase the sample size across different age groups and to increase the diversity of respondents in order to affirm the initial findings and results outlined in this chapter.

Figure 6. *Average score for each factor among older adults by gender.*
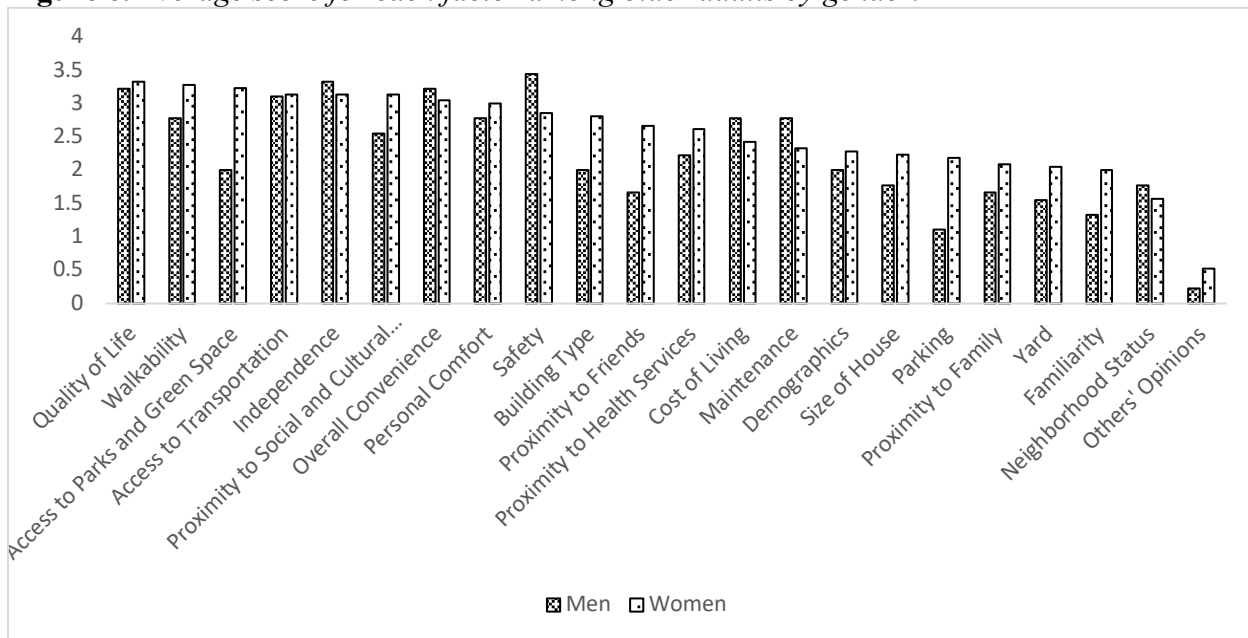
certain factors (such as access to transportation) choose to live in urban areas.

It is also interesting to consider the important role that age plays in individuals placing importance on certain factors over others in their decision to move. This is directly relevant for family members and financial advisors who are seeking to support and influence decisions to move. But it also helps city planners and designers to understand what approaches might attract populations of different age groups. Perhaps most specifically, the above findings offered a strong indication that accessibility and access to different modes of transportation is a priority for older adults and thus prioritizing the development of transportation infrastructure could serve both those age groups as well as younger ones.

It is important to note, however, that there are nuanced differences among the factors themselves when comparing across different age groups. Personal Comfort, for example, means something very different to an 86-year-old than it does to a 25-year-old. Similarly, Overall Convenience—an arguably catch-all term in the context of transportation—could be referencing much shorter distances for an older

adult as compared to a younger one. Conversely, older adults could be in fact willing to walk slightly longer distances due to travel during less congested times of day or as a result of more time to do so. This remains an area that is ripe for research: How do different age groups perceive urban amenities, proximity and, significantly, access? Nonetheless, the logic still holds that designers and planners would be wise to plan for the lowest common denominator. More directly, if a city plans for its most vulnerable populations, the resultant infrastructure will better serve all citizens.

Finally, it is perhaps interesting to consider the differences between the focus group responses and the responses to the online questionnaire a little more closely. Focusing on the urban respondents, while the correlation between the two groups was relatively high, there were indeed some differences. Might these differences be a result of the activities conducted by researchers and thus offer insights into at what point in the process individuals consider different factors? The ranking inherent in the QSort (completed by focus group participants) is perhaps more representative of the final stage of the decision-making process when different priorities have to be weighed

against each other. Simply ranking the importance of individual factors, conversely, is more similar to an earlier stage in the decision-making process in which one identifies potential priorities. More directly, the results that emerged as the highest priorities among focus group participants are likely more important later in the process, whereas the results that emerged as important in the online questionnaire, but were of lower importance among the QSort participants are likely more important earlier in the process.

Figures 7 and 8 below offer a potential framework for the manifestation of this phenomenon, based on the models developed in Chapter Three. In considering the progression of the stages as outlined in Figure 8, it is perhaps interesting to consider the important implications of the progression for spatial decision-making as outlined in Figure 7. Material and personal priorities play a more important role at the later stages of decision-making when individuals are more closely considering potential neighborhoods and homes themselves. As a result, those have the potential to have a greater influence on the final outcome, even if other factors (including accessibility) might be more important to the individuals making the decision or have a greater impact on the ultimate quality of life.

Chapter Five will explore the manifestation of the importance of walkability and accessibility to individuals who choose to move within urban areas. In doing so, we can determine whether individuals who have moved do indeed show a preference for those factors and, significantly, what other factors might play a role in subverting increased accessibility.

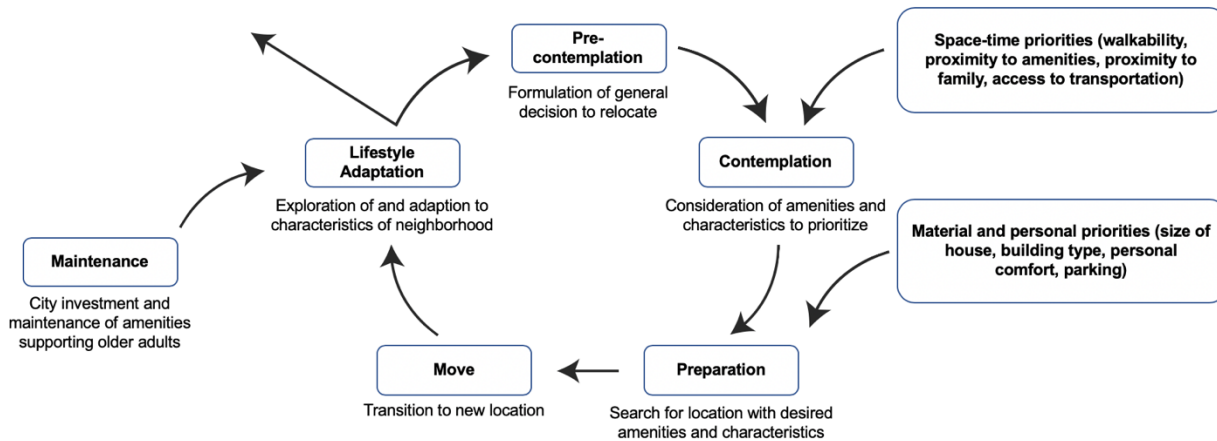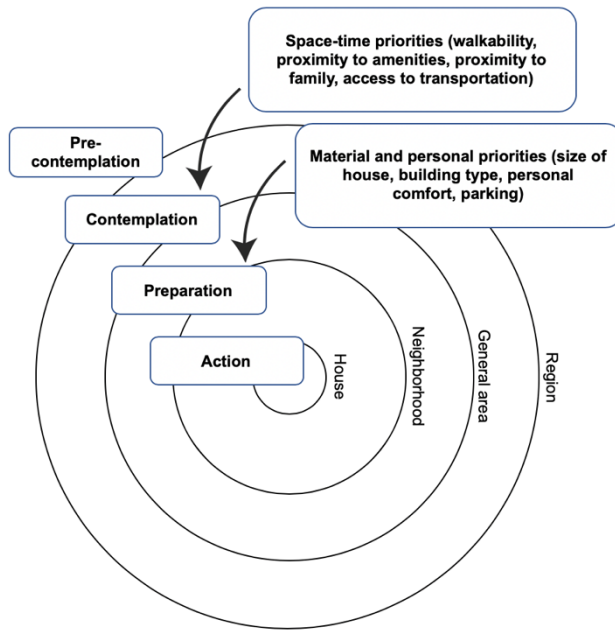**Figure 7**. *The role of spatial features in the transtheoretical model of relocation decision-making.*

Figure 8. *The role of spatial features in the spatial manifestation of transtheoretical model of relocation decision-making.*

05

Measuring Preferences for Walkability in the Boston Metropolitan Area

Introduction

Chapter Four explored stated preferences for features of the built environment among individuals who have moved within the last 5 years. These preferences, measured through a variety of methods, notably differed among urban and suburban individuals as well as across age groups. Access to transportation, walkability, and accessibility more generally featured prominently as priorities among older adults who had moved to urban locations.

These results supplemented the decision-making model outlined in Chapter Three to include spatial factors. We hypothesized that accessibility arose in the later stages of the decision-making processes, as individuals more closely considered the neighborhood scale. Based on this hypothesis, individuals who move to urban locations should thus prioritize greater accessibility, and therefore end up in more accessible locations.

This chapter explores exactly that. It asks: can one measure a preference for greater accessibility to certain destinations among older adults who have moved in recent years? It compares these individuals to the overall older adult population to determine whether or not individuals who have moved in recent years show a preference for accessibility over the general population. And then it examines how

this compares to other generations, exploring whether there are certain generations who have greater access to certain amenities by foot than do other generations.

While the population that chooses to move likely has differing characteristics from the population that choose to age in place, moving nonetheless serves as an interesting proxy to offer insights into what the population overall might be eager to access. And the analysis ultimately finds that older adults who have moved within the past 5 years are mostly likely to be within walking distance of the destinations examined.

This chapter first explores the existing literature on accessibility and transportation, explains the chosen methodology for measuring accessibility (and to which destinations), and then examines the resultant accessibilities across different generations.

Literature Review

Accessibility is an important concept for urban planners; it represents the possibilities of engagement with different activities and is therefore closely connected with quality of life. There is rich existing literature on the subject, with a diverse array of methods proposed through which to measure accessibility. Accessibility is inherently based on a

combination of land use characteristics and the transportation system; the spatial distribution of activities helps to determine one's proximity and the transportation system determines the efficiency of one's movements.

There are a number of different ways to measure accessibility. While the methods for classifying those measurements are nearly as diverse as the methods of measurement themselves, for the purposes of this research, I will be focusing on three main categories: cumulative opportunities, gravity-based, and utility measures. *Cumulative opportunities* measures simply count the number of opportunities that are reachable within a given distance or travel time. *Gravity-based measures*, meanwhile, add a cost to reaching those destinations, by weighing factors such as trip distance or the value of the destination itself. Finally, *utility measures* explore the probability of an individual choosing to go to a destination based on the utility of that trip and based on the utility of all potential trip and destination choices (Handy & Clifton 2001; Geurs & Van Wee 2004).

While methods for measuring accessibility have grown in intricacy and complexity in recent years with new methods, there is immense value in using a simple measure that is replicable for widespread usage. Yet a number of questions still remain in the quest to develop a practical method for measuring accessibility. First, what are the factors that matter most to individuals in terms of accessibility, and how do those differ across age groups? And how can planners disaggregate the inputs of an aggregated accessibility measure to understand how changes to different factors affect accessibility itself?

Accessibility, meanwhile, is being increasingly used as a tool to evaluate social equity (Fan et al. 2012; Ricciardi et al. 2015); authors are using accessibility as a way to show which populations might be receiving subtle benefits from policies and decisions on land use and

spatial planning. A number of studies thus look at accessibility for specific vulnerable populations (Di Ciommo & Shiftan 2017; Van Wee and Geurs 2011), arguing that certain destinations should perhaps not simply be equally accessible for all individuals, but perhaps even more so for vulnerable and dependent populations. These studies attempt to expand the existing focus of accessibility studies, which, in turn, is largely focused on accessibility to jobs—a feature that does not apply to the older adult population, for example.

Building on this, a number of studies examine accessibility as it applies to the adult population in particular. Julien et al (2015) look at the accessibility of older adults to recreational facilities, for example. Cheng et al (2019) build on this research to explore the walkability as a subset of accessibility to recreational facilities among older adults in China, arguing that walkability is essential to well-being.

There is also considerable research conducted into the travel habits of older adults. Studies have found, for example, that older adults do fewer, shorter trips per day than their younger counterparts, and that their trips are more likely to be of a social/recreational nature (Boschmann & Brady 2013; Chudyk et al 2015). Others have found that older adults complete a higher proportion of trips as a passenger and by foot, and that their trips tend to be early in the day and during off-peak hours (Marble et al 1973; DiPietro 2001). These features are of course different from the activities of younger populations, and thus accessibility measures intended for the general population arguably have more limited relevance to older adults.

In order to address the resultant gaps in the literature, this thesis focuses on a narrow aspect of accessibility as optimized for the older adult population. It explores accessibility to specific destinations that are desirable for older adult populations and examines accessibility

specifically through the lens of walkability, both as a result of the benefit of walkability for the older adult population as well as the desire that older adults expressed for greater walkability explored in previous chapters.

