

4-1-2013

Do Age-Friendly Characteristics Influence the Expectation to Age in Place? A Comparison of Low-Income and Higher Income Detroit Elders

Amanda J. Lehning

University of Michigan, alehning@umich.edu

Richard J. Smith

Wayne State University, smithrichardj@wayne.edu

Ruth E. Dunkle

University of Michigan, redunkle@umich.edu

Recommended Citation

Lehning, A. J., Smith, R. J., & Dunkle, R. E. (expected). Do Age-Friendly Characteristics Influence the Expectation to Age in Place? A Comparison of Low-Income and Higher Income Detroit Elders. *Journal of Applied Gerontology*, published online April 15, 2013, doi: [10.1177/0733464813483210](https://doi.org/10.1177/0733464813483210)

Available at: http://digitalcommons.wayne.edu/soc_work_pubs/22

NOTICE IN COMPLIANCE WITH PUBLISHER POLICY: This is the Author's Accepted Manuscript version of a work published online (in advance of print) in the *Journal of Applied Gerontology*. © Copyright The Author(s) 2013, DOI: [10.1177/0733464813483210](https://doi.org/10.1177/0733464813483210)

Do Age-Friendly Characteristics Influence the Expectation to Age in Place? A Comparison of
Low-Income and Higher Income Detroit Elders

by

Amanda J. Lehning, Richard J. Smith
and Ruth E. Dunkle

Journal of Applied Gerontology

The online version of this article can be found at:

<http://jag.sagepub.com/content/early/2013/03/21/0733464813483210>

DOI: 10.1177/0733464813483210

Journal of Applied Gerontology published online 15 April 2013

Abstract

Currently there is limited evidence linking age-friendly characteristics to outcomes in elders. Using a representative sample of 1,376 adults age 60 and older living in Detroit, this study examined the association between age-friendly social and physical environment characteristics and the expectation to age in place, and the potential differences between low and higher-income elders. Based on U.S. Environmental Protection Agency's age-friendly guide, we identified six factors reflecting age-friendly characteristics. Logistic regression models indicated that regardless of income level only neighborhood problems were significantly associated with expecting to age in place. Low-income elders were more likely to expect to age in place than their higher-income counterparts, and it is unclear whether this resulted from a desire to remain in the home or that there is no place else to go. Future research should address the ways in which financial resources affect the choices, expectations, and outcomes of aging in place.

Introduction

Over the past decade, a number of organizations and government entities have encouraged the development of more “age friendly” social and physical environments to promote elder health, well-being, and ultimately the ability to age in place. Age-friendly environments are those that offer infrastructure and supports that meet the needs of older adults and allow them to remain involved in community life (Alley, Liebig, Pynoos, Benerjee, & Choi, 2007). While there is variation in the terminology and organizing frameworks used by the growing number of initiatives, age-friendly characteristics typically include proximally located goods, services, and amenities; availability of transportation options beyond the personal automobile; safe and accessible neighborhoods and housing; access to sources of social support; and opportunities to engage in meaningful activities (Alley et al., 2007; Hanson and Emler, 2006; Plouffe & Kalache, 2010; Scharlach and Lehning, in press). Since this concept has only recently received attention from academics, policymakers, and health and social service providers, there is limited empirical evidence linking age-friendly characteristics to outcomes in older adults. One area that remains unexplored is the potential for variations in the influence of age-friendly characteristics on the expectation of and ability to age in place for older adults with limited financial resources. The purposes of this study are to: 1) examine the association between measures of age-friendly characteristics and the expectation to not move from one’s home (i.e., expectation to “age in place”) in a representative sample of older adults living in Detroit, 2) assess whether age-friendly effects differ by income, and 3) examine whether the expectation to age in place differs between those with low and higher incomes.

Literature Review

Age-Friendly Environments and Aging in Place

Since the early 2000s, a number of organizations, including the World Health Organization, AARP, AdvantAge Initiative, and U.S. Environmental Protection Agency (EPA), have developed checklists and guides outlining modifications to the social and physical environment that have the potential to improve elder health and well-being and facilitate aging in place. More recently, scholars have published articles describing particular frameworks (Hanson & Emler, 2006; Plouffe & Kalache, 2010) or the age-friendly concept as a whole (Alley et al., 2007; Scharlach, 2009). The social and physical environment modifications recommended to make existing communities more age-friendly are typically based on focus group and/or survey data collected from older community residents, practice knowledge, existing empirical literature from a wide variety of disciplines, or some combination of all three.

The EPA's age-friendly guide, for example, is based on principles from smart growth (i.e., community design that emphasizes compact neighborhoods to promote environmental, economic, and public health) and concepts from active aging (i.e., community design that encourages physical activity for residents of all ages) (U.S. EPA Aging Initiative, 2011). The EPA organizes age-friendly characteristics into four categories: staying active, connected and engaged (e.g., social interaction, access to social support, and civic engagement opportunities); neighborhoods and housing (e.g., appropriate housing conditions, neighborhood access to services and shopping, neighborhood safety); transportation and mobility (e.g., accessible and convenient public transit); and access to healthy activities (e.g., access to food and recreational activities) (U.S. EPA Aging Initiative, 2011). While these categories are supported by empirical evidence of the social and physical environment characteristics associated with health and well-being (e.g., Berke, Koepsell, Moudon, Hoskins, & Larson, 2007; Fiori, Antonucci, & Cortina, 2006; Freedman, Grafova, Schoeni, & Rogowski, 2008; Mezuk and Rebok, 2008; Morrow-

Howell, Hinterlong, Rozario, & Tang, 2003; Moore, Diez-Roux, Nettleton, & Jacobs, 2008), research taking a holistic approach to examining the effects of the EPA's recommendations (or those of an alternative checklist or guide) on elder outcomes, such as aging in place, is limited.

