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Abstract

Title of Dissertation: Push Factors, Moving, and Mental Health Among Older Adults: The Moderating Effects of Indicators of Social Support

Ji Hyang Cheon, Doctor of Philosophy, 2023

Dissertation Directed by: Amanda Lehning, Ph.D., Senior Associate Dean for Academic Affairs and Associate Professor, School of Social Work, University of Maryland, Baltimore

Due to their inclination to age in place, older adults can experience stress when push factors require them to leave their current residence. Consequently, older adults who are moved because of such factors may be susceptible to adverse effects on their mental health. This study aimed to (1) identify the push factors affecting the moving of older adults, (2) investigate whether the relationship between push factors and mental health is mediated by moving, and (3) examine the moderating role of indicators of social support on the relationship between moving and the mental health of older adults. I conducted analyses of a sample of 4,856 community-dwelling older adults using secondary data derived from Rounds 6 and 7 of the National Health and Aging Trends Study. I used logistic regression and structural equation modeling to test aims. The findings revealed that older adults who had been hospitalized and were renters demonstrated a higher propensity to move and that those who were Medicare beneficiaries were less likely to move. Several health issues were associated with lower well-being and higher depression. Renters reported lower well-being, and Medicaid beneficiaries reported higher depression. Housing interior conditions were also associated with depression and well-being. However, the study produced no evidence that social support moderated the relationship between relocation and mental health in older adults. These findings can inform targeted interventions and policy development to improve the mental health of at-

risk older adults who may face push factors such as health problems, limited income, and poor housing conditions.

Push Factors, Moving, and Mental Health Among Older Adults: The Moderating Effects
of Indicators of Social Support

by
Ji Hyang Cheon

Dissertation submitted to the Faculty of the Graduate School of the
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Chapter 1: Background and Purpose

Problem Statement

The purpose of this study was to identify the push factors affecting the moving of older adults, to investigate whether these factors indirectly affect mental health via moving, and to examine whether indicators of social support moderate the relationship between moving and the mental health of older adults. Through examination of the effects of push factors on mental health via moving, this study contributes to understanding of the complex relationships among push factors, moving, and mental health. In addition, it provides insights into whether indicators of social support can mitigate the negative effects of moving on the mental health of older adults. Finally, this research provides knowledge that can inform targeted interventions and policy development to enhance the mental health of older adults who are at risk of decline in mental health due to push factors such as health problems, limited income, and poor housing conditions.

Definition of Moving

Moving in this study was limited to the relocation of older adults within a community. Moving within a community indicates moving from one residence to another residence within the same community or to another state, city, or town. Older adults who moved internationally were not included in the study. Relocation to a long-term care facility was not included in the definition of moving within a community.

Mental Health in Later Life

In 2019, the prevalence of major depressive disorder (MDE) in the United States

among older adults aged 65 years and older was 2.9%, compared with 15.2% of young adults aged 18–25, 8.9% of those aged 26–49, and 4.7% of those aged 50–64 years (Substance Abuse and Mental Health Services Administration, n.d.). However, using the Patient Health Questionnaire [PHQ]–8 scale, a considerable proportion of adults across age groups have experienced mild, moderate, or severe depressive symptoms in the past two weeks. Specifically, 21% of adults aged 18–29 years, 16.8% of those aged 30 to 44 years, 18.4% of those aged 45 to 64 years, and 18.4% of those aged 65 and older have reported experiencing such symptoms (Villarroel & Terlizzi, 2020). Even mild depressive symptoms may develop into MDE, so older adults should not overlook depressive symptoms. In addition, in 2020, the U.S. suicide rate among older adults aged 85 and older (20.86 per 100,000) was the highest among all adults aged 25 and older, followed by the rate for those aged 75–84 years (18.43 per 100,000). This prevalence was higher than the suicide rate for those aged 25–34 (18.35 per 100,000; American Foundation for Suicide Prevention, 2022), indicates that older adult groups have a higher probability of dying by suicide compared to younger age groups. This is possibly due to their stronger inclination towards suicide among those who are experiencing severe depression. Since one of the criteria for depression in the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; American Psychiatric Association, 2013) is suicidality, depressive symptoms in older adults should never be overlooked, even if these adults do not meet the criteria of MDE. Further, the percentage of older adults in the U.S. population in 2016 was 17.2%, and it is projected to reach 26.9% in 2050 (U.S. Census Bureau, 2017b), so the number of older adults suffering from depressive symptoms can be expected to increase.