Methodology

As outlined above, this chapter examines a narrow aspect of accessibility tailored towards the needs of older adults. The destinations to which to analyze accessibility were selected based on responses collected from focus group participants and online survey respondents. Each older adult was asked which three destinations they visit most frequently. The results were standardized and the seven most frequently cited destinations were selected: bars, churches, cultural activities, shopping destinations, gyms, grocery stores and restaurants. The data of the locations of those potential destinations was collected from ESRIs's Business Analyst service.

The method of access chosen, meanwhile, was by foot. As outlined in Chapter Four, walkability was the neighborhood characteristic valued most highly among urban movers, indicating a desire to be able to access key destinations by foot. Further, the importance of walkability increases with age, as individuals are more limited in transportation alternatives; driving and public transit use both become more challenging as adults age. Finally, we are most interested in how older adults related to their immediate neighborhoods and what characteristics might draw them to those neighborhoods. Walkability allows us to focus on the more immediate scale to better understand how individuals might relate to their more direct environment.

The analysis was notably conducted within the city limits of Boston. Focus group participants and online survey respondents live in the Boston Metropolitan Area, making the city the natural choice for an accessibility analysis. Data

was collected from InfoGroup on the residential locations of all individuals residing in Boston and broken up by age group. The older adult age group was then further divided among individuals who had moved within the past five years and the older adult population as a whole.

The accessibility analysis was conducted using Urban Network Analysis (UNA). The UNA Toolbox allows for examining walkability along a network of streets as opposed to relying on a buffer that perhaps belies the complexity of access along a street network. The analysis relies on a gravity-based measure: destinations were weighted by the number of destinations accessible, with the added cost of distance decay. The beta used for the gravity measure was 0.02, which would indicate a very limited willingness to walk. This is a very conservative choice, but nonetheless offers insights into what individuals choose to have in their immediate vicinity. There are opportunities for future research to explore accessibility based on a greater willingness to walk; this could perhaps include interviews with older adults at different destinations to determine how far they walked to get there. There is the potential that older adults are in fact more willing to walk longer distances, unlike the assumptions made in this analysis and for most analyses examining usage of transportation modes among the elderly.
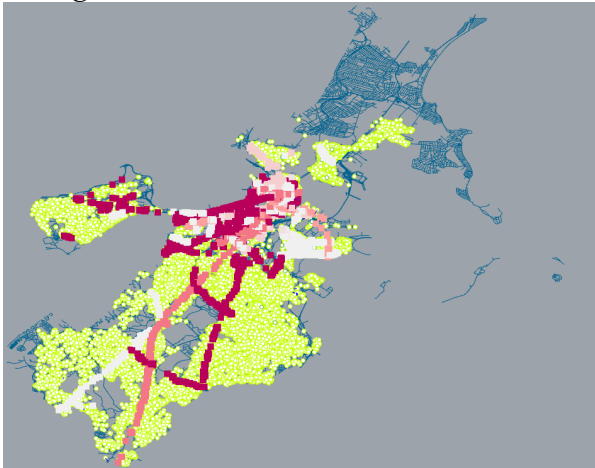
The accessibility analyses were run for each age group separately, as well as for the older adults who had moved within the past five years. Examples of results can be seen in Figures 1 and 2 below.

Findings

Older Adults: Comparing movers to the general older adult population
As explored in the methodology section, the analysis relied on a very small beta value, which heavily weights the impact of distance; the results are thus representative of the accessibility to locations that are in the

Figure 1: *Walkability to cultural activities among Older Adults.*

Figure 2*: Walkability to restaurants among Generation Z.*

immediate vicinity of the individuals considered. Figure 3, below, shows the average number of destinations within immediate walking distance across the seven categories of destinations for individuals who have moved in the past five years as compared to the general population. Almost all categories indicate a slight increase in the number of activities in proximity for the individuals who selected to move, but the measure is not statistically significant. Thus, there is a subtle indication towards a preference to be in greater proximity to a greater number of destinations among individuals who have moved.

Figure 4, however, shows the results of the percentage of individuals who are within

immediate walking distance of at least one of the destinations investigated. The results are impressive: there is a much higher percentage of individuals who have moved in the past 5 years who are close to at least one destination than the average population—and this holds for each of the seven categories that are explored. This strongly indicates a preference for greater accessibility among individuals who have moved in recent years.

Intergenerational location: Comparing across generations
The above findings become perhaps more interesting when compared across different generations. As discussed in Chapter Four,

Figure 3. *Average number of activities within immediate walking distance.*

Figure 4. *Percentage of individuals with at least one activity within immediate walking distance.*
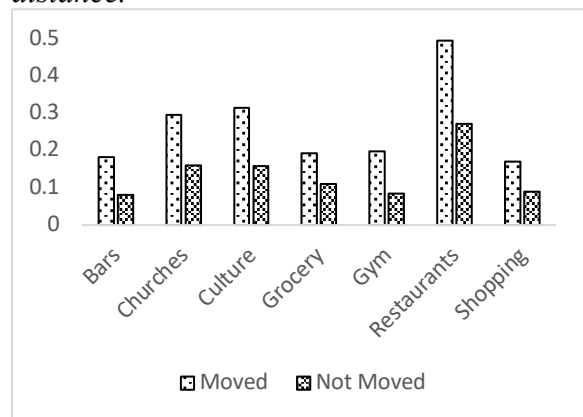
older adults indicated a stronger preference towards accessibility and proximity to transportation as compared to other generations. Yet this begs the question of whether they actually ultimately have greater access to their desired destinations. Figures 5 and 6 explore exactly that; they show the percentage of individuals in different age groups with access to at least one of the listed destinations in close walking distance. Figure 5 shows that the overall elderly population has a significantly smaller proportion of individuals who are close to at least one of the explored destinations. Individuals from Generation Z are the most likely to live within walking distance.

Figure 6, conversely, offers the comparison across generations focusing only on older adults who have moved in recent years. In this comparison, older adults are in a situation quite similar to members of Generation Z; at times they even surpass Generation Z in the percentage of individuals within the generation who have access to the enumerated destinations.

It is important to consider the reasons why there might be such clear differences across generations. Generation X, as shown in Figures 5 and 6, is comparatively less likely to live within walking distance of the enumerated destinations. This is likely a result of lifestyle at their current stage of life: they can perhaps afford cars moreso than younger generations and are in need of more space for raising families in exurban locations. Generation Z, meanwhile, is more likely to live in a dense urban center; they have a lower likelihood of having a car and smaller space needs. Older adults are in many ways similar to Generation Z: they are in need of less space and have expressed a preference for proximity (and a greater need for alternative modes as they age).

This is born out in the results among individuals who have moved; yet the results for the overall adult population are very different. The findings regarding the average number of

destinations close at hand, meanwhile, are perhaps less clear (Figures 7 and 8). While they generally track the above results, there are more muted differences across generations. This perhaps indicates that there is less value placed on increasing the total number of possible accessible destinations; it is in many ways a proxy analysis for a preference for density. Rather, there are more distinct differences in having a least one location in walking distance, which offers more insights into a preference for walkability.

There are of course limitations to the above findings. There are many different angles that one could explore as part of an accessibility analysis, for example. This particular analysis focuses only on walkability as discussed above; yet there are many different modes that one could use to access the aforementioned destinations. Perhaps different generations differ in their choice of mode to reach key destinations. Nonetheless, the focus of this analysis is in choice of characteristics of one's immediate neighborhood and walkability offers a strategic initial tool to measure exactly that.

There are also notably other reasons that might explain the differences of location choice among individuals who have recently moved and the overall elderly population. Perhaps the movers are wealthier, for example, enabling the move to more desirable areas; or perhaps they have a different set of preferences from individuals who choose to stay in place. This would be an important area to earmark for further research.

It is also important to note that the destinations chosen for this particular analysis are based on responses given by older adults. They are thus tailored to be most appropriate for the older adult generation. The greater accessibility among younger generations might be more pronounced should the destinations be different. Nonetheless, many of the enumerated destinations would seem to logically align with what other generations might be eager to access as well.

Discussion

The above findings show a clear preference for walkability among older adults who have moved in the past five years: there is a higher percentage of individuals who have moved in the past five years who live in immediate walking distance of key destinations such as churches, gyms, and grocery stores as compared to the overall older adult population. This, in turn, undergirds the stated preferences investigated as Chapter Four. Older adults moving to urban destinations listed walkability and proximity to transportation as particularly important for them in considering where to move.

This has a number of policy implications. First and foremost, it would indicate an obligation for municipal governments to ensure the walkability of their older adult citizens. This could be encouraged through innovative zoning policies that attract key destinations to areas with a higher percentage of older adults. It could similarly be manifested through investment in walking and transit infrastructure.

There arguably is both a positive and a normative mandate in this scenario: older adults have expressed a preference for walkability and there is also immense value in increasing the walkability for older adults for health reasons.

Figure 5. *Percentage of individuals with at least one activity in immediate walking distance (overall elderly).*

Figure 6. *Percentage of individuals with at least one activity in immediate walking distance (recently moved elderly).*

Figure 7. *Average Number of Activities within immediate walking distance (overall elderly).*
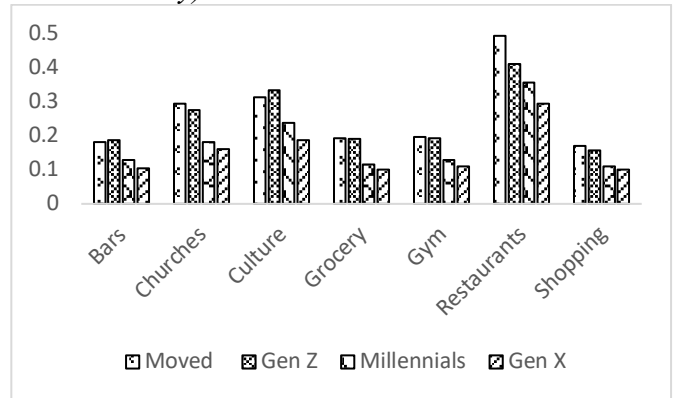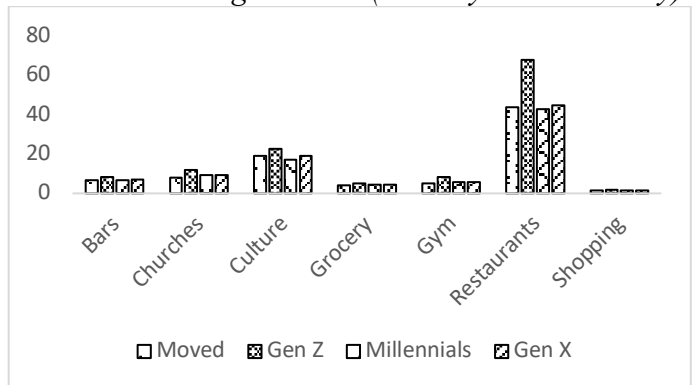

Figure 8. *Average Number of Activities within immediate walking distance (recently moved elderly).*

These findings also beg the question as to why more individuals don't move to more accessible areas; or why the individuals that choose to move don't end up in even more accessible areas than the ones they select. While this is an area ripe for further investigation, initial analysis of responses within our focus groups indicated that this might be the result of limitations of the housing stock in urban areas. Participants noted that the affordable existing housing stock was unfit for aging and they weren't able to find appropriate housing for their needs in the proper price range. It is thus important for cities to work to increase the affordable housing targeting senior citizens in more walkable areas.

It is also perhaps interesting to consider the destinations themselves as investigated in the above analysis. They were enumerated based on answers given by participants as to what destination they access most frequently. Yet the destinations that arose in response to that question did not otherwise arise in the focus groups. Instead of speaking about the importance of proximity to the grocery store, focus group participants instead focused on things like proximity to family or the housing itself. While we see a clear preference for

greater accessibility to these destinations in the above analysis, it would be interesting to explore further how salient they were in the decision-making process, given that they were not salient during the focus groups.

This analysis is in many ways a first step in a larger analysis. There are many aspects that could be investigated further. It would be important to better calibrate the beta value of the gravity measure to better align with older adults' willingness to walk, for example. Similarly, it would be interesting to conduct a cluster analysis of the older adults who have moved in recent years and in doing so to more closely explore the characteristics of the neighborhoods in which they show a preference for settling. Might that offer more insights into what sorts of destinations they would like to be closest to?

Further, it would be valuable to conduct the above analysis in a more suburban location. How might the experience of older adults in the suburbs differ from their urban counterparts? And, of course, there would be value in conducting more expansive accessibility analyses that include public transit and car access.

06

Conclusion

This thesis explores locational preferences among older adults who have recently moved using several different analyses in pursuit of answering a diverse array of research questions. Yet its overarching goal is to better understand the factors that older adults incorporate into their relocation decision-making process and to use those factors, in turn, to better understand their spatial needs—and to thus offer tools for municipalities to improve the overall quality of life of this key population.

Why is it important to think about the quality of life of older adults? Older adults make up a growing percentage of the overall population, particularly in urban areas. In Boston, for example, 14 percent of the current population is above the age of 60 and projections estimate that older adults could make up as much as 25 percent of the total population by 2030 (Mutcher et al 2014).

And, significantly, this population of older adults has different needs and preferences as compared to their younger counterparts: they generally do not commute to jobs and they are seeking to reach different destinations. Yet urban analysis and planning today largely assumes a homogeneous population with homogeneous accessibility needs.