Age-friendly community efforts are just one of a growing number of initiatives that are focused on helping older adults age in place (see Greenfield, 2012, for an overview of aging in place initiatives), which we define for the purposes of the present study as remaining in one's current residence. This focus is due in part to evidence that the overwhelming majority of older adults would like to remain in their home for as long as possible (Feldman, Oberlink, Simantov, & Gursen, 2004). The benefits of aging in place for older adults are thought to emerge from the sense of attachment, familiarity, and identity that comes from the home and neighborhood environment (Burns, Lavoie, & Rose, 2012; Sixsmith & Sixsmith, 2008; Wiles, Leibing, Guberman, Reeve, & Allen, 2012). Rowles (1983) proposes that place attachment is related to three types of *insideness*: 1) autobiographical (i.e., personal memories), 2) physical (i.e., mastery over the environment), and 3) social (i.e., sense of knowing others and being known). Unwanted relocation, in contrast, can lead to a number of negative outcomes; for example, nursing home admission is associated with reduced quality of life for older adults (Scocco, Rapattoni, & Fantoni, 2006) and psychological distress for their caregivers (Schulz et al., 2004). Furthermore, aging in place is believed to be less expensive than institutional long-term care for older adults, their families, and governments (Sixsmith & Sixsmith, 2008).

Prior research that could inform interventions to help older adults age in place, however, has two limitations. The first is that few studies look explicitly at aging in place, but rather identify risk factors for nursing home placement. The second is that the risk factors included are predominantly characteristics of the individual, rather than of their environment. This research

indicates that demographic characteristics, including older age (Andel, Hyer, & Slack, 2007, Banaszak-Holl et al., 2004; Bharucha, Pandav, Shen, Dodge, & Ganguli, 2004) female gender (Banaszak-Holl et al., 2004; Bharucha et al., 2004), White race (Andel et al., 2007; Banaszak-Holl et al., 2004), living alone (Banaszak-Holl et al., 2004; Bharucha et al., 2004), low socioeconomic status (Banaszak-Holl et al., 2004; Bharucha et al., 2004; Gaugler, Duval, Anderson, & Kane, 2007), limited social resources (Banaszak-Holl et al., 2004; Bharucha et al., 2004; Gaugler et al., 2007, and poor health, including ADL limitations and diagnosis of dementia (Andel et al., 2007; Banaszak-Holl et al., 2004; Bharucha et al., 2004; Gaugler et al., 2007) , are associated with a higher risk of institutionalization.

According to propositions of the ecological model of aging (Lawton & Nahemow, 1973), however, the environment plays a larger role in outcomes for those who are aging and experiencing a decline in “competence”, such as cognitive and physical functioning. Other scholars have also noted that the immediate home and neighborhood environment becomes increasingly important for older adults, as they are less likely to be working or have the ability to access a variety of locations (Burns et al., 2012). To date, it remains unclear the extent to which characteristics of the environment influence elders’ expectation of and ability to age in place. The present study begins to address limitations of the literature by examining both the individual and age-friendly characteristics associated with the expectation of remaining in one’s current residence.

Expectation to Move and Expectation to Age in Place

Choice is central to the concept of aging in place (Emler & Moceri, 2012; Wiles et al., 2011), and helps to distinguish those aging in place from those “stuck in place” (Torres-Gil & Hofland, 2012). The present study focuses on this aspect of aging in place by examining factors

associated with elders' expectations to not relocate. We are not aware of previous research focused on the expectation to age in place. The late life migration literature, however, highlights how the ability to live where one chooses is an important component to understanding the living arrangements of older adults. Litwak and Longino (1987), for example, propose that there are three types of older movers who are motivated by three different factors. First, amenity-oriented movers relocate to seek out more attractive features, including weather and cultural or recreational activities. Second, assistance movers relocate closer to family or other informal caregivers because of life changes, including widowhood, decline in health and functioning, or insufficient resources to maintain their current residence. The third type of older mover relocates to institutional long-term care because of severe disability or physical health problems. Research generally supports this typology of late life migration, with elders who are relatively younger, wealthier, and healthier moving to more distant locations because of amenities and comfortable surroundings (Conway & Houtenville, 2003; Wilmoth, 2010). Elders with slightly poorer health move close to family after a life crisis, while elders who are older and experience a steep decline in health move into a long-term care facility (Wilmoth, 2010). While this literature acknowledges that environmental characteristics (e.g., weather, tax rates, health and welfare spending (Smith Conway & Houtenville, 2003)) can act as push and pull factors for older movers, to our knowledge there is no research examining the effects of age-friendly characteristics on late life migration.

Late life migration studies have, however, examined the relationship between the expectation to move and actually relocating to a different residence. Among older adults, previous research reports that about 50% of those who are considering moving have relocated by the study's follow up (Bradley, Longino, Stoller, & Haas, 2008; Hansen & Gottschalk, 2006) and

in one recent study, expectation to move was significantly associated with community-based (as opposed to institutional-based) relocation over two years (Sergeant, Ekerdt, & Chapin, 2010). The percentage of those who relocate is higher among those who expect to move to a nursing home (Taylor, Osterman, Acoff, & Ostbye, 2005), although the vast majority of those who end up living in a nursing facility do not expect to go there (Colsher & Wallace, 1990). The sum of this research suggests that the expectation to move is one important component in the process of relocation. Indeed, the behavioral model of late life migration proposed by Wiseman (1980) asserts that individuals frequently reevaluate whether to relocate based on a combination of resources (particularly financial and health), needs, wants, and anticipated outcomes. Our belief is that this is also true for the process of aging in place, but to date the predictors, whether age-friendly or otherwise, for expectation to age in place have not been identified.

Variations in Expectation to Age in Place by Financial Resources

There has been an acknowledgment in practice and scholarship that financial resources play a role in residential patterns of older adults. Late life migration research provides clues about the relationship between financial resources and the decision and ability to age in place, as well as how this relationship may be changing. Specifically, Meyer and Speare (1985) found that higher income increases the likelihood of relocating for amenity reasons and decreases the likelihood of moving for assistance reasons. According to Walters (2002), however, many older adults with lower incomes are amenity movers until they experience negative life events, such as impaired health or death of a spouse, and then become assistance movers. This suggests that lower-income elders have the same motivations in regards to where they will live, but circumstances interfere with their ability to act on these motivations. Therefore, there may be few differences in the expectation to make an amenity move between low- and higher-income

older adults. Additionally, Bradley and colleagues (2008), using longitudinal data from 1994 to 2000, reported that, contrary to the researchers' expectation, wealthier older adults who had been considering an amenity move were less likely to actually make that move at follow up. An underlying assumption of the late life migration literature is that relocation for amenity reasons is desirable and beneficial. It is possible, however, that the increased attention to aging in place by academic researchers (as documented by Vasunilashorn, Steinman, Liebig, & Pynoos, 2012) and organizations (as evidenced by the growing number of aging-in-place initiatives (Greenfield, 2012)) has also been accompanied by a growing interest among older adults to remain in their homes. While not yet supported empirically, there is the potential for both lower and higher resourced older adults to decide they do not want to make amenity type moves and instead decide to age in place.