Quality of life, life satisfaction, and well-being are terms that have been used interchangeably (Steptoe et al., 2015), and *well-being* has been defined as “optimal psychological function and experience” (Springer & Hauser, 2006, p. 1081). Many studies have shown a positive relationship between well-being and the physical health of older adults. For example, a review of 35 studies found that higher well-being was associated with lower mortality rates in both healthy and sick older adults (Chida & Steptoe, 2008). In contrast, several studies have shown depressed older adults to have lower quality of life (González-Celis & Gómez-Benito, 2013; Sivertsen et al., 2015). These results suggest that attention should be paid to both depression and well-being to protect the health of older adults and reduce mortality.

Depressive symptoms in old age may be a continuation of depression that occurred in youth. However, in the case of late-onset depression occurring in old age, depressive symptoms could be caused by stressful life events and various constraints that have occurred in older adults’ daily lives (Blazer & Hybels, 2005). For example, older adults with chronic health issues, lower functional ability, financial strain, dissatisfaction with their environment, deteriorating housing, and/or lack of social relationships or social support have shown depressive symptoms (Blazer & Hybels, 2005; Thapa et al., 2020; Timalsina et al., 2014). Such episodic or chronic stressors related to depressive symptoms in older adults may also serve as triggering mechanisms inducing older adults to move.

Moving and Mental Health

Prior research indicates that moving can increase depression and impair well-being (Lyu et al., 2020; Oishi, 2010; Tunstall et al., 2015). Sixty percentage of older adults prefer to stay in the house and neighborhood in which they currently live (AARP,

2021). However, they may move due to various factors that occur along the life cycle. The tendency of older adults to prefer to age in place suggests that these adults may be negatively affected by moving. The event of moving may act as a stressor for older adults, particularly if they need to move involuntary. According to social stress theory, stressful events can cause health problems (Schmidt et al., 2017). Prior research indicates that older adults who have moved experience negative mental health issues such as anxiety, depression, and psychiatric problems (Lyu et al., 2020; Tunstall et al., 2015) and suffer from poor well-being (Oishi, 2010). In 2017, in the United States, 3.5% of those aged 65 years and over and 5.6% of those aged 50–64 moved, representing 4 million people overall (Joint Center for Housing Studies of Harvard University [JCHS], 2018). As the older adult population increases, the number of older adults who move will continue to increase. As a result, the number of older adults who experience depression or reduced well-being due to a move may also increase.

Push Factors and Mental Health

According to Wiseman's (1980) behavioral model of older adults' migration, when triggering mechanisms occur, older adults decide whether to move or not by evaluating their current residence. The triggering mechanisms can be divided into (1) push factors that cause people to leave their current residence and (2) pull factors that cause them to move to a new residence (Wiseman, 1980).

Studies have been conducted on the various push factors and pull factors that induce older adults to move. Push factors include poor health (Choi, 1996; Costlow et al., 2020; Pope & Kang, 2010); dissatisfaction with a residence or difficulties in maintaining a house (Costlow et al., 2020; Pope & Kang, 2010; Weeks et al., 2012); financial

problems (Choi, 1996; Costlow et al., 2020; Pope & Kang, 2010); and changes in family composition, such as being widowed (Pope & Kang, 2010). Pull factors include nearby family (Choi, 1996; Pope & Kang, 2010) and/or health care facilities (Pope & Kang, 2010), attractive new locations (Costlow et al., 2020), desirable social factors (Costlow et al., 2020), availability of services and amenities (Costlow et al., 2020), and better/safer neighborhoods (Pope & Kang, 2010).

It is likely that push factors have a stronger influence on older adults' well-being than do pull factors. For example, Costlow et al. (2020) found that older adults who moved a downsized house because of push factors such as health problems, housing maintenance concerns, or dissatisfaction with location had lower well-being than did older adults affected by pull factors such as an attractive new place, desirable social factors, or improved services and amenities. In addition, push factors are expected to be related to depression in older adults. For example, push factors such as poor self-rated health (Fan et al., 2021), limitations in activities of daily living (ADLs; Fan et al., 2021), neighborhood disorder (Baranyi et al., 2020), and lack of social cohesion (Baranyi et al., 2020) have been found to be positively associated with depression.