This thesis thus seeks to offer a methodology for understanding the needs of a more vulnerable population and strategies for designing a city to better suit those needs.

Key Findings

Chapter Three draws on insights gleaned from in-person focus groups to offer a model for the relocation decision-making process. It explores and expounds on the mental process that grows in clarity as individuals progress towards the decision to move and finds that this parallels a narrowing of space with regards to what scale individuals are considering at which point in the decision-making process. There are a number of different events that initiate the decision-making process, including cultural shifts, tragic events, and solution-first conundrums. Yet once entered, individuals are likely to 'relapse' and move again. Should municipalities be eager to halt this process (in order to capture the population that has chosen to move to within its borders), they would be wise to offer the infrastructure and amenities that are valued by this growing population.

Chapter Four subsequently explores the stated preferences of individuals who have recently moved in order to understand what factors they considered throughout the decision-making process. An analysis of an online survey of

recent movers indicates that age plays an important role in determining which factors an individual values most highly when considering moving. Younger adults take economic factors most into consideration, for example, whereas older adults value transportation-related factors most highly. Older adults are more likely to cite independence, maintenance and proximity to health services as factors that they took into account as compared to their younger counterparts. And a desire to be close to social and cultural activities increases progressively across respondents of different generations. The analysis also finds that there is heterogeneity of preference across older individuals who select an urban location as compared to a suburban one—that urban dwellers value transportation-related factors most highly.

Finally, Chapter Five explores the situation on the ground within the city limits of Boston. Given the findings from Chapter Five that older adults have a preference for walkability, Chapter Five explores whether this preference is manifested in reality. It thus compares walkability in Boston across generations as well as among older adults who have recently moved and the older adult population as a whole. The preference for walkability outlined in Chapter Five is indeed born out among older adults who choose to move: they have on average greater accessibility as compared to the older adult population as a whole. Yet the older adult population as a whole boasts a far smaller walkability as a generation as compared to their younger counterparts. This begs the question: if we know that older adults value walkability even more so than younger generations, then why do they live in less walkable destinations?

One way to address this question is through a deeper analysis of heterogeneity of preferences. The findings throughout this thesis affirm that individuals from different generations value different factors when considering where to move to. As a result, planning for a homogeneous population will not effectively address the needs of each generation; rather this

finding would indicate that planning departments would be wise to adopt a multi-pronged strategy targeting the needs and desires of different age groups.

It is perhaps most interesting to think about this from the perspective of infrastructure built in support of a monocentric city. Following along the lines of the Alonso-Muth-Mills Model discussed throughout this thesis, many urban areas focus their transportation infrastructure on the dense central business district, which attracts a higher density as a result of its greater concentration of jobs. Yet the resultant transportation infrastructure best serves individuals seeking to reach jobs—and not individuals with other destinations in mind.

In fact, an exploration of the factors that are preferred by older adults would indicate a preference for more spread-out locations—ones that are largely not centered in the urban core. If an older adult wishes to be close to friends and family, for example, they are likely not seeking transport to the urban core, but rather to locations closer to the fringes of the urban area. They would thus be underserved by a transportation network that prioritizes movement to the urban center.

It is perhaps also interesting to consider the implications of a job-focused urban core on the existing housing stock. According to focus group participants, many older individuals who are eager to live closer to the urban core are limited by the senior-friendly housing options available. Many older adults, for example, expressed a preference for greater proximity to cultural and social activities, many of which would indeed be located in the urban core. Yet as the housing stock is targeting a different demographic, it is unable to serve the needs of an older adult population.

Recommendations

To address these existing challenges that are limiting older adults from experiencing greater

walkability and accessibility in urban areas, there are several different strategies to consider. One is of course to thicken the transportation network to make it easier for older adults to move to the destinations that they want to access. Another, significantly, is to think about existing land use strategies and how those might be revised in order to bring the origins and the destinations of older adults closer together.

Transportation solutions
As discussed above, older adults are not looking to travel to job centers or to access the same destinations as younger adults. Rather, a deeper analysis indicates that older adults are eager to access social and cultural activities, as well as subcenter destinations such as gyms, churches, and restaurants. Serving these needs would require a transportation infrastructure that is not monocentric, but rather thick and more diffuse.

Municipalities would be wise to closely consider these divergent transportation needs of older adults. They travel at different hours of the day (generally off-peak), have different needs accessing the modes of transportation, and have different routes as compared to their younger counterparts. How might it be possible to supplement the existing transportation system or sidewalk infrastructure to better serve these needs?

This is perhaps an interesting case for alternative forms of transportation used to supplement the existing system as opposed to simply increasing service as part of the legacy system itself. One option might be a targeted autonomous vehicle experimentation. Older adults are looking to travel in less dense parts of the urban area, which are naturally better-suited for an autonomous vehicle route as compared to the pedestrian-dense urban core. Further, the autonomous vehicle could offer more flexible service during the times of day most convenient for older adults—this could serve as an

addendum to the existing fixed transit system catered to the needs of older adults.

Conversely, these needs could be addressed through an optimization process of bus routing that takes the needs of this particular demographic into account. Or it could involve simply prioritizing sidewalk infrastructure build-out in areas that boast a high percentage of older adult inhabitants.

Land use solutions
Yet instead of simply making changes to transportation to ease access, access can also be improved through changes to the land use system. The analysis in Chapter Five finds that those who move choose to relocate to areas with greater proximity to the destinations that they visit most frequently. This, more directly, indicates a preference for greater proximity to those destinations. Municipalities should thus perhaps consider encouraging more diverse land uses in areas where those older adults who haven't chosen to (or haven't been able to) move currently reside. This could be done through zoning policies, for example, that incentivize a greater land use mix in those areas.

Conversely, there might be a greater demand for individuals to move closer to the urban core than is currently acted upon. One limitation that arose continuously throughout the focus groups was the existing housing stock. Participants emphasized that it was difficult to find senior-friendly housing in the areas that they wanted to live. Municipalities would thus be wise to consider incentivizing the building of senior-friendly housing stock in more accessible areas to satisfy this demand.

Other Stakeholders
As discussed at length above, municipalities are the prime target of this research. The goal is to offer strategies for cities across the globe to better understand the needs of their older adult populations and to use this understanding either to attract a greater number of older adults to

their cities or to improve the quality of life for existing populations. Nonetheless, in addition to the policy implications discussed above, there are a number of other stakeholders for whom these findings might offer tools and strategies.

One key stakeholder in this process is, of course, older adults themselves. The analysis throughout this thesis aims to break down the decision-making process of relocation decisions and to establish different locational priorities among individuals who have decided to move. The findings hopefully offer tools for self-reflection—a method for better understanding how one might approach the decision-making process in the future. And in understanding which factors arise during which parts of the process, older adults may be able to better control and plan for factors that traditionally arise later in the decision-making process.

The family members of older adults also have a strong interest in better understanding both the decision-making process as well as what factors older adults value most highly when considering where to move. Breaking down the decision-making process offers a clear framework from which family members can develop a strategy for intervening in or supporting the moving process. It might be wise for family members, for example, to step in during the pre-contemplation or contemplation stage should they be interested in better steering the larger-scale locational decisions. Conversely, understanding the factors that older adults most desire about their ultimate neighborhood means that families can help steer older adults towards locations that can help them achieve those factors.

Finally, there are a number of other individuals and companies that might have in interest in better understanding the moving decisions of older adults. Financial advisors, for example, are often tasked with determining the financial feasibility of moving decisions. Were they to intervene earlier in the decision-making process and were they to understand what factors older

adults prioritize, they might be able to more effectively steer the process in a direction that is both financially feasible and achieves the goals of their clients. Real estate developers, meanwhile, might examine this research and consider expanding their housing stock in mixed-use areas to cater to older adults.

This thesis finds, in short, that older adults who relocate decide to move to areas with greater walkability and greater access to different modes of transportation. Yet the walkability and accessibility in areas where the general older adult population currently lives is more limited as to the accessibility enjoyed by younger generations.

Contribution

This thesis contributes to the existing literature on a number of different fronts. One of its main goals is to offer a methodological strategy to better understand the role of different built environment characteristics in relocation choices. While a number of different fields offer tools to better understand this complex decision-making process, they largely operate independently from one another. This thesis thus strives to marry the many pertinent fields through a rigorous literature review and a mix of qualitative and quantitative methods. It is only through a complex and integrated process that we can start to better understand how the built environment is built in the minds of citizens.

As outlined above, there is also immense value in the empirical findings of this thesis for a wide variety of stakeholders. Understanding the nuances within heterogeneity of preference among different groups of citizens is a first step towards better serving all segments of a population. These findings also offer the tools for cities to start prioritizing infrastructure investments and attracting new populations that might be underserved by existing built environment characteristics.

Further Research

As with all forms of research, this thesis sparks a number of additional research questions that are ripe for further investigation. Building on the findings in Chapter Four, it would be valuable to attempt to replicate these findings in different cities, both in the United States and abroad. Do urbanites share similar priorities on a global scale? Or do individuals from different cities value characteristics more closely associated with their specific metropolitan area? Further, it would be interesting to refine the decision-making model with a deeper investigation into differences between individuals who have moved locally (within the same city) and individuals who have moved regionally or cross-country. There could be more deeply seated differences among individuals with differing familiarities of the local context.

This model could be further refined by teasing out the nuances hinted at in the differences between the QSort results and the online questionnaire. Might it be possible to more accurately determine the sequence with which individuals consider specific spatial characteristics when making the decision to move? This, in turn, could help to refine the spatial model proposed in Chapter Three to better represent the interplay of different scales in the decision-making process.

Chapter Five, meanwhile, serves in many ways as the tip of the iceberg for walkability and accessibility analyses targeting older adult populations. It would be valuable, for example, to better calibrate the beta value used in the gravity measure to more accurately reflect willingness to walk among older adults. This could be done through interviews with older adults at transit stations, inquiring after their origin and using those findings to calibrate a more accurate beta curve. It would also be interesting to conduct a cluster analysis of the individuals who have moved within the past five years in the Boston Metropolitan Area and to complete a more thorough investigation of the characteristics of the neighborhood in which dense clusters of individuals chose to locate. This, in turn, could evince shared built environment characteristics across different clusters. Further, as mentioned in Chapter Five, there is the opportunity to expand the accessibility analysis to include other modes as well, such as transit or car access. This could offer a more complete picture of the number of destinations that are comfortably reachable for older adults and their younger counterparts.

Finally, there is the opportunity to use the findings to offer more extensive and detailed policies and regulations aimed at improving the quality of life of older adults. It would be valuable to offer concrete strategies to prioritize infrastructure development or incentivize the development of senior-friendly housing options in key areas.

As the older population in cities continues to grow, it is important that municipalities consider the needs of this demographic. As there is a clear preference for accessibility, it would be wise for cities to prioritize expanding walkability and accessibility for older adults throughout city limits. There are a number of ways to achieve this ranging from thickening the transportation network to creating incentives that encourage a greater mix of land uses in areas with a higher density of older adults.

And a greater accessibility for older adults, in turn, promises to increase accessibility for a city's population more generally. If effectively enacted, these changes ultimately have the potential to improve the quality of life—and perhaps even longevity—of this growing and vibrant population.

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APPENDICES

APPENDIX A

Dimensions of home and their affiliated spatial factors

Space-time dimensions
- Walkability
- Access to certain modes of transportation
- Overall convenience
- Parking

Personal/Psychological
- Personal comfort
- Independence
- Quality of life
- Proximity to health services
- Neighborhood status

Economic
- Cost of living (minus taxes)
- Taxes

Social
- Proximity to family
- Proximity to social or cultural activities
- Proximity to friends
- Demographics of neighborhood

Material
- Size of house
- Building Type
- Maintenance
- Access to parks/green space
- Safety
- Yard or outdoor property

Temporal
- Familiarity of setting

APPENDIX B

Focus group guide

5 mins. Welcome and ground rules for the group

Thank you so much for joining us today. We'll start by introducing ourselves and giving you a sense of how this session is going to go.

- **Goals:** Understand the aspects of your neighborhood that helped you to choose where you wanted to live during retirement.
- **Ground Rules:** Be yourself – we want you to be open and honest. We are here to learn from you about your thoughts and experiences. We know that everyone has different motivations for living where they do and so there is no one right or wrong answer or approach in our conversation today – we just want to hear your thoughts perspectives.
- **Recording:** We will be recording this session so that we can review tonight's discussion later. Please speak one at a time if possible so that we can hear everyone's comments on the audio. These recordings will only be used for transcription purposes and will not be shared with the public.
- **Overview:** We will be covering a few different topics over the course of the evening. We'll start by getting a sense of how you started to think about where to move and then we will dive into the factors that helped you choose the specific location that you chose to move to. And we'll ask about any reasons as to why you maybe wanted to move away from your old neighborhood. Are there any questions before we get started? Great, let's dive in…

- **5 mins. Introductions**
  - 1st round: Name, age, where do you live right now? Where did you move from?
  - 2nd round: What is your favorite part about your current neighborhood?

- **10 mins. Macro vs. micro: what comes first?**
  - **Show of hands.** Who decided to move:
    - 1. Within the same neighborhood
    - 2. Within the same city
    - 3. Within the same state
    - 4. Within a different state
  - Tell me why you decided to move and why you selected the location that you did.