Purpose of the Study

This study uses cross-sectional data from a representative sample of community-dwelling Detroit elders to examine how age-friendly characteristics influence the expectation to age in place, and to begin understanding the differences between expecting to age in place and the ability to do so. Specifically, the first purpose of the study is to examine the relationship between characteristics based on the EPA's age-friendly guide (U.S. EPA, 2011) and respondents' indication that they are not considering moving from their current residence; that is, that they expect to age in place. Based on the limited age-friendly community literature and more expansive multidisciplinary research documenting the beneficial effects of aspects of the social and physical environment on older adults, we hypothesize that age-friendly characteristics will be associated with an expectation to age in place after adjusting for individual demographic and health characteristics. The second purpose of this study is to assess whether the association

between age-friendly characteristics and the expectation to age in place differs between those who are low income and those who are higher income. Our third purpose is to understand whether low income older adults differ in their expectation to age in place from their higher income counterparts. Informed by the late life migration literature, as well as a potential attitude shift among older adults regarding the desire to remain in their current residence, we hypothesize that the effects of age-friendly characteristics on the expectation to age in place, as well as the actual expectation, will not differ by income.

Methods

Sample and Study Setting

This study is a secondary data analysis of the Detroit City-Wide Needs Assessment of Older Adults collected by the Center for Urban Studies for the Institute of Gerontology and the Center for Healthcare Effectiveness of Wayne State University (Chapleski et al., 2002). The needs assessment used a representative sample of non-institutionalized persons aged 60 years or older who resided in the City of Detroit, and was selected to reflect those eligible for Older Americans Act programs so that the city could plan more effectively for future service needs. We focused on Detroit because the city's history over the lifetime of the study's respondents may be particularly inhospitable to expectations to age in place. Over the second half of the twentieth century, many Detroit neighborhoods transitioned as African Americans migrated from the South, and Whites, as well as many businesses, relocated to the nearby suburbs (Sugrue, 1996). As the U.S. moved away from a manufacturing-based economy, the city lost approximately 350,000 jobs (Schulz, Williams, Israel, Lempert, 2002), and dropped from the population peak in 1950 of 1.8 million to less than 750,000 in 2010 (Data Driven Detroit, 2012). With no regional mass transit system, access to goods and services is a challenge. Detroit currently has many

neighborhoods that contain urban prairie in which a combination of arson, neglect, and demolition has created large tracks of vacant land that have reverted back to a natural habitat. Detroit has been experiencing outmigration of older adults, which, combined with a high mortality rate and smaller replacement cohort, resulted in a 23% loss in the city's 60 and older population between 1990 and 2000 (Detroit Area Agency on Aging and Detroit Senior Citizens Department, 2004).

Details about the data collection procedures for the Detroit needs assessment are reported elsewhere (Chapleski et al., 2002). Briefly, data were collected during 2001 via telephone interviews with a stratified random digit dialing sample of 1,310 older adults and in-person interviews with 100 older adults living in census tracts with low telephone coverage. The stratified sample targeted city-designated neighborhood area clusters, and we used post-stratified sampling weights in the regression analyses so that all areas of the city were represented in the research analyses in proportion to the total population of eligible respondents. We deleted 6 records that were not living in the city of Detroit and one whose address was listed only as 'Detroit, MI'. We also deleted 25 respondents missing data for outcome variables of interest (for both the current analyses and two previous analyses), resulting in a final sample of 1,376.

Measures

Expectation to Age in Place. Recent qualitative research indicates that the term "aging in place" is not familiar to many older adults (Wiles et al., 2011). The needs assessment did not ask respondents explicitly about aging in place, but included an item asking whether respondents were considering moving to another place, which we reverse coded and labeled expectation to age in place (0=no, 1=yes).

Age-friendly characteristics. To develop parsimonious measures and avoid

multicollinearity in our regression model, we measured age-friendly characteristics using scores derived from exploratory factor analysis. Items in the factor analysis came from the needs assessment survey as well as public and business data on characteristics of the respondent's surrounding environment. We obtained business and service location data from Dun & Bradstreet for the first quarter of 2001, and data on the location of bus stops and parks from the Detroit Department of Transportation (DDOT) and the Southeast Michigan Council of Governments, respectively. We selected items for the exploratory factor analysis based on the EPA guide (U.S. EPA Aging Initiative, 2011), although we did not have any *a priori* theory regarding item intercorrelations. Public and business location data were organized and geocoded in ArcGIS 10 (Beyer, 2011). For addresses that did not match, we manually corrected using GoogleMaps and then geocoded again. We drew a buffer of 400 meters around each respondent's address to calculate the number of amenities (e.g., parks, bus stops) within walking distance. This distance has been used in previous studies as a reasonable walking distance for older adults (Satariano et al., 2010.). The six factors included: *access to business and leisure*, *access to health care*, *neighborhood problems*, *social interaction*, *social support*, and *community engagement*. We present the items in each factor in Table 1.

Demographic and health characteristics. Based on previous research examining risk factors for relocation to a long-term care institution, we included a number of measures of sociodemographic position: gender (comparing females to males), age (measured as a continuous variable), race (comparing Black/African American, Other, and White as the reference group), and education (high school graduate, some college or higher, and less than a high school diploma as the reference group). We constructed the low income variable by dividing annual household income (reported as one of twelve categories ranging from less than \$5,000 to more than

\$50,000) by number of individuals in the household and then determining whether this number was less than 125% of the poverty rate for the year 2000 (Dalaker, 2001). We also included three dichotomous variables potentially influencing expectation to age in place: living alone, which has been previously identified as a risk factor for moving into a nursing home (Banaszak-Holl et al., 2004); owned their home, which could complicate the moving process, particularly in a city experiencing outmigration; and reported driving as a primary mode of transportation, which has been associated with remaining in one's current residence (Sergeant et al., 2010). We assessed the individual's residential stability using a continuous measure of the number of years the respondent reported living at their current address.