Moderating Role of Indicators of Social Support for Moving and Mental Health

It has been demonstrated that older adults' social environments significantly impact their mental health and well-being. As part of the social environment, social support systems around individuals play a crucial role in the well-being of older adults. By buffering the stress caused by external events (Brown et al., 2009; Gayman et al., 2014), social support makes it possible to prevent the deterioration of physical and mental health that can result from psychological distress (Han et al., 2007; Heid et al., 2017;

Kim, 2001). Accordingly, older adults with adequate social support experience higher levels of psychological well-being and lower levels of psychological distress (Alcañiz et al., 2020; Brown et al., 2009), while those with inadequate support are more likely to experience depression (Han et al., 2007; Kim, 2001; Wu & Chiou, 2020).

Social support has been measured using various indicators such as social network size (H.-R. Han et al., 2007), social support satisfaction (Alcañiz et al., 2020; S. C. Brown et al., 2009; Han et al., 2007), perceived social support level (Han et al., 2007), affective support (Heid et al., 2017), emotional support (Heid et al., 2017; Kim, 2001), instrumental support (Kim, 2001), and social activities (Alcañiz et al., 2020). Since older adults who experience adverse events such as a death in the family, functional limitations, and deterioration of health are at risk for anxiety and/or depression (Thapa et al., 2020), it is crucial for these adults to receive robust social support to relieve the stress arising from these events. These findings suggest that social support may prevent mental health deterioration by buffering the stress of moving. However, very few studies have examined whether social support or indicators of it moderate the relationship between moving and depression or the relationship between moving and well-being.

Purpose of the Study

The purpose of this study was to investigate the relationships among push factors, moving, and mental health outcomes in older adults. In addition, the study aimed to examine whether indicators of social support moderate the relationship between moving and mental health. Specifically, this study pursued the following aims and hypotheses.

Aim 1: Identify the push factors affecting the moving of older adults.

Hypothesis 1: Push factors (i.e., poor self-rated health, ADL limitations,

limitations in instrumental activities of daily living [IADLs], hospital stays, falls, cognitive decline, financial difficulties, renter status, neighborhood disorder, lack of perceived neighborhood cohesion, housing deterioration) will be positively associated with the moving of older adults.

Aim 2-1: Investigate whether the relationship between push factors and depression is mediated by moving.

Hypothesis 2-1: Push factors will be associated with greater depression via moving.

Aim 2-2: Investigate whether the relationship between push factors and well-being is mediated by moving.

Hypothesis 2-2: Push factors will be associated with lower well-being via moving.

Aim 3-1: Examine the moderating role of indicators of social support (i.e., living with others, social network size, participation in social activities) on the relationship between moving and depression in older adults.

Hypothesis 3-1: Indicators of social support will moderate the relationship between moving and depression such that social support reduces moving's influence on depression outcome.

Aim 3-2: Examine the moderating role of indicators of social support on the relationship between moving and well-being in older adults.

Hypothesis 3-2: Indicators of social support will moderate the relationship between moving and well-being such that social support reduces moving's influence on well-being outcome.

Chapter 2: Literature Review and Conceptual Framework

Older Adults and Moving

Most older adults prefer to age in place, living in their current home and neighborhood (AARP, 2021). This preference can be explained by older adults' attachment to and familiarity with their residence and community. As the histories and memories of family members are embedded in a home, it becomes an object of psychological and physical attachment for an older adult (Cloutier-Fisher & Harvey, 2009). In addition, a sense of social belonging formed through social relationships and activities within the community in which older adults reside creates social attachment to the community (Garrett & Poulain, 2018; Rowles, 1993). As physical functions decline with age, older adults spend more time at home (Baltes et al., 1999) and tend to prefer familiar places and environments. In a familiar environment, older adults can easily access the resources they require, such as hospitals and grocery stores, as they possess knowledge of and have capacity to navigate these places. The physical, social, and psychological attachment to home and community created by staying in the same residence for a long time, as well as the psychological stability and practical convenience provided by familiar physical and social environments, may cause older adults to not want to move.

Nonetheless, in the United States, 4 million older adults moved in 2017 alone (JCHS, 2018), and this number is expected to increase in every subsequent year due to increases in the older adult population. Wiseman (1980) proposed a migration process (discussed in more detail later in this chapter) in which individuals evaluate residence satisfaction following triggering mechanisms that may induce moving. Based on the life

cycle, older adults are likely to experience various events such as retirement, changes in health status, and the death of a spouse, and these events can act as triggering mechanisms. These triggering mechanisms that influence older adults to move can be divided into *push factors* and *pull factors*. Push factors make older adults unwilling or unable to continue to reside in the house or community in which they currently reside. Pull factors motivate older adults to move to a residence or community that they have decided on as a moving destination.