- o Would you say you picked the general location first and the specific spot second? Or did you know exactly the spot that you wanted to move to?
- o What would you say was the primary factor driving where you decided to move?

- **25 mins. Location choice**
  Now we are going to talk a little bit about why you chose to live in the specific neighborhood that you chose to live in. I am going to hand out a list of factors that might affect your choice of which specific home to move to. Please rank them in order of importance as to your decision-making. Options (Independence; Proximity to friends; Proximity to family; Proximity to social or cultural activities; Cost of living (minus taxes); Taxes; Size of house; Proximity of health services; Proximity to other services; Personal comfort; Parking; Quality of life; Access to certain modes of transportation; Building type; Overall convenience; Access to parks/green space; Yard or outdoor property; Safety; Walkability; Maintenance; Demographics of neighborhood; Neighborhood status; Others' opinions about where I should live)
  Please take about 5 to 10 minutes to rank the options. We will be circulating around the room and would love for you to talk through why you are ranking them as you do so.

  You don't need to rank each of the options, although we ask that you include at least the top 5 factors that you considered as part of your overall decision in your ranking.

  Please note that this is not in hindsight about what your favorite characteristics of your current neighborhood are. Rather, we are asking you to put yourself in your shoes prior to the move and to really think back about what you were looking for when you were deciding which house or apartment to move to.

  Note: the above options are broken down by economic, physical; psychological; social; and built environment dimensions

  - o Let's go around the room and discuss everyone's top two options. Please explain why you put them at the top of the list.
  - o Now that you are living in your new neighborhood, how do you get around?
  - o Are the top options that you included in your list met at your current location now that you live there?
  - o In hindsight, do you still think the options that you listed as most important should be most important in making a move in retirement?
  - o What options were not at all important to you?
  - o Are there any options that weren't at all important to you at the time that you now view as more important in hindsight?
  - o Are there any options that you hadn't thought about before, but that, in hindsight, played a role in your choice as to where to live?
  - o If you had two choose three of the factors in front of you to represent your least favorite part about your current neighborhood, which three would you choose?
  - o Do you talk about retiring or relocating with your friends? When does it come up? Do they seem to have similar priorities in where to located?
  - o (*If transportation doesn't come up*) How important was transportation to these options? Did you anticipate transportation needs in your future location?

BREAK

- **10 mins. If you were to move again…**
  Ok, now let's pretend you were moving again. I am going to ask you to select three of the factors in front of you that would be the three most important in your new neighborhood.
    - Are the top options that you included in your list met at your current location now that you live there?
    - How are they different from the factors that you listed as most important in our previous activity?

- **10 mins. Why you moved away from where you did**
  Ok, now that we've talked a little about why you chose to move to where you ended up moving and where you would move if you could do it again, now let's talk a little about the previous location where you lived. Once again, please put yourselves in your shoes as you were making the decision as opposed to wearing your hindsight glasses. So this is about what was driving you to move at the time as opposed to why you think you should have moved (or valued) now that you have done so.

    - Looking at the same cards that we used for the previous exercises, what would be the top two factors influencing why you moved away from your previous neighborhood.
    - What options were not at all a factor in your decision to move away from your old neighborhood?
    - In making the decision to move, do you feel that it was primarily a result of your priorities or needs not being met in your existing location? Or was it a draw to move to your current location?
    - Were there any factors that you hadn't thought about as positives in your old location that, now that you have moved, you miss?
    - Conversely, are there any factors that you hadn't thought about as problems in your old location that, now that you have moved, you realize that they are solved in your new location?
    - If you had two choose two of the factors in front of you to represent your *favorite* part about your old neighborhood, which two would you choose?
    - How involved in your old community were you? How did you reach your various social activities?

- **15 mins. Decision-making**
    - Prior to moving, how long did you know you were going to move to where you did?
    - Let's talk a little about how you came to the decision itself. Were you the primary decision-maker in making the decision about where to move? If not, who else was involved in the decision?
    - What kind of conversations do you remember having in the family about where to move?
        - Were there any conversations that you wish you had had that you did not?
        - Who was the first one to bring up the location where you ended up moving to?
        - Who ultimately made the final decision about moving?
    - Was there a defining event that prompted you to move (e.g., work, health, family event)?

- Thinking back, was the decision primarily driven by emotion or by logic?
    - Do you think the emotion involved affected how the decision was reached? In what way?
- Is the result 'ideal' for you?
    - If not, what would have made the decision more 'ideal' for you?
- If you could do the decision-making process (not the decision!) over again, what would you change?

- **5 mins. Access**
To end today's conversation, I want to ask a couple of final questions about what you want easiest access to in your neighborhood. What are the items that you need to or want to get to on a regular basis? This can be anything from grocery store to golf course to friends to simply a good place to walk.
    - I'm going to go around the room and ask each of you to list three places that you want to get to quickly and easily in whatever form that takes.

- **5 mins. Conclusion + participants complete follow-up**
    - Thank you very much for participating in today's discussion. Before you leave, please complete this brief follow-up so that we can learn about your experience with the group. On your way out, please give us your completed payment form. Thank you!

APPENDIX C

Demographic overview of study participants

Demographics of online questionnaire participants (between the ages of 50 and 75)
Number of participants: 98

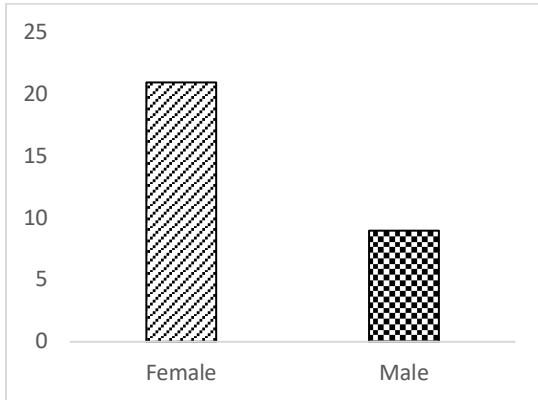**Figure 1.** *What is your gender?*
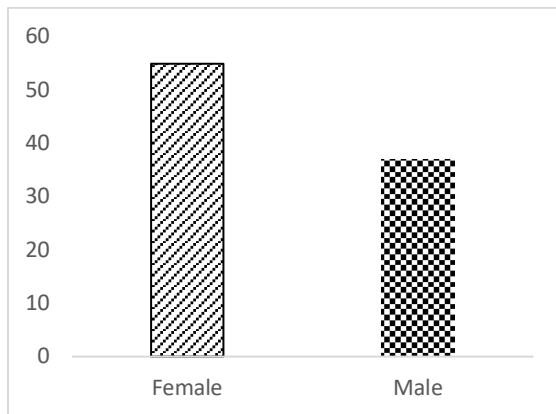
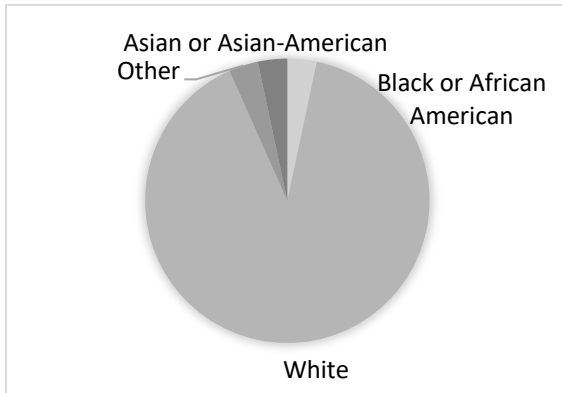**Figure 2.** *With which race/ethnicity do you most closely identify?*
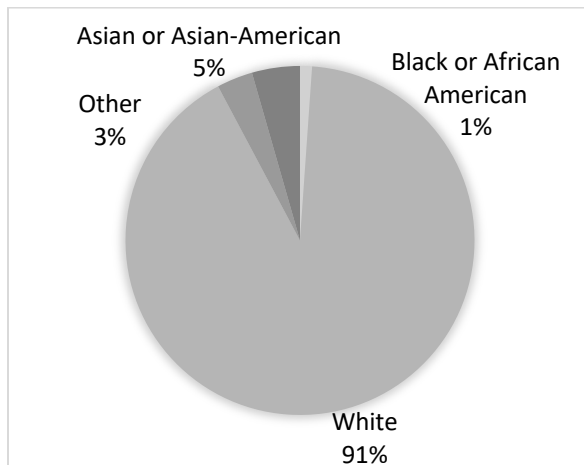
Figure 3. *Which of the following best describes your relationship status?*
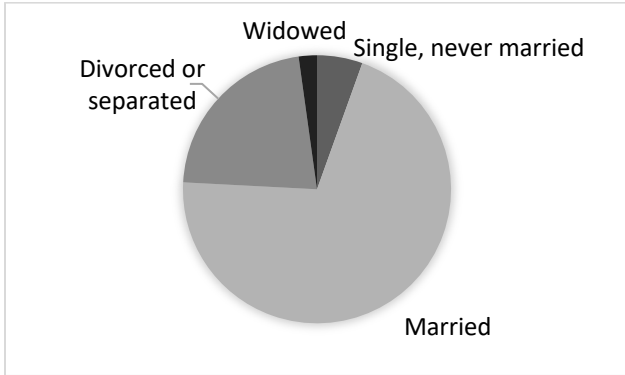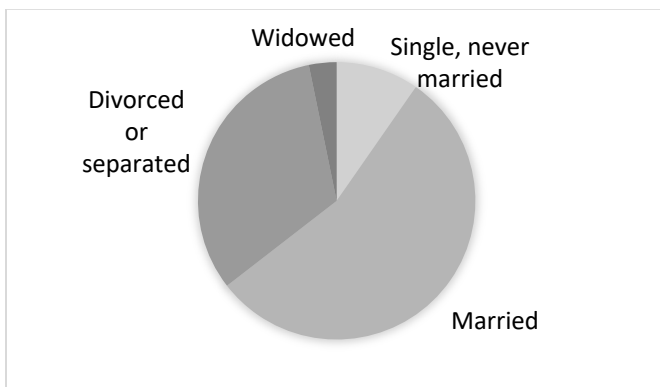

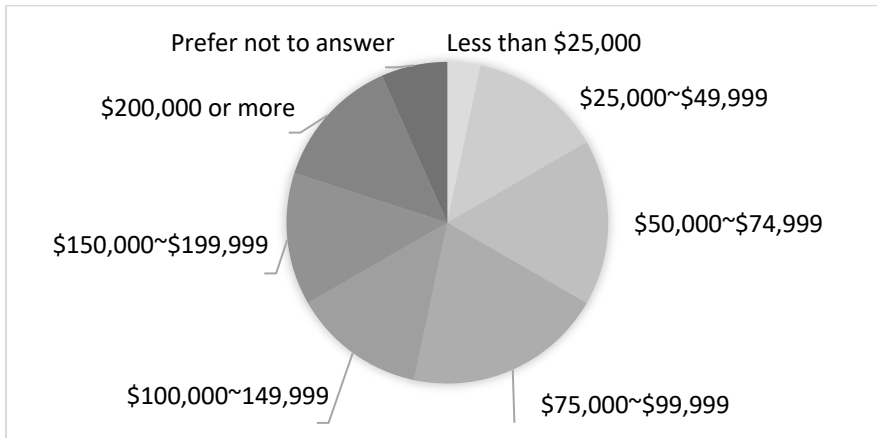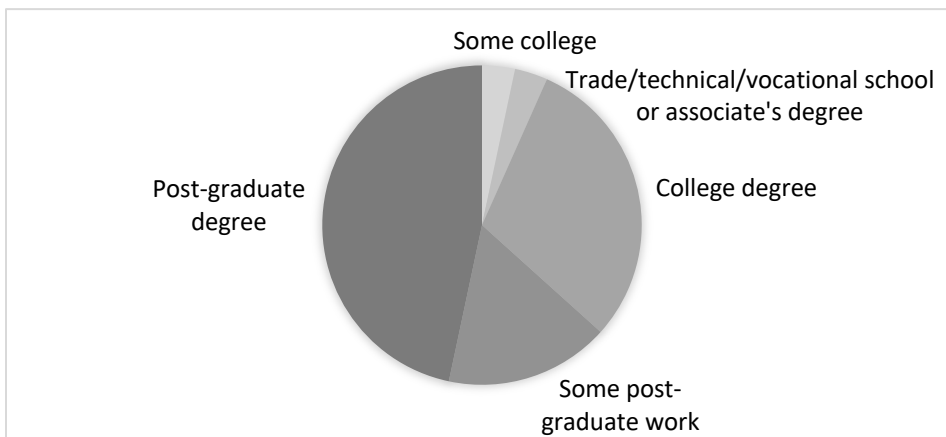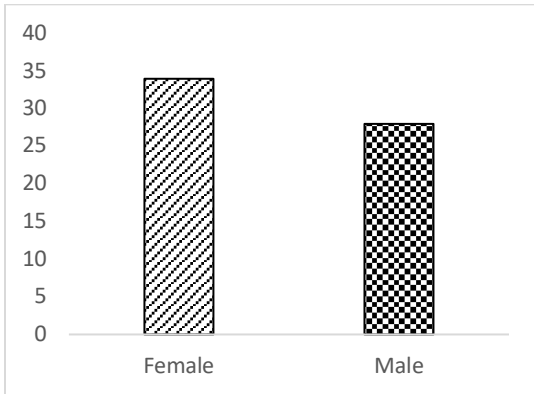**Figure 4.** *What is your total annual household income before taxes?*
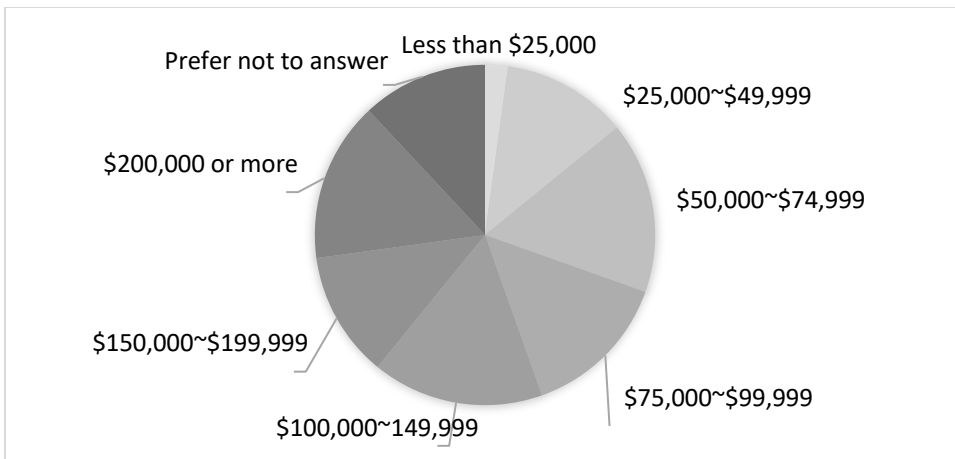
Figure 5. *What is the highest degree or level of school you have completed?*
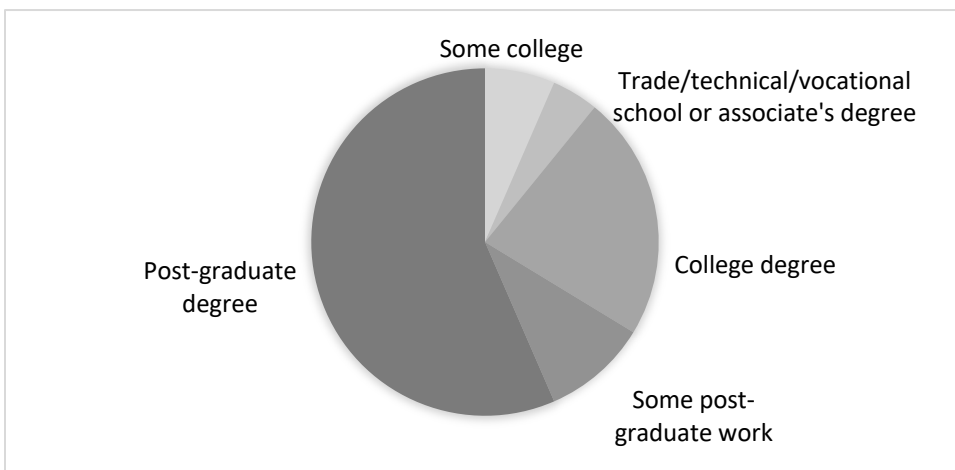
Demographics of focus group participants
Number of participants: 16