Health measures included a single-item measure of self-rated health: "In general, would you say your health is poor, fair, good, very good, or excellent?" with scores ranging from 1 to 5. We also included a count of five common serious chronic conditions affecting the elderly (i.e., chronic bronchitis or emphysema, heart problems, stroke, diabetes, and cancer) (Federal Interagency Forum on Aging-Related Statistics, 2010), and two ordinal measures of potential functional limitations: health limits ability to engage in moderate physical activity, and health limits ability to climb stairs (both measured with three categories: not limited at all, limited a little, and limited a lot).

[Insert Table 1 About Here]

Statistical Analyses

We imputed missing data in the needs assessment using Multiple Imputation with Chained Equations (MICE) in Stata 11. We ran an exploratory factor analysis (EFA) using principal axis factoring with a varimax rotation and Kaiser normalization to calculate the factor scores described above. Because multiple imputation methods do not work with Stata's

FACTOR command, we conducted an EFA separately for five imputed data sets and then compared the results. While we report the results from only one imputed data set, each of the other four imputations factored in the same way. We ran descriptive statistics, using percentages to describe categorical and dichotomous data, and means and standard deviations to describe continuous data.

We fit a logistic regression model to test the association of age-friendly characteristics and respondents' demographic and health characteristics on expectation to age in place. Tolerance and variance inflation factor (VIF) results indicated multicollinearity was not a concern with independent variables. We tested for the presence of residual spatial autocorrelation by calculating Moran's I, which was not statistically significant. While this does not rule out neighborhood-specific effects, the sampling frame of the needs assessment did not allow for inference at the neighborhood level. To address the second purpose of our research, we included six interaction terms between the six age-friendly factors and income. To address the third purpose of the study, we conducted a matched pair analysis. This allowed us to obtain a causal effect by comparing a difference in means between a treatment (i.e., higher income) and control group (i.e., low income). We constructed a control group such that there were no statistically significant differences on any variables that might relate to being in the higher income versus the low income group and there were enough observations for each variable (Morgan & Winship, 2007). We used the GenMatch software package to find the best matched control group from this sample (Diamond & Sekhon, 2006; Sekhon, 2009). We used an alpha of .05 for statistical tests.

Results

Descriptive Statistics

Table 1 presents a list of measures and their distribution for the unweighted sample. In the full sample, which was predominantly African American and majority low-income and low educational attainment, almost 66% reported that they had not considered moving somewhere else, whether within Detroit or farther away. Respondents reported a mean age of slightly less than 72 years, and had lived at their current address for an average of nearly 25 years. We observed an approximate normal distribution for self-rated health. These Detroit elders had been diagnosed with an average of two chronic health conditions, and a minority reported that their health limited their ability a lot to engage in moderate activities or climb stairs. Table 1 also presents the distribution of the items that comprised the six age-friendly factor scores. The six factor scores were standardized variables, so each had a mean of zero and a standard deviation of one (not shown). Participants in this sample generally lived close to a relatively high number of bus stops and businesses, but fewer grocery stores, parks, and health or mental health services. They tended to feel safe in their neighborhoods during the day and somewhat less safe at night. The number of average neighborhood or housing problems was small. Respondents reported feeling close to and having frequent contact with friends and family. More than 90% believed someone would help them for short-term or emergency reasons, and slightly less had someone available for long-term assistance. Participation in community groups or volunteering was generally low.

Multivariate Results

Logistic regression results for the full sample are presented in Table 2. In this representative sample of Detroit elders, five of the six factors, including access to business and leisure, access to health care, social interaction, social support, and community engagement, were not significantly associated with respondents' expectation to age in place. The

neighborhood problems factor, however, was significantly negatively associated with the expectation to age in place ($B = -.61$, $SE = .08$, $p < .001$). Few demographic characteristics, and none of the health characteristics, were significantly associated with the expectation to age in place. Age had a small but significant positive association with expectation to age in place ($B = .03$, $SE = .01$, $p < .001$), and home ownership also increased the likelihood of expecting to age in place ($B = .64$, $SE = .17$, $p < .001$). Those living in low income households were more likely to expect to age in place ($B = .40$, $SE = .21$, $p < .05$), but the absence of a significant association for any of the interaction terms indicated that income does not moderate the relationship between age-friendly characteristics and the expectation to age in place.

In the matched pair subsample ($n = 418$), 17% fewer higher income respondents expected to age in place compared to those with low incomes ($T = -12.405$, $p < 0.01$). (Not shown in the table).

Discussion

While aging in place has become a topic of much discussion among practitioners, policymakers and scholars, empirical studies examining the factors contributing to or the consequences of aging in place are limited. The present study, which assessed the relationship of age-friendly, demographic, and health characteristics to the expectation to age in place among a representative sample of older adults living in Detroit, contributes to the literature in several ways. First, in contrast to the majority of prior research on elders' living arrangements, including studies exploring nursing home placement (e.g., Banaszak-Holl et al., 2004; Gaugler et al., 2007) and late life migration (e.g., Bradley et al., 2008), our focus is on understanding more about older adults who will potentially age in place, specifically those who are not considering moving. Second, local, state, national, and international governmental and nongovernmental entities (e.g.,

AARP, EPA, WHO) are encouraging the adoption of policies, programs, and infrastructure changes to make existing communities more age friendly. To date, however, while there is evidence that specific components of age-friendly communities (e.g., access to social support, access to public transportation) can improve the health and well-being of older adults, research has generally not investigated the direct effects of the social and physical environment on living arrangements, including aging in place. Our findings suggest that age-friendly characteristics reflecting the EPA's framework have little impact on the expectation to remain in one's home, with the exception of those who report more neighborhood problems, housing problems, and less perceived safety being less likely to expect to age in place. Third, the majority of discussions about age-friendly communities and aging in place fail to acknowledge the role that financial resources could play in both of these processes. We found that while income did not moderate the relationship between age-friendly characteristics and the expectation to age in place, a significantly higher percentage of those with low incomes expected to remain in their homes. Likewise, home ownership had a positive association with the expectation to age in place. While this could indicate an owner's attachment to their home, it could also indicate the difficulty of selling a home in the inner city.