Older adults who move within the community may be more satisfied with their new residence if they move voluntarily and/or are motivated by pull factors, which may positively affect their mental health. Conversely, when moving involuntarily because of push factors, older adults may be leaving the residence to which they have been attached for a long time and, thus, they may be stressed by this unwanted move. In addition, since push factors imply that the current residence does not meet the needs of older adults or indicate a change in health status, and changes in physical, psychological, and social environments, they can act as stressors and impair older adults' health. Previous studies indicate that a greater number of moves and moving within a neighborhood are associated with decreased well-being in older adults (Oishi, 2010) and with mental and physical health problems (Lyu et al., 2020; Tunstall et al., 2015). However, studies examining the relationship between moving in response to push factors and mental health are scant.

Moving and Mental Health

For older adults, moving is a significant event in which physical and psychological attachments to home and neighborhood that may have been accumulated

over a long period of time are lost (Cloutier-Fisher & Harvey, 2009). Also, older adults may feel concerned that the social relationships they have built within the community will be lost (Garrett & Poulain, 2018; Rowles, 1993). When moving out of their existing community, older adults experience psychological stress and anxiety as they are cut off from familiar environments and relationships and have to go through the process of adapting from an old environment to a new one (Lieberman, 1991). Such stress and anxiety can have a detrimental effect on older adults' mental health.

Further, the higher the attachment of older adults to a former residence, the more difficult it may be for them to adapt to a new residence. For example, one study found that when older adults living in the countryside in China migrated to the city, those with a strong attachment to the countryside had higher post-migration depressive symptoms than did those without such strong attachment (Zhang & Wang, 2020). In addition, the claim that well-being is based on attachment to home and neighborhood (Thin, 2016) implies that attachment to a former residence is likely to affect not only depression but also well-being in relocated older adults.

Moving and Depression

Studies have documented how moving contributes to depression in later life. For example, recently in China, both longitudinal (Lyu et al., 2020) and cross-sectional (Li et al., 2017) studies using the China Health and Retirement Longitudinal Study showed that older adults who migrated were more depressed than were those who did not. Sun et al. (2020) found that higher stress levels was associated with higher depression among older adults who had just moved. And Donley and Nicholson (2019) found that older adults who migrated to public housing had higher levels of stress, anxiety, and depression than

did older adults living in private housing. These studies suggest that older adults who have moved have various mental health issues that are interrelated.

To date, studies have investigated moving as a result of pull factors more than by push factors. For example, older adults who moved to become homeowners had less experience of depression (Courtin et al., 2018), perhaps because they chose a house and neighborhood to move to. In the United States, older adults often migrate to the sunbelt, which runs from the southwest to the southeast, seeking a warm and sunny climate. Similarly, in Japan, retirees tend to move to resorts as they age. Japanese older adults who moved due to this pull factor were found to have lower levels of depression than did those who did not move (Saito et al., 1999).

Focusing on older adults in the United States, Bradley and Van Willigen (2010) investigated the effects of moving by push factors on depression in a longitudinal study using the Health and Retirement Study (HRS). Push factors included health problems, marital status change, neighborhood or residence conditions, natural disasters, financial problems, no home, living alone, and family problems. Bradley and Van Willigen found that older adults who moved by push factors had higher levels of depression after moving than did those who moved by pull factors. However, in their study, reason for moving was divided into only two attributes—push factors and other factors—for analysis. They did not investigate the relationship between moving and depression by each push factor. To my knowledge, no previous studies have examined whether moving mediates the relationship between each push factor and depression.

Moving and Well-Being

Well-being is a concept that can be used to measure whether older adults are

living an optimal life (Springer & Hauser, 2006). Well-being has been measured using a variety of concepts and measurement tools. For example, quality of life (Steptoe et al., 2015), psychological well-being (Ryff & Essex, 1992), and life satisfaction (Kampfe, 1999) have all been used as measures of well-being.

A limited number of studies have investigated the role of moving to account for the well-being of older adults. Moving constitutes a stressful event for older adults and lowers life satisfaction (Oishi, 2010). However, the level of well-being of older adults after moving may differ depending on whether these adults moved voluntarily or involuntarily or whether they were more affected by push or by pull factors. For example, one study found that well-being continued to decline after moving, irrespective of whether older adults moved voluntarily or involuntarily; however, both before and after moving, the well-being level of older adults who moved involuntarily was lower than the well-being level of those who moved voluntarily or did not move (Finney & Marshall, 2018). This result suggests that the well-being of involuntary movers may be adversely affected by push factors before moving and that well-being does not recover after moving. However, even if push factors caused a move, it has been found that psychological well-being did not deteriorate when satisfaction with a new residence was high (Ryff & Essex, 1992). This result shows that moving is an important event and that, in particular, the well-being and quality of life of older adults who have moved may deteriorate due to push factors. In contrast, older adults who perceive that they took the lead in the moving process and controlled their surroundings have been found to have higher life satisfaction after moving (Kampfe, 1999).