Figure 6. *What is your gender?*
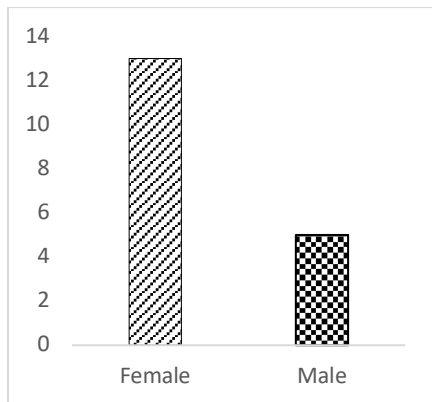
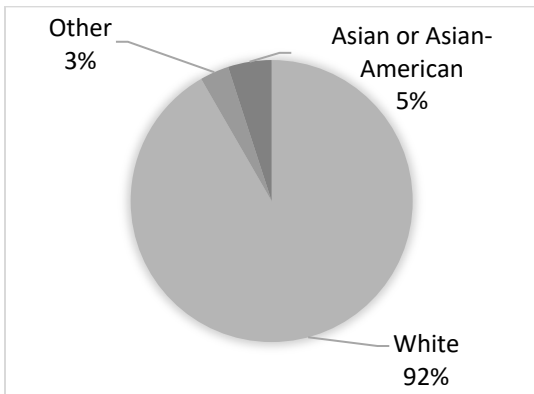**Figure 7.** *With which race/ethnicity do you most closely identify?*
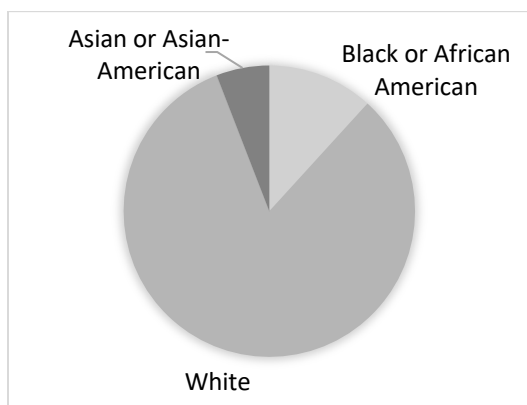
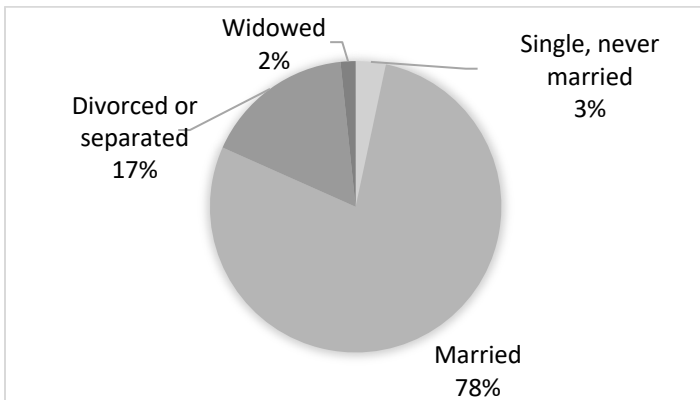**Figure 8.** *Which of the following best describes your relationship status?*
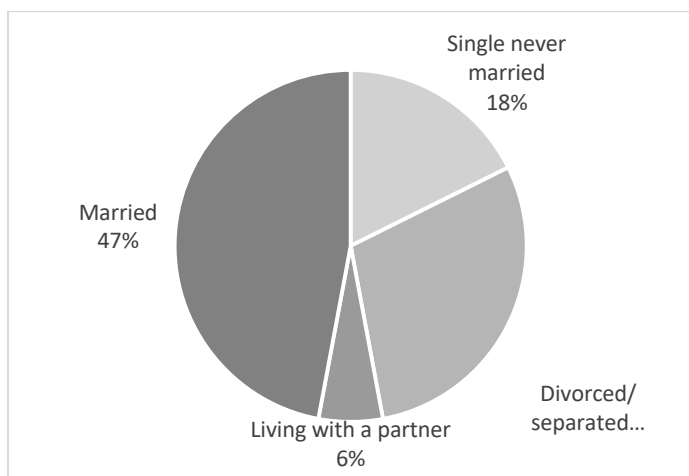
Figure 9. *What is your total annual household income before taxes?*
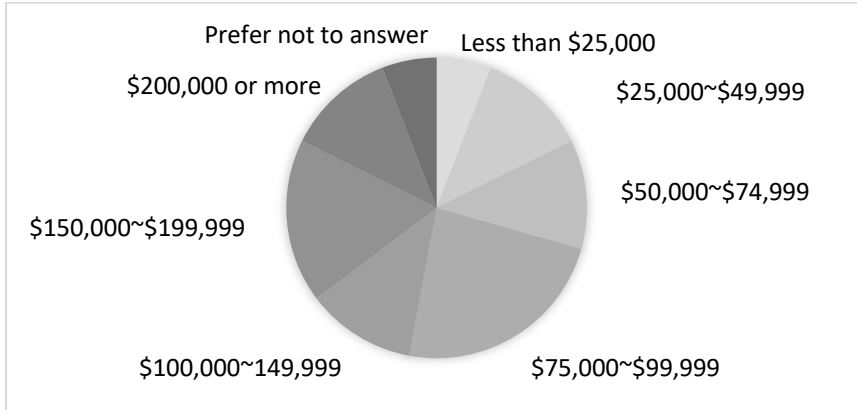
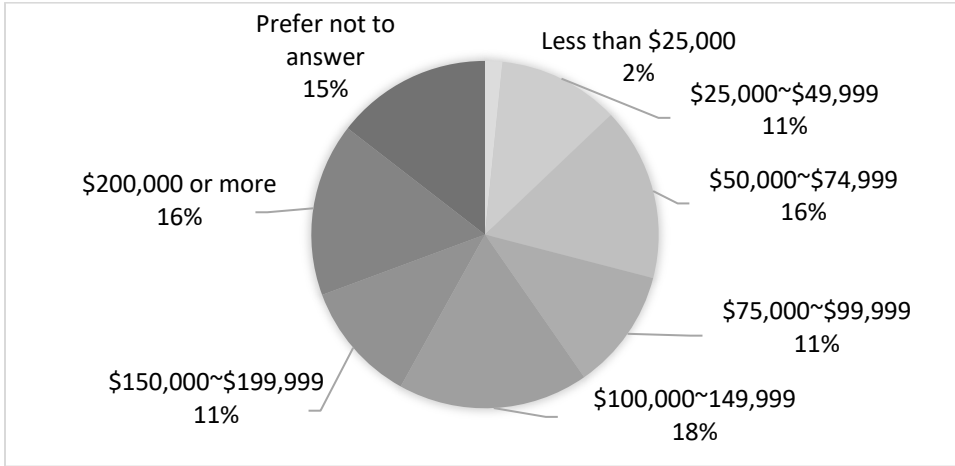**Figure 10.** *What is the highest degree or level of school you have completed?*
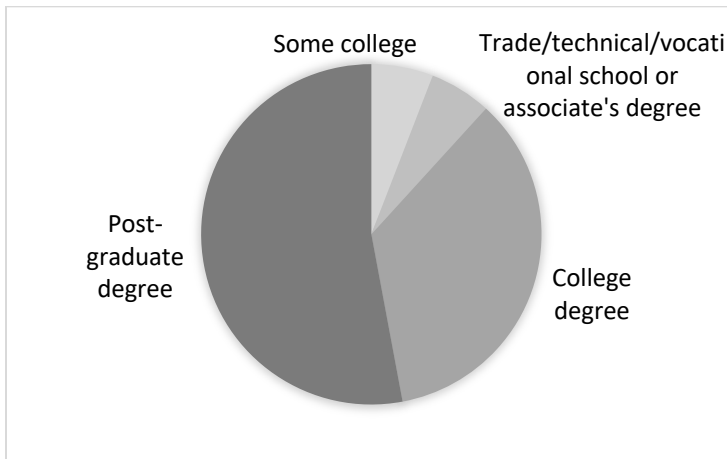
Demographics of urban vs. suburban online questionnaire participants (between the ages of 50 and 75)
Number of urban participants: 32
Number of suburban participants: 66

Urban

Figure 11. *What is your gender?*

Figure 12. *With which race/ethnicity do you most closely identify?*

Figure 13. *Which of the following best describes your relationship status?*

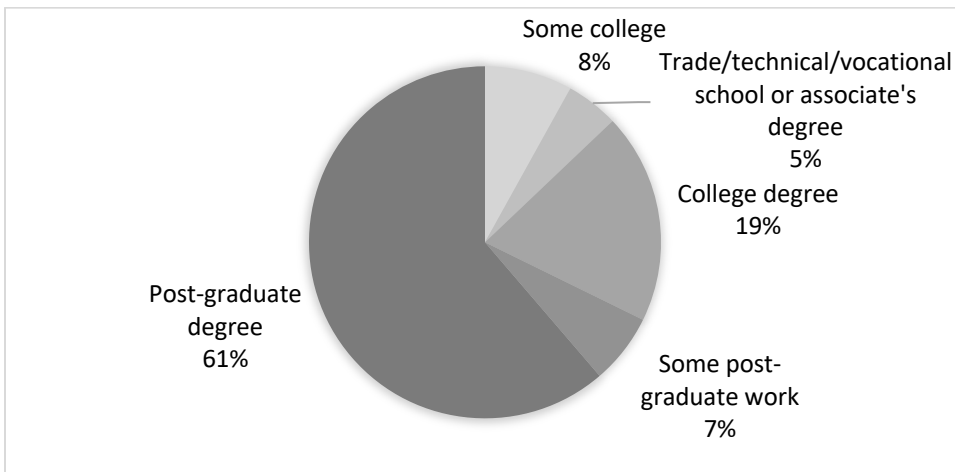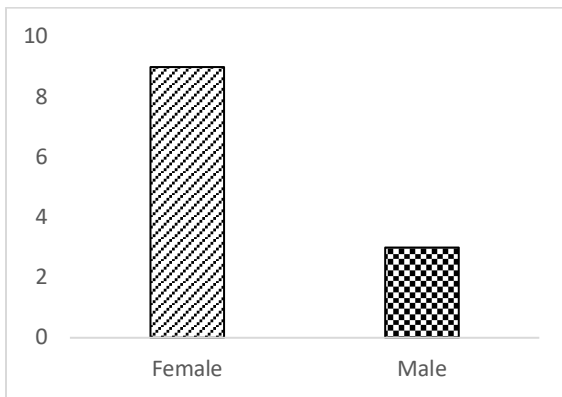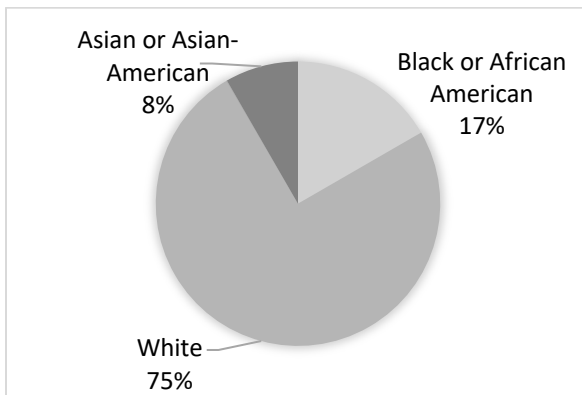**Figure 14.** *What is your total annual household income before taxes?*