As noted earlier, a number of organizations have produced checklists and guides that describe the characteristics of an age-friendly community. What is often missing from these guides, in part reflecting the limited empirical literature on age-friendly communities, is an indication of thresholds that distinguish a non-age-friendly community from an age-friendly one. For example, are there a certain number of grocery stores or parks within walking distance needed to be age-friendly? Without any guidance on a threshold of age-friendliness, we created count variables of the number of various businesses, services and amenities to reflect some age-

friendly characteristics, which may explain the lack of a significant association between these measures and the expectation to age in place. Furthermore, it may not be the number, for example, of grocery stores near a person's home or the frequency of contact with family members, but rather the quality of these stores and interactions, that influences an older adult's expectation to age in place. However, we were unable to assess quality (or perceptions of quality) with our data.

Given the limited attention to the influence of individual and community characteristics on the expectation to age in place, our research was informed by prior work on risk factors for institutionalization and the theoretical and empirical literature on late life migration. In our study, a number of the demographic and health characteristics previous work has identified as increasing elders' risk for nursing home placement, including female gender, White race, living alone, and serious chronic health conditions (Banaszak-Holl et al., 2004; Bharucha et al., 2004) were not significantly associated with the expectation to age in place. While those who are older and have fewer financial resources are more likely to end up living in a nursing home (Banaszak-Holl et al., 2004), our findings suggest that they do not necessarily anticipate making this type (or any type) of move. In our sample, respondents who were older and had lower incomes were more likely to expect to age in place. In a previous study on late life migration, Stoeckel and Porell (2009) similarly found that older adults with low incomes were less likely to expect to move, which they proposed may be due to limits in the availability of affordable housing options.

While the quantitative empirical literature on aging in place is limited, there has been an increased focus on aging in place by researchers (e.g., Vasunilashorn et al., 2012), policymakers (e.g., the Community Interventions for Aging in Place Initiative included in the 2006

reauthorization of the Older Americans Act), and media (e.g., Crary, 2011), as well as surveys indicating that the overwhelming majority of older adults would like to remain in their home for as long as possible (Feldman et al., 2004). We therefore hypothesized that income would not influence the expectation to age in place in our sample. We believed that most of our sample, regardless of income, would expect to remain in their current home, yet both the regression and matched pair analysis showed that those with lower incomes were more likely to expect to age in place. Our results, including the finding that homeownership was positively associated with the expectation to age in place, raise questions about the difference between aging in place safely by choice and being what Torres-Gil and Hofland (2012) describe as “stuck in place”. Older adults with few economic resources and those who are Latino or African American may be particularly vulnerable to being stuck in place. This is an important policy issue if an elder needs to move to a better situation but is unable to afford to make the move.

We anticipated that differences in the expectation to age in place by income would only be detectable in a longitudinal research design that examined factors contributing to the actual ability to age in place over time. Our results indicate that low-income elders are less likely to report alternatives to staying in their current residence. Caution must be noted in interpreting that a proportion of our respondents are “stuck in place,” as there are many reasons why older adults may want to continue to live in a home or neighborhood that outside observers deem undesirable or unsafe. For example, elders who report living near good friends and relatives are less likely to expect to move (Stoeckel & Porell, 2010). While our data did not detect differences in the expectation to age in place by levels of social support, the data did not explicitly ask whether one lived near friends and relatives. Thus, we do not know whether these variations by income reflect

the difference between aging in place by choice for reasons such as the desire to remain near friends and family, or being stuck in place due to lack of resources.

Our findings in part reflect our choice to analyze data from a sample of elders living in Detroit, a city characterized by the outmigration of businesses, services, and wealthier residents (Sugrue, 1996). Furthermore, because the City of Detroit has high property tax (Helms, 2012), city income tax (Galster, 2002), and home and automobile insurance rates (Galster & Booza, 2008), it creates a particular disincentive for higher income elders to remain in the city. This financial disincentive does not accrue to those without cars, who are living in affordable rental housing, and whose income is not taxable. Consequently, at a time when almost all cities and towns in the United States are experiencing an increase in the proportion of the population that is elderly, Detroit's older adult population is declining, particularly among those under the age of 75 years (Detroit Area Agency on Aging and Detroit Senior Citizens Department, 2004). In this sample, slightly more than 65% of the respondents indicated that they expected to age in place, which, while representing a majority, is below the percentages found in previous surveys, such as that by Feldman and colleagues (2004) who found 93% of older adults wanted to remain in their homes for as long as possible and were confident they could afford to do so. If the current outmigration of the younger, healthier, and wealthier elders continues, the already-limited services targeted to the older population (Detroit Area Agency on Aging and Detroit Senior Citizens Department, 2004) may also disappear, and older adults who age in place in Detroit may become particularly vulnerable to negative outcomes, such as poor quality of life and social isolation. Additionally, it is unclear what will happen to many of these older adults should they need institutionalized long-term care, as approximately 16 nursing homes in Detroit have closed

in the past 15 years and there are no planned replacements (Detroit Area Agency on Aging, 2010).

The current study has a number of limitations that should be addressed in future research. First, this study contains limitations commonly found in observational, cross sectional research, including the possibility of reciprocal causation. Furthermore, with this data, we were unable to look at the ability to age in place, the relationship between the expectation to age in place and the ability to age in place, or the potential long-term consequences for older adults without the resources to relocate by choice, which should be explored in future research. Second, this study is at risk of endogeneity due to selection bias because there may be an unobserved variable that influences both the residential preferences of a resident and also effects health directly (Rogowski, Freedman, Schoeni, 2006). In this study we have adjusted estimates for individual characteristics that influence residential selection and health. Future research should use observational designs that employ matching with sensitivity analysis in order to address the problem of selection bias, attenuation bias, and endogeneity (Diez Roux, 2004). Third, there is the potential for self-report or recall bias (Keysor et al., 2010). In order to enhance measures of social and physical environments, we combined this survey data with measures from public and business data. Fourth, the needs assessment did not ask respondents to give reasons why they were considering moving, and therefore it is not possible to determine whether they wanted to age in place or if they felt stuck in place. Finally, this study draws from a representative sample of elders in one city. While it is not generalizable globally, it can inform future work in other North American cities that have predominantly African-American populations who live in neighborhoods that have experienced disinvestment.