Studies on the association between moving and well-being among older adults

have been scarce, with the exception of Finney and Marshall's (2018) study with older adults in the United Kingdom and Ryff and Essex's (1992) study with a small sample size ($N = 120$) of older women in the United States. Therefore, there is a need for research using a nationwide data set that has a sufficient sample size to be generalizable to older adults in the United States.

Push Factors, Moving, and Mental Health

According to Wiseman (1980), some of the most common push factors for a move are health problems, financial difficulties, new widowhood, being a renter, and stressful environmental conditions. This section documents the existing literature linking these push factors both to moving and to older adults' mental health. These findings suggest that each push factor's association with depression and well-being may be mediated by moving.

Health Problems

Physical health problems present the most significant concerns overall among older adults (Boyon & Jackson, 2019) and may be the most significant factor inducing them to move (Choi, 1996). The findings of a recent scoping review support the notion that the health-related issues of older adults and/or their partners—including physical health decline, cognitive decline, and functional decline—are among the most extensively investigated push factors (Franco et al., 2020).

Self-Rated Health. Self-rated health can function as a subjective indicator of the health of older adults in that it represents how older adults perceive their own current health status (Franzini, 2008). Studies investigating the effect of self-rated health as a push factor on moving have been based on various theories, including Wiseman's (1980)

model (described in more detail at the end of this chapter). In most of these studies, older adults mentioned that their reason for moving or considering moving was their own and/or their spouse's health (Bloem et al., 2008; Choi, 1996; Coulter & Scott, 2015; Erickson et al., 2006).

Carpenter et al. (2007) found that older adults who were worried about moving rated their health as lower than did those who were not worried. Older adults considered moving when they had a health condition that required another person's help (Crisp, Windsor, Butterworth, & Anstey, 2013). However, Ewen et al. (2014) revealed that while there was a positive association between moving plans and relocation among older adults, there was no significant relationship between poor health and moving plans. This result suggests that poor health was not a push factor in older adults' moving.

Several studies have measured changes in older adults' self-rated health. For example, a study of community-dwelling older adults in New York County found that they moved when their health status got worse (Erickson et al., 2006). However, the same study found that older adults whose health was poor but stable did not relocate. This finding suggests that it is deterioration of their health condition, not their current health status per se, that motivates older adults to move. Tyvimaa and Kemp (2011) conducted a qualitative study of older adults living in independent senior housing and found that older adults who experienced a change in health status moved in preparation for requiring someone's help in the future. In contrast, a study by Philibert and Daniel (2015) using the Canadian National Population Health Study found that older adults with poor self-rated health were more likely than were others to move, but older adults with changes in health did not move more often than did those without health changes. Due to the biennial

nature of the data collection, it remains unclear whether any sudden health changes that occurred between the 2-year intervals prompted the older adults in this study to relocate. Hence, the researchers contended that the likelihood of changes in health status over a relatively brief period being a catalyst for moving could not be discounted.

Many studies have investigated the relationship between self-rated health and depression in middle-aged and older adults in various countries. For example, Boima et al. (2020) found that among patients with hypertension older than 50 years of age, the poorer their self-rated health, the higher their depressive symptoms compared with younger adults. Oserowsky et al. (2021) found that deterioration of overall general health was the most significant risk factor for depression in older adults over 65 with bladder cancer. Studies of European older adults 65 and older and German older adults 75 and older also found that poor self-rated health was associated with an increased risk of depression (Conde-Sala et al., 2019; Luppá et al., 2012). In a study of Chinese adults over 45 and a study of Taiwanese older adults over 65, the depression of participants who reported poor self-rated health was worse than that of participants who reported good self-rated health (Fan et al., 2021). Regardless of culture or age, middle-aged and older adults are more likely to experience depression when their self-perceived health status is poor.

Fewer studies have been conducted on the relationship between self-rated health and well-being. A study using the Survey of Health, Ageing and Retirement in Europe data set and targeting older adults 50 years of age and older found that the poorer their self-rated perception of health, the lower their level of subjective well-being (Bussière et al., 2021). In a study of Israeli older adults over 70, the higher their self-rated perception

of health, the higher their degree of life satisfaction (Carmel & Bernstein, 2003).

ADL