Figure 15. *What is the highest degree or level of school you have completed?*

Suburban

Figure 16. *Question: What is your gender?*

Figure 17. *With which race/ethnicity do you most closely identify?*

Figure 18. *Question: Which of the following best describes your relationship status?*

Figure 19. *Question: What is your total annual household income before taxes?*

Figure 20. *Question: What is the highest degree or level of school you have completed?*

Demographics of urban vs. suburban focus group participants
Number of urban participants: 11
Number of suburban participants: 5

Urban

Figure 21. *What is your gender?*

Figure 22. *With which race/ethnicity do you most closely identify?*

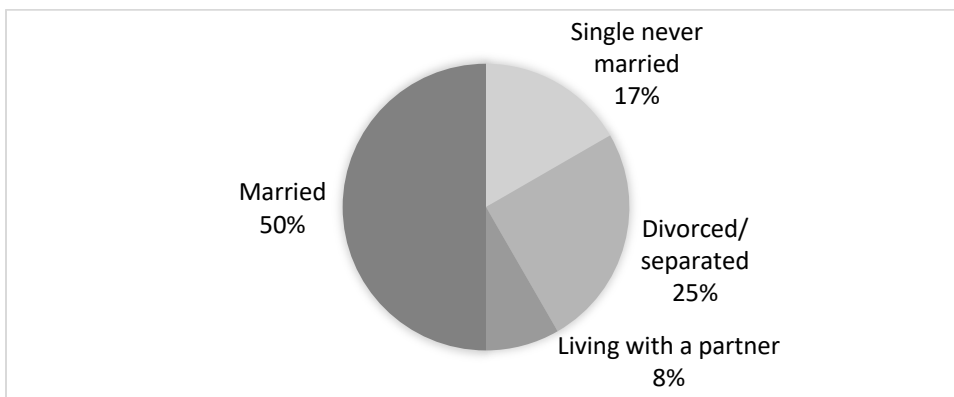**Figure 23.** *Which of the following best describes your relationship status?*

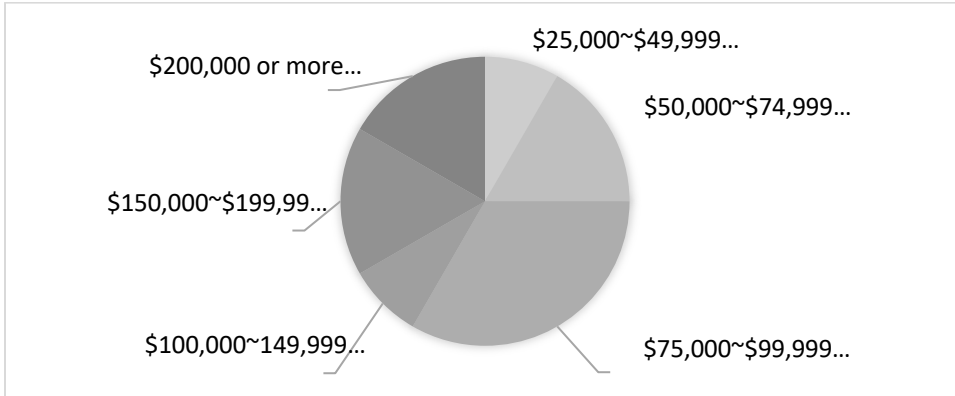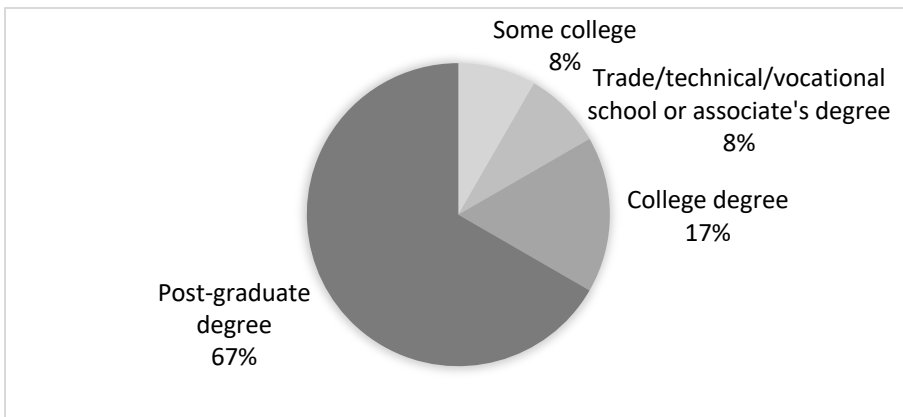**Figure 24.** *What is your total annual household income before taxes?*

$200,000 or more...

$25,000~$49,999...

$50,000~$74,999...

$150,000~$199,99...

$100,000~149,999...

$75,000~$99,999...

Figure 25. *What is the highest degree or level of school you have completed?*

Some college
8%

Trade/technical/vocational
school or associate's degree
8%

College degree
17%

Post-graduate
degree
67%

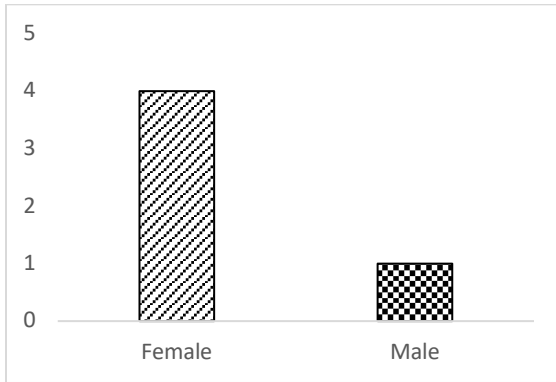## Suburban

Figure 26. *What is your gender?*

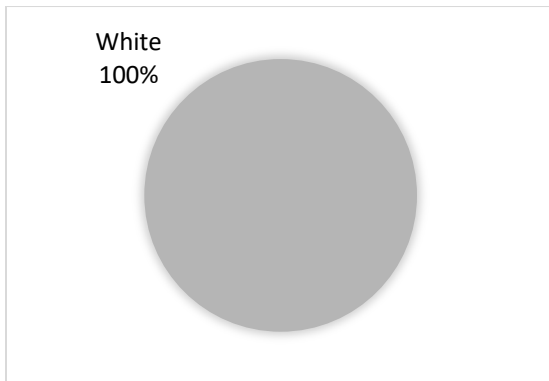**Figure 27.** *With which race/ethnicity do you most closely identify?*

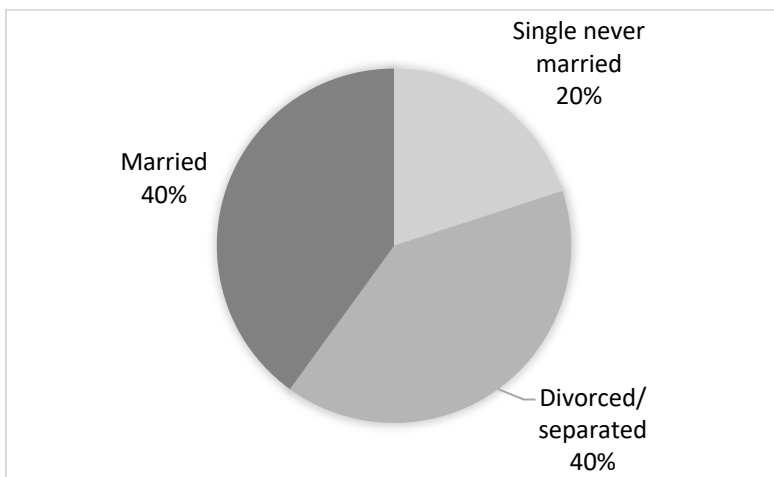**Figure 28.** *Question: Which of the following best describes your relationship status?*

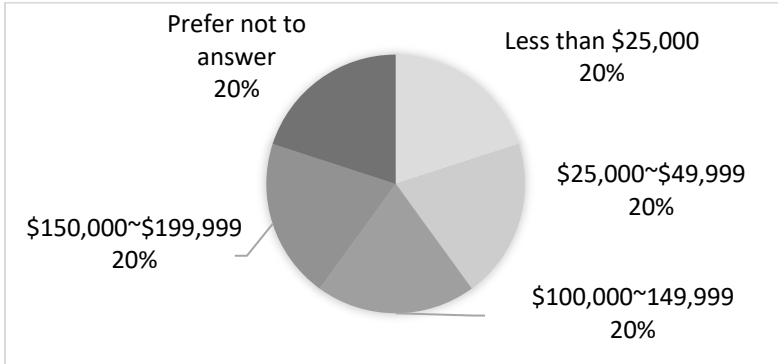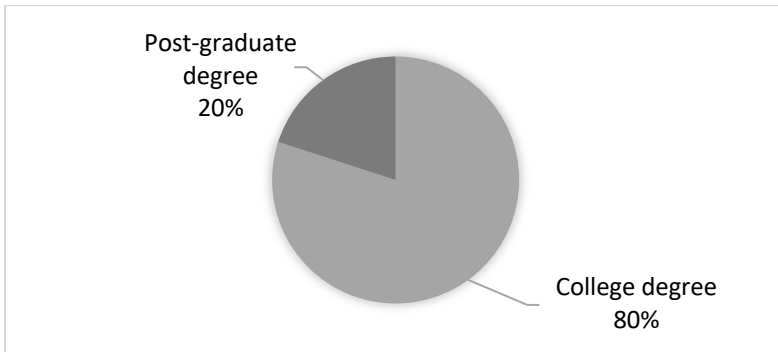**Figure 29.** *What is your total annual household income before taxes?*

Figure 30. *What is the highest degree or level of school you have completed?*

APPENDIX D

Online questionnaire

Have you moved residences in the past 5 years?

○ Yes
○ No
○ Don't recall

Now think about your most recent move. Below is a list of factors that may have affected your choice of which specific home to move to. Please indicate how important each factor was when making your most recent moving decision.

	Not at all important	Slightly important	Somewhat important	Very important	Extremely important
Walkability	○	○	○	○	○
Yard or outdoor property	○	○	○	○	○
Independence	○	○	○	○	○
Access to parks/green space	○	○	○	○	○
Personal comfort	○	○	○	○	○
Building type	○	○	○	○	○
	Not at all important	Slightly important	Somewhat important	Very important	Extremely important
Size of house	○	○	○	○	○
Overall convenience	○	○	○	○	○

	Not at all important	Slightly important	Somewhat important	Very important	Extremely important
Demographics of neighborhood	○	○	○	○	○
Proximity to health services	○	○	○	○	○
Other's opinions about where I should live	○	○	○	○	○
Safety	○	○	○	○	○

	Not at all important	Slightly important	Somewhat important	Very important	Extremely important
Maintenance	○	○	○	○	○
Cost of living	○	○	○	○	○
Proximity to friends	○	○	○	○	○
Proximity to social or cultural activities	○	○	○	○	○
Proximity to family	○	○	○	○	○
Neighborhood status	○	○	○	○	○

	Not at all important	Slightly important	Somewhat important	Very important	Extremely important
Access to certain modes of transportation	○	○	○	○	○
Familiarity of setting	○	○	○	○	○
Parking	○	○	○	○	○
Quality of life	○	○	○	○	○
Other (please specify)	○	○	○	○	○