Notwithstanding the limitations, this work makes a contribution to the literature by calling attention to the ways in which age-friendly characteristics and the process of aging in place may vary across populations and contexts. This study suggests that, regardless of income level, neighborhood and housing problems and issues with safety play a dominant role in terms of whether older adults expect to age in place. Future research should examine whether this finding is related to the unique characteristics of Detroit, reflective of older adults living in urban areas, or universally applicable regardless of the geographic location. Results also indicate that low-income elders are more likely to expect to age in place than their higher-income counterparts, and it is unclear whether this is due to a desire to remain in the home and neighborhood or the realization that there is no place else to go. Our findings call attention to the phenomenon of being stuck in place, which, with few exceptions (e.g., Phillipson, 2007; Torres-Gil & Hofland, 2012), is typically not discussed by researchers and policymakers. Indeed, the term “aging in place” is often presented as an optimal outcome, without consideration of the health and well-being of those who are remaining in their own homes and communities because they are unable to leave. Future research should continue to increase our understanding of the ways in which financial resources affect the choices, expectations, and outcomes of aging in place.

References

- Alley, D., Liebig, P., Pynoos, J., Benerjee, T., & Choi, I.H. (2007). Creating elder-friendly communities: Preparation for an aging society. *Journal of Gerontological Social Work, 49*, 1-18. doi:10.1300/J083v49n01_01.
- Andel, R., Hyer, K., & Slack, A. (2007). Risk factors for nursing home placement in older adults with and without dementia. *Journal of Aging & Health, 19*, 213-228. doi:10.1177/0898264307299359.
- Banaszak-Holl, J., Fendrick, A.M., Foster, N.L., Herzog, A.R., Kabeto, M.U., Kent, D.M., et al. (2004). Predicting nursing home admission: Estimates from a 7-year follow-up of a nationally representative sample of older Americans. *Alzheimer Disease and Associated Disorders, 18*, 83-89.
- Berke, E.M., Koepsell, T.D., Moudon, A.V., Hoskins, R.E., & Larson, E.B. (2007). Association of the built environment with physical activity and obesity in older persons. *American Journal of Public Health, 97*, 486-492. doi:10.2105/AJPH.2006.085837
- Bharucha, A.J., Pandav, R., Shen, C., Dodge, H.H., & Ganguli, M. (2004). Predictors of nursing facility admission: A 12-year epidemiological study in the United States. *Journal of the American Geriatrics Society, 52*, 434-439.
- Bradley, D.E., Longino, C.F., Stoller, E.P., & Haas, W.H. (2008). Actuation of mobility intentions among young-old: An event-history analysis. *The Gerontologist, 48*, 190-202. doi:10.1093/geront/48.2.190
- Burns, V.F., Lavoie, J., & Rose, D. (2012). Revisiting the role of neighbourhood change in social exclusion and inclusion of older people. *Journal of Aging Research, 2012*. doi:10.1155/2012/148287.

- Chapleski, E.E., Massanari, R.M., Herskovitz, L., 2002. Facing the future: 2002 City of Detroit needs assessment of older adults. Retrieved on April 4, 2012 from:
<http://www.daaa1a.org/DAAA/media/Detroit%20Needs%20Assessment%20Excerpt.pdf>.
- Colsher, P.L., & Wallace, R.B. (1990). Health and social antecedents of relocation in rural elderly persons. *Journals of Gerontology: Social Sciences*, 45, S32-S38.
- Conway, K.S., & Houtenville, A.J. (2003). Out with the old, in with the old: A closer look at younger versus older elderly migration. *Social Science Quarterly*, 84, 309-328.
- Crary, D. (11/20/11). Aging in place: A little help can go a long way. *Boston Globe*. Retrieved on September 20, 2012 from:
http://www.boston.com/news/nation/articles/2011/11/20/aging_in_place_a_little_help_can_go_a_long_way/
- Dalaker, J. (2001). Poverty in the United States: 2000. *U.S. Census Bureau, Current Population Reports, Series P60-214*. Washington, DC: U.S. Government Printing Office. Retrieved on August 22, 2012 from: <http://www.census.gov/prod/2001pubs/p60-214.pdf>.
- Data Driven Detroit, 2012. Retrieved on May 25, 2012 from: <http://datadrivendetroit.org/data-mapping/census-2010/>.
- Detroit Area Agency on Aging and Detroit Senior Citizens Department (2004). Dying before their time: The startling truth about mortality and Detroit area seniors. Retrieved on August 22, 2012 from: <http://www.daaa1a.org/DAAA/media/DBTT%20Synopsis.pdf>.
- Detroit Area Agency on Aging (2010). Dying before their time II: The startling truth about senior mortality in the Detroit area and urban Michigan. Retrieved on September 20, 2012 from:

<http://www.daaa1a.org/DAAA/media/Dying%20Before%20Their%20Time%20II%20-%202012%20Final%20Report.pdf>.

Diamond, A., & Sekhon, J. S. (2006). Genetic matching for estimating causal effects: A general multivariate matching method for achieving balance in observational studies. Retrieved on September 20, 2012 from: <http://sekhon.berkeley.edu/papers/GenMatch.pdf>.

Diez Roux, A. V., 2004. Estimating neighborhood health effects: the challenges of causal inference in a complex world. *Social Science & Medicine*, 58, 1953-1960.

Emler, C.A., & Moceri, J.T. (2012). The importance of social connectedness in building age-friendly communities. *Journal of Aging Research*. doi: 10.1155/2012/173247

Federal Interagency Forum on Aging-Related Statistics, 2010. Older Americans 2008: key indicators of well-being. Retrieved on July 15, 2012 from: http://www.agingstats.gov/agingstatsdotnet/Main_Site/Data/2010_Documents/Docs/OA_2010.pdf

Feldman, P. H., Oberlink, M. R., Simantov, E., & Gursen, M. D. (2004). *A tale of two older Americas: Community opportunities and challenges*. New York: Center for Home Care Policy and Research. Retrieved January 25, 2012 from http://www.vnsny.org/advantage/ai_nationalsurveyreport.pdf

Fiori, K. L, Antonucci, T. C, & Cortina, K. S. (2006). Social network typologies and mental health among older adults. *Journal of Gerontology: Psychological Sciences*, 61B, P25-P32.

Freedman, V.A., Grafova, I.B., Schoeni, R.F., & Rogowski, J. (2008). Neighborhoods and disability in later life. *Social Science & Medicine*, 66, 2253-2267.

- Galster, G., & Booza, J. (2008). Are home and auto insurance policies excessively priced in cities? Recent evidence from Michigan. *Journal of Urban Affairs, 30*(5), 507–527.
doi:10.1111/j.1467-9906.2008.00416.x
- Galster, G. C. (2002). Gentrification as Diversification: Why Detroit Needs It and How It Can Get It. *Journal of Law in Society, 4*, 29. Retrieved from
<http://heinonline.org/HOL/Page?handle=hein.journals/jls4&id=35&div=&collection=journals>
- Gaugler, J.E., Duval, S., Anderson, K.A., & Kane, R.L. (2007). Predicting nursing home admission in the U.S: A meta-analysis. *BMC Geriatrics, 7*, 13-26.
- Greenfield, E.A. (2012). Using ecological frameworks to advance a field of research, practice, and policy on aging-in-place initiatives. *The Gerontologist, 52*, 1-12.
doi:10.1093/geront/gnr108
- Hansen, E.B., & Gottschalk, G. (2006). What makes older people consider moving house and what makes them move? *Housing, Theory, and Society, 23*, 34-54.
- Hanson, D., & Emler, C.A. (2006). Assessing a community's elder-friendliness: A case example of the AdvantAge Initiative. *Family and Community Health, 29*, 266-278.
- Helms, M. (2012, August 7). Raise Detroit property taxes by 8 mills to pay for more cops? No way, City Council says. *Detroit Free Press*. Retrieved from
<http://www.freep.com/article/20120807/NEWS01/120807060>
- Keysor, J.J., Jette, A.M., LaValley, M.P., Lewis, C.E., Torner, J.C., Nevitt, M.C., Felson, D.T., 2010. Community environmental factors are associated with disability in older adults with functional limitations: the MOST study. *Journals of Gerontology: Medical Sciences 65A*, 393-399.

- Lawton, M.P., & Nahemow, L., (1973). Ecology and the aging process. In: Eisdorfer, C., Lawton, M.P. (Eds), *The Psychology of Adult Development and Aging*. American Psychological Association, Washington, DC, pp. 619-674.
- Litwak, E., & Longino, C.F. (1987). Migration patterns among the elderly: A developmental perspective. *The Gerontologist*, 27, 266-272. doi: 10.1093/geront/27.3.266
- Meyer, J.W., & Speare, A. (1985). Distinctively elderly mobility: Types and determinants. *Economic Geography*, 61, 79-88.
- Moore, L., Diez-Roux, A., Nettleton, J., & Jacobs, D. (2008). Associations of the local food environment with diet quality—a comparison of assessments based on surveys and geographic information systems: The multi-ethnic study of atherosclerosis. *American Journal of Epidemiology*, 167, 917–924. doi:10.1093/aje/kwm394
- Morgan, S. L., & Winship, C. (2007). *Counterfactuals and Causal Inference: Methods and Principles for Social Research* (1st ed.). Cambridge University Press.
- Morrow-Howell, N., Hinterlong, J., Rozario, P.A., & Tang, F. (2003). Effects of volunteering on the well-being of older adults. *Journal of Gerontology: Social Sciences*, 58B, S137-S145. doi:10.1093/geronb/58.3.S137
- Plouffe, L., & Kalache, A. (2010). Towards global age-friendly cities: Determining urban features that promote active aging. *Journal of Urban Health*, 87, 733-739. doi:10.1007/s11524-010-9466-0.
- Rogowski, J.A., Freedman, V.A., Schoeni, R.F., 2006. Neighborhoods and the health of the elderly: challenges using national survey data. Population Studies Center Research Report 06-600. Retrieved on February 13, 2012 from: <http://www.psc.isr.umich.edu/pubs/pdf/rr06-600.pdf>

- Rowles, G.D. (1983). Place and personal identity in old age: Observations from Appalachia. *Journal of Environmental Psychology, 3*, 299-313.
- Satariano, W.A., Ivey, S.L., Kurtovich, E., Kealey, M., Hubbard, A.E., Bayles, C.M. et al. (2010). Lower-body function, neighborhoods, and walking in an older population. *American Journal of Preventive Medicine, 38*, 419-428.
doi:10.1016/j.amepre.2009.12.031
- Scharlach, A.E. (2009). Creating aging-friendly communities. *Generations, 33*, 5-11.
- Scharlach, A.E., & Lehning, A.J. (in press). Aging-friendly communities and social inclusion. *Ageing & Society*.
- Schulz, A. Williams, D.R., Israel, B., Lempert, L.B., 2002. Racial and spatial relations as fundamental determinants of health in Detroit. *Millbank Quarterly, 80*, 677-707.
- Schulz, R., Belle, S.H., Czaja, S.J., McGinnis, K.A., Stevens, A., & Zhang, S. (2004). Long-term care placement of dementia patients and caregiver health and well-being. *Journal of the American Medical Association, 292*, 961-967. doi:10.1001/jama.292.8.961
- Scocco, P., Rapattoni, M., & Fantoni, G. (2006). Nursing home institutionalization: A source of *eustress* or *distress* for the elderly? *International Journal of Geriatric Psychiatry, 21*, 281-287. doi:10.1002/gps.1453
- Sekhon, J. S. (2009). Opiates for the Matches: Matching Methods for Causal Inference. *Annual Review of Political Science, 12*, 487-508. doi:10.1146/annurev.polisci.11.060606.135444
- Sergeant, J.F., Ekerdt, D.J., & Chapin, R.K. (2010). Older adults' expectations to move: Do they predict actual community-based or nursing facility moves within 2 years? *Journal of Aging and Health, 22*, 1029-1053. doi: 10.1177/0898264310368296