APPENDIX E

Ranking of spatial characteristics by generation

Figure 1. *Generation Z.*
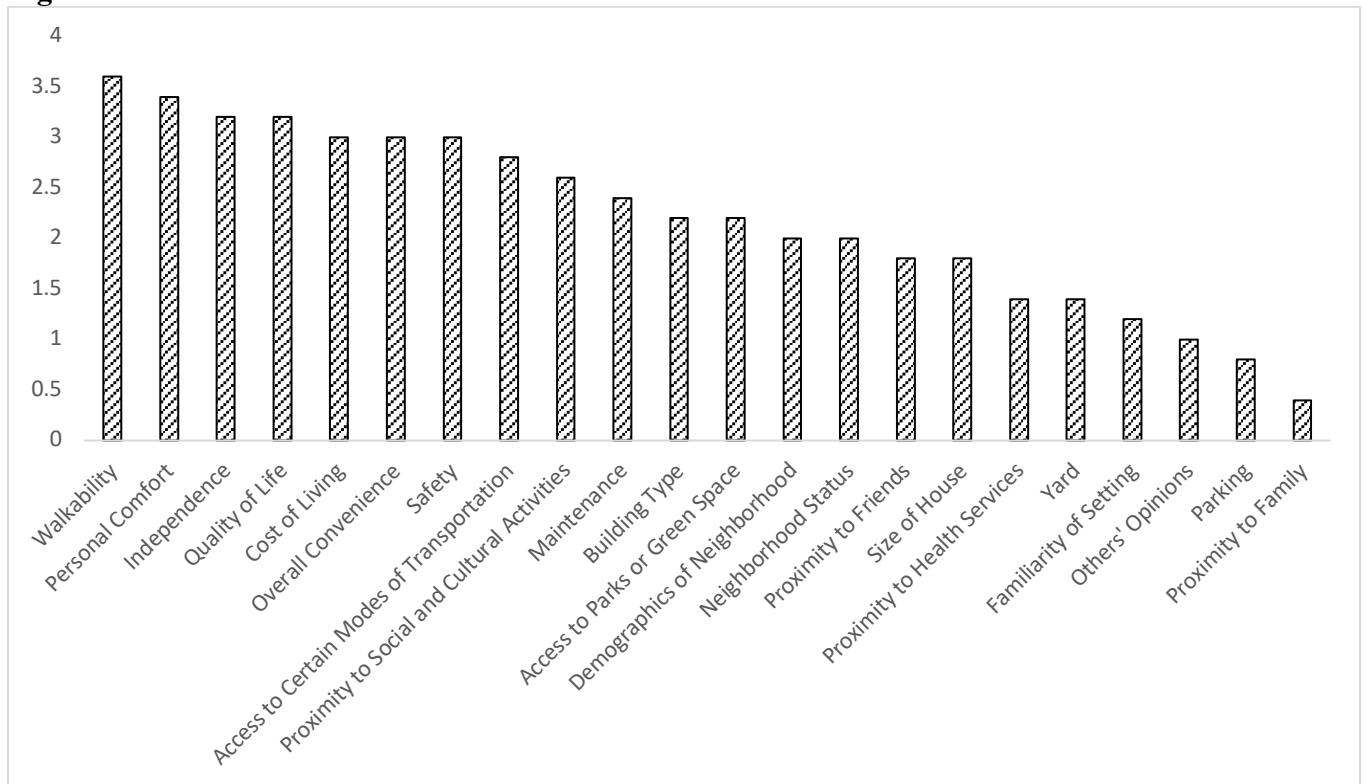
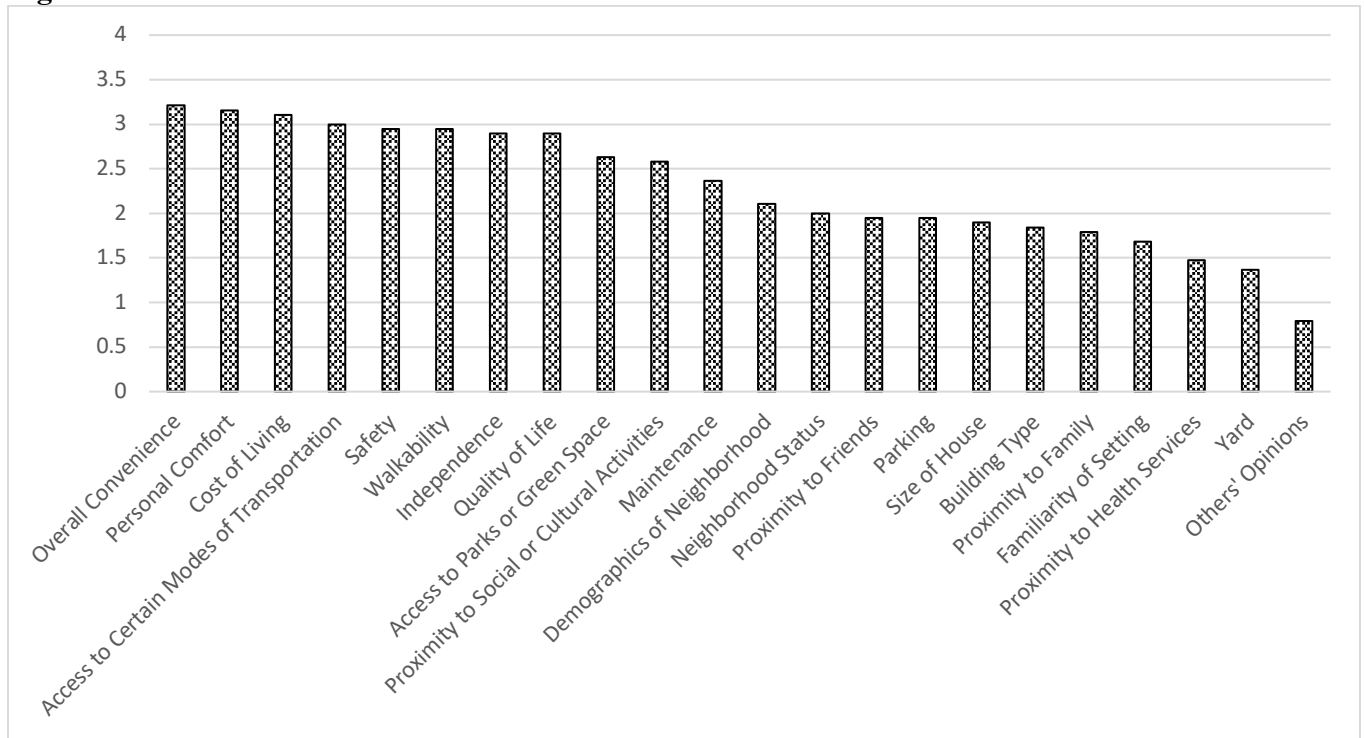**Figure 2.** *Millennial.*

Figure 3. *Generation X.*
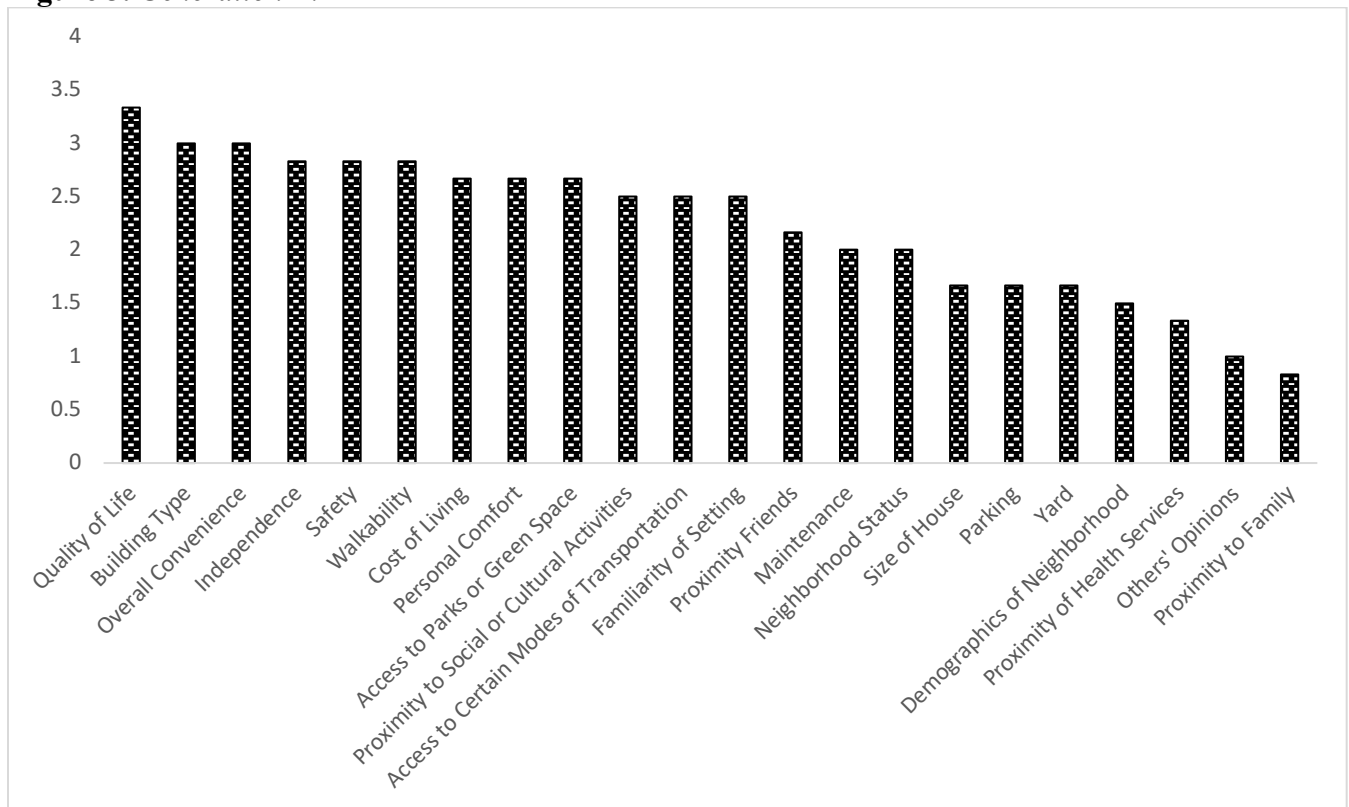
Figure 4. *Boomer Generation.*
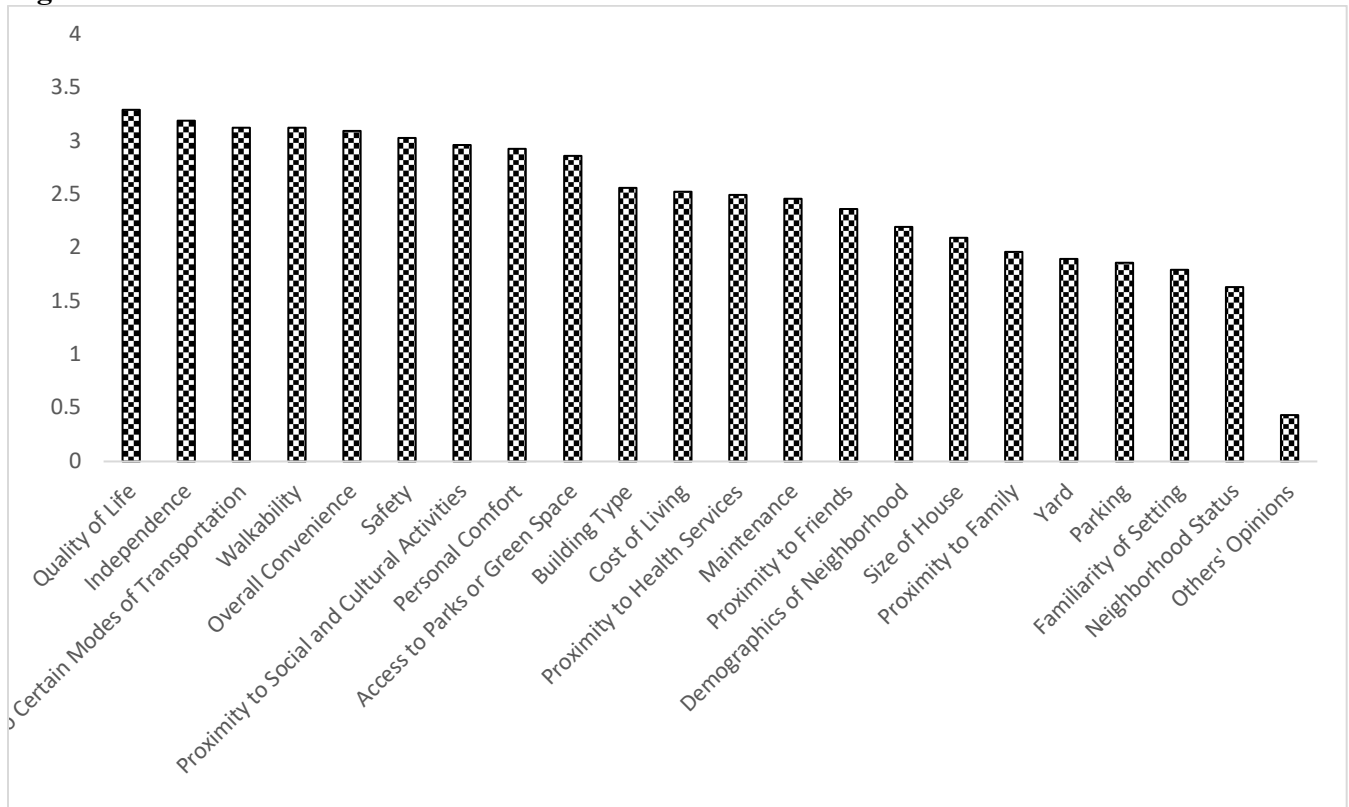
Figure 5. *Silent Generation*
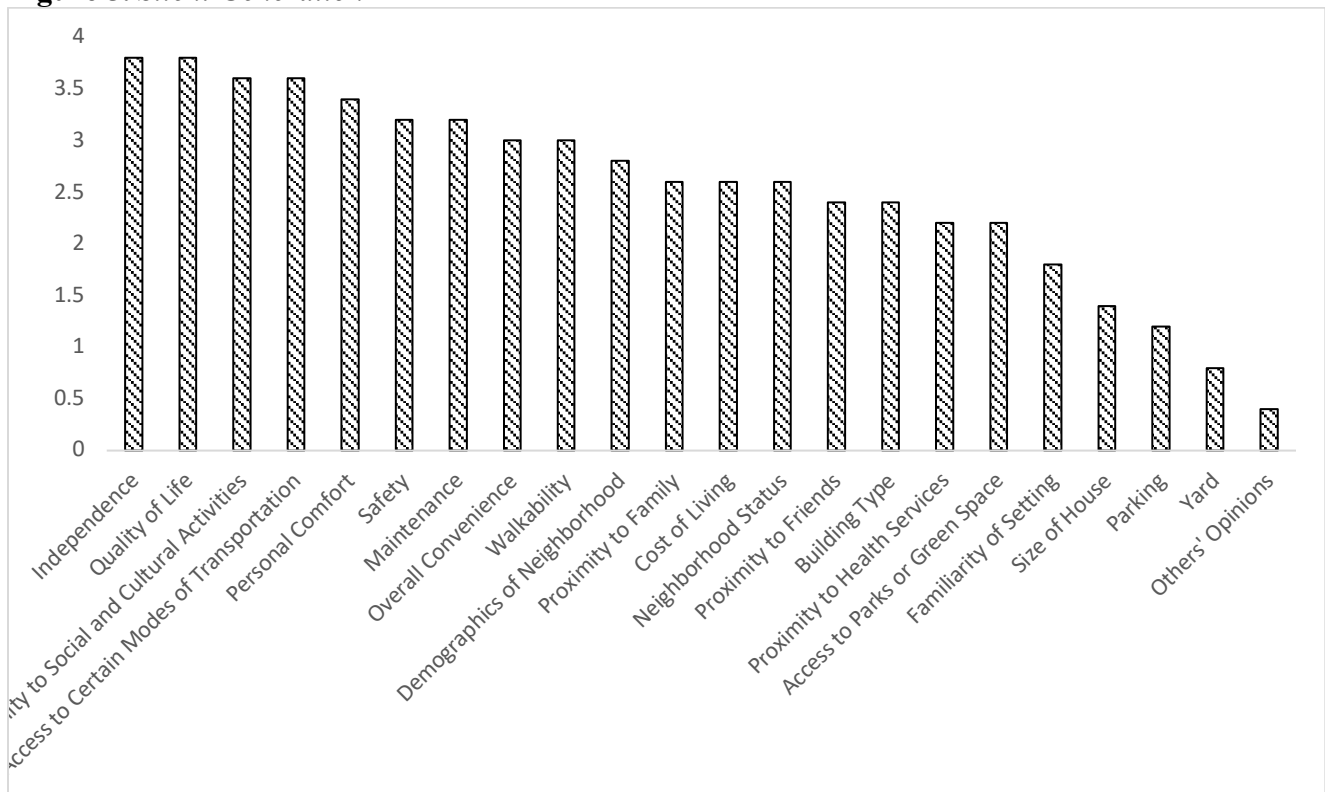
APPENDIX F

Significance of demographic characteristics in determining importance placed on spatial factors in decision-making process

	Independence	Proximity to Friends	Proximity to Family	Proximity to Social & Cultural Activities
(Intercept)	1.178	1.709	2.530*	2.426*
Race: African American	1.053	-0.780	-0.422	-1.236
Race: Hispanic	0.916	-0.736	0.933	-1.243
Race: Middle Eastern	0.425	-0.015	-1.395	-1.412
Race: Other	1.104	0.542	-0.249	-0.111
Race: White	0.772	1.405	-0.179	-0.019
Gender: Male	-0.539	-0.327	-0.532	-0.651
Education	1.157	-0.400	-0.837	2.448*
Household Size	-0.814	1.387	-1.861	0.457
Rel Status: Divorced	0.558	-0.876	0.727	-2.063*
Rel Status: Living w Partner	-0.096	-0.417	-0.455	-2.164*
Rel Status: Married	0.565	-1.193	0.705	-1.808
Rel Status: Single,	0.408	-0.188	0.066	-1.309
Gen: Boomer	-0.265	0.804	1.970	1.657
Gen: Millennial	0.133	-0.263	2.294*	0.624
Gen: Silent Generation	0.171	0.450	2.385*	0.581
Gen: Z	0.838	-0.709	1.604	1.169
Income	-0.069	0.047	0.816	0.536
Employment: Full-time	1.701	-0.582	-2.103*	-0.382
Employment: Home	1.257	-1.007	-1.025	0.606
Employment: Unemployed	0.976	-1.969	-1.947	-0.823
Employment: Part-time	1.503	-0.917	-1.659	0.134
Employment: Retired	2.541*	-0.136	-2.135*	-0.036
Employment: Self-employed	2.563*	0.066	-1.271	0.219
Employment: Student	0.820	-0.903	-2.261*	-1.002
Location: Suburban	0.327	1.304	-0.673	-0.249
Location: Urban	0.329	1.904	-0.798	1.321

	Cost of Living	Size of House	Proximity of Health Services	Personal Comfort
(Intercept)	2.539*	1.448	1.422	4.106***
Race: African American	1.122	1.029	0.032	0.888
Race: Hispanic	0.109	1.369	-1.367	0.507
Race: Middle Eastern	0.269	-0.816	0.074	1.220
Race: Other	0.745	-0.705	-0.076	0.380
Race: White	0.080	0.159	-0.259	0.449
Gender: Male	-0.134	-1.814	0.111	-1.981*
Education	1.914	0.752	1.043	-0.882
Household Size	-0.183	0.455	1.310	-0.264
Rel Status: Divorced	-0.473	-0.809	-0.202	-0.670
Rel Status: Living w Partner	-1.535	0.159	-0.231	-1.219
Rel Status: Married	-0.862	0.014	0.139	-0.743
Rel Status: Single,	-1.211	-0.141	-0.209	-0.217
Gen: Boomer	0.089	1.592	2.879**	0.439
Gen: Millennial	0.938	0.182	0.545	1.582
Gen: Silent Generation	-0.170	1.005	2.175*	0.673
Gen: Z	1.775	0.059	0.670	1.471
Income	-1.697	-0.406	-0.308	1.550
Employment: Full-time	0.405	0.671	-1.142	-0.600
Employment: Home	0.456	0.645	0.786	-0.183
Employment: Unemployed	0.446	-2.108*	-0.195	-1.494
Employment: Part-time	0.410	0.249	-0.597	0.637
Employment: Retired	0.173	0.323	-0.312	0.408
Employment: Self-employed	0.825	0.962	-0.872	0.622
Employment: Student	0.338	0.288	-1.048	-0.543
Location: Suburban	0.883	-0.277	0.357	-0.877
Location: Urban	-1.390	0.782	-0.876	-1.600

	Parking	Quality of Life	Access to Transportation	Building Type
(Intercept)	2.340*	4.381***	0.476	2.239*
Race: African American	-1.161	2.748**	-0.759	1.482
Race: Hispanic	-0.492	2.261*	-1.567	1.158
Race: Middle Eastern	-2.176*	2.083*	-1.022	-0.068
Race: Other	-0.608	1.640	-0.584	-0.552
Race: White	-1.233	1.946	-1.256	-1.352
Gender: Male	-1.506	0.864	-0.008	-1.840
Education	-0.713	-0.512	2.183*	0.355
Household Size	0.068	-4.010***	0.232	-1.512
Rel Status: Divorced	0.495	0.156	-0.792	0.453
Rel Status: Living w Partner	0.398	0.259	-0.062	1.155
Rel Status: Married	0.899	0.943	-0.343	1.848
Rel Status: Single,	0.425	-0.217	-0.663	0.943
Gen: Boomer	-0.709	-0.917	1.875	0.130
Gen: Millennial	0.136	0.131	1.267	-1.433
Gen: Silent Generation	-0.295	-0.891	1.241	-0.260
Gen: Z	-0.385	-0.149	1.955	-1.333
Income	-0.728	0.301	-1.891	0.205
Employment: Full-time	0.311	0.253	1.031	0.733
Employment: Home	-0.076	0.736	0.874	1.060
Employment: Unemployed	-1.710	-0.752	1.005	0.696
Employment: Part-time	0.229	0.796	0.761	1.184
Employment: Retired	0.803	1.427	0.823	0.695
Employment: Self-employed	0.747	1.505	1.347	1.100
Employment: Student	-1.523	0.185	-0.130	0.101
Location: Suburban	-0.245	0.579	0.411	-0.806
Location: Urban	0.283	4.716***	-0.590	2.496*

	Overall Convenience	Access to Parks or Greenspace	Yard	Safety
(Intercept)	3.837***	1.912	2.679**	2.664**
Race: African American	0.972	0.767	0.180	1.555
Race: Hispanic	-0.763	-0.052	-0.175	0.134
Race: Middle Eastern	-0.464	-1.446	1.035	0.738
Race: Other	-1.097	0.590	0.086	0.305
Race: White	-1.067	1.237	-0.220	0.018
Gender: Male	0.339	-1.940	-1.985*	0.473
Education	0.884	1.176	-1.471	-0.297
Household Size	-1.585	-0.209	-0.015	-1.952
Rel Status: Divorced	-1.119	0.468	-0.201	1.297
Rel Status: Living w Partner	-0.482	1.415	0.428	1.240
Rel Status: Married	-0.732	1.570	0.549	1.945
Rel Status: Single,	-0.575	1.506	-0.169	1.635
Gen: Boomer	0.494	1.293	0.558	0.098
Gen: Millennial	0.835	-0.869	0.182	0.994
Gen: Silent Generation	-0.596	0.142	-0.448	0.475
Gen: Z	0.833	-0.987	-0.745	0.924
Income	-0.313	0.062	-0.254	-0.018
Employment: Full-time	-0.038	-0.752	-0.373	-0.053
Employment: Home	0.548	-0.818	-0.292	1.018
Employment: Unemployed	-1.942	-1.781	-1.211	-0.996
Employment: Part-time	-0.052	-1.339	-0.350	-0.149
Employment: Retired	0.310	-0.990	-0.394	0.221
Employment: Self-employed	0.048	-0.350	0.078	0.452
Employment: Student	-0.958	-1.390	-1.430	-0.417
Location: Suburban	2.004*	-1.232	-0.672	0.464
Location: Urban	-0.146	-1.969	-0.123	3.732***

	Walkability	Maintenance	Familiarity of Setting	Demographics
(Intercept)	2.150*	1.630	2.285*	0.730
Race: African American	0.793	0.402	0.119	1.160
Race: Hispanic	-0.712	0.579	-1.011	1.103
Race: Middle Eastern	0.409	0.233	0.701	0.413
Race: Other	0.785	0.073	-1.440	-0.566
Race: White	-0.519	-0.179	-0.415	0.461
Gender: Male	-2.915**	-1.054	-0.888	-0.123
Education	0.574	0.389	-1.240	-0.394
Household Size	-1.312	-1.098	-0.414	-1.442
Rel Status: Divorced	-1.029	0.497	-0.544	-0.821
Rel Status: Living w Partner	0.308	-0.205	-0.347	-0.071
Rel Status: Married	-0.216	0.735	-1.036	0.142
Rel Status: Single,	-0.226	0.246	-0.810	0.678
Gen: Boomer	1.514	1.313	-0.817	2.474*
Gen: Millennial	1.033	1.060	0.023	0.123
Gen: Silent Generation	0.457	2.446*	-1.011	1.921
Gen: Z	1.464	1.877	-1.616	-0.637
Income	0.079	1.013	1.349	-0.096
Employment: Full-time	-0.635	0.006	0.565	1.880
Employment: Home	-0.975	0.431	-0.349	2.091*
Employment: Unemployed	-1.250	0.757	0.423	-0.966
Employment: Part-time	-0.846	0.281	0.971	1.472
Employment: Retired	-0.034	0.375	0.972	1.133
Employment: Self-employed	-0.578	0.211	0.919	2.137*
Employment: Student	-1.406	-0.721	0.210	1.044
Location: Suburban	0.787	-0.264	-0.065	-0.677
Location: Urban	-0.222	-0.305	-0.748	0.004

	Neighborhood Status	Others Opinions
(Intercept)	1.401	1.912
Race: African American	0.247	-1.464
Race: Hispanic	0.347	-1.189
Race: Middle Eastern	0.048	-1.277
Race: Other	-1.333	-2.232*
Race: White	-1.249	-2.236*
Gender: Male	0.309	0.955
Education	-1.124	2.018*
Household Size	-2.064*	-1.134
Rel Status: Divorced	0.245	-0.014
Rel Status: Living w Partner	0.824	-0.179
Rel Status: Married	0.813	0.409
Rel Status: Single,	0.866	0.048
Gen: Boomer	0.781	0.114
Gen: Millennial	1.066	0.797
Gen: Silent Generation	0.589	-0.531
Gen: Z	-0.112	0.847
Income	-0.362	-1.096
Employment: Full-time	1.126	-1.723
Employment: Home	1.293	-0.815
Employment: Unemployed	-0.412	-1.891
Employment: Part-time	0.915	-2.315*
Employment: Retired	1.081	-1.624
Employment: Self-employed	1.558	-1.169
Employment: Student	0.078	-0.801
Location: Suburban	1.154	1.567
Location: Urban	1.109	0.191