- Sixsmith, A., & Sixsmith, J. (2008). Ageing in place in the United Kingdom. *Ageing International*, 32, 219-235.
- Stoeckel, K. J., & Porell, F. (2010). Do Older Adults Anticipate Relocating? The Relationship Between Housing Relocation Expectations and Falls. *Journal of Applied Gerontology*, 29, 231–250. doi:10.1177/0733464809335595.
- Sugrue, T.J. (1996). *The Origins of the Urban Crisis: Race and Inequality in Postwar Detroit*. Princeton, NJ: Princeton University Press.
- Taylor, D.H., Osterman, J., Acuff, S.W., & Ostbye, T. (2005). Do seniors understand their risk of moving to a nursing home? *HRS: Health Services Research*, 40, 811-828.
- Torres-Gil, F., & Hofland, B. (2012). “Vulnerable populations”. In H. Cisneros, M. Dyer-Chamberlain, & J. Hickie (Eds), *Independent for life: Homes and neighborhoods for an aging America*. Austin, TX: University of Texas Press.
- U.S. Environmental Protection Agency Aging Initiative (2011). Growing smarter, living healthier: A guide to smart growth and active ageing. Retrieved on January 21, 2012 from: http://www.epa.gov/aging/bhc/guide/2009_Aging.pdf
- Vasunilashorn, S., Steinman, B.A., Liebig, P.S., & Pynoos, J. (2012). Aging in place: Evolution of a research topic whose time has come. *Journal of Aging Research*. doi:10.1153/2012/120952.
- Walters, W.H. (2002). Place characteristics and late-life migration. *Research on Aging*, 24, 243-277. doi:10.1177/0164027502242004
- Waites, C. (2012). Examining the Perceptions, Preferences, and Practices That Influence Healthy Aging for African American Older Adults: An Ecological Perspective. *Journal of Applied Gerontology*. doi:10.1177/0733464812446020

Wiles, J.L., Leibing, A., Guberman, N., Reeve, J., & Allen, R.E.S. (2012). The meaning of "ageing in place" to older people. *The Gerontologist, 52*, 357-368.
doi:10.1093/geront/gnr098.

Wilmoth, J.M. (2010). Health trajectories among older movers. *Journal of Aging and Health, 22*, 862-881. doi:10.1177/0898264310375985

Wiseman, R.F. (1980). Why older people move: Theoretical issues. *Research on Aging, 2*, 141-154.

Table 1: Characteristics of the Sample (N=1,376 Community-Dwelling Older Adults Age 60 and Older Living in Detroit in 2001)

	Distribution
Expectation to Age in Place	65.4
<i>Demographic Characteristics</i>	
Female	70.6
Age	71.6 (7.6)
	Range 60-97
Race	
White	13.8
Black/African American	81.2
Other	5.3
Education	
Less than High School Diploma	40.8
High School Graduate	24.0
Some College or Higher	35.2
Low Income (Below 125% Poverty)	16.5
Lives Alone	42.1
Owns Home	70.4
Drives	61.0
Years at Current Address	24.1 (15.7)
	Range 0-83
<i>Health Characteristics</i>	
Self-Rated Health	
Poor	8.7
Fair	23.8

Good	31.8
Very Good	27.1
Excellent	8.6
Number of Chronic Conditions	0.8 (0.9)
	Range 0-4
Health Limits Activities	1.7 (0.8)
(Not at All to A Lot)	Range 1-3
Health Limits Stairs	1.9 (0.8)
(Not at All to A Lot)	Range 1-3
<i>Age-Friendly Factor Items</i>	
Factor 1: Access to Business and Leisure	
Total Number of Bus Stops Within 400 Meters	14.2 (22.6)
	Range 0-321
Total Number of Businesses Within 400 Meters	21.6 (29.4)
	Range 0-333
Total Number of Grocery Stores Within 400 Meters	1.0 (1.2)
	Range 0-11
Total Number of Parks Within 400 Meters	0.9 (1.1)
	Range 0-16
Factor 2: Access to Health Care	
Total Number of Health Services Within 400 Meters	1.5 (4.8)
	Range 0-47
Total Number of Mental Health Services Within 400 Meters	0.1 (0.5)
	Range 0-3

Factor 3: Neighborhood Problems	
Feels Safe Alone at Night	1.5 (0.7)
(Very Safe to Very Unsafe)	Range 1-4
Feels Safe Alone During the Day	2.3 (1.0)
(Very Safe to Very Unsafe)	Range 1-4
Count of Neighborhood Problems	1.99 (2.5)
	Range 0-10
Count of Housing Problems	2.3 (2.1)
	Range 0-9
Factor 4: Social Interaction	
Feels Close to Friends and Family	90.7
Talks or Visits with Friends and Family	5.4 (2.1)
(Never to Everyday)	Range 0-7
Factor 5: Social Support	
Believes Someone Available for Short Term	92.9
Believes Someone Available for Long Term	80.7
Believes Someone Available for Emergency	95.5
Factor 6: Community Engagement	
Frequency of Participation in Community Groups	1.1 (1.9)
(Never to Everyday)	Range 0-7
Frequency of Volunteering	1.4 (2.3)
(Never to Everyday)	Range 0-7

Notes: Table entries are for unweighted data. Percentages are shown for categorical variables. Means with standard errors in parentheses and range below are shown for continuous variables.

Table 2: Logistic Regression of Age-Friendly Factors on Expectation to Age in Place (N=1,376 Community-Dwelling Older Adults Age 60 and Older Living in Detroit in 2001)

	<i>B</i>	<i>SE B</i>	OR
<i>Age-Friendly Community Factors</i>			
Access to Business and Leisure	-.04	.07	.97
Access to Health Care	-.03	.09	.96
Neighborhood Problems	-.61***	.08	.54
Social Interaction	.02	.08	1.01
Social Support	.11	.08	1.12
Community Engagement	.02	.09	1.03
<i>Demographic Characteristics</i>			
Female	.10	.14	1.10
Age	.03***	.01	1.03
Race (White ref)			
Black/African American	.18	.19	1.20
Other	.07	.31	1.07
Education (No HS ref)			
High School Graduate	-.04	.16	.96
Some College or Higher	-.29	.15	.75
Low Income (Below 125% Poverty Line)	.40*	.21	1.49
Lives Alone	-.12	.14	.88
Owns Home	.64***	.17	1.90
Drives	-.24	.15	.79
Years at Current Address	.004	.005	1.00
<i>Health Characteristics</i>			
Self-Rated Health	-.04	.07	.97

RUNNING HEAD: Expectation to Age in Place

Number of Chronic Conditions	-.003	.08	1.00
Health Limits Activities	-.12	.10	.89
Health Limits Stairs	.02	.10	1.02
<i>Interaction Terms</i>			
Low Income* Access to Business and Leisure	.05	.11	1.05
Low Income* Access to Health Care	.02	.13	1.02
Low Income* Neighborhood Problems	-.15	.22	.86
Low Income* Social Interaction	.11	.20	1.11
Low Income* Social Support	-.15	.20	.86
Low Income* Community Engagement	-.01	.24	.99

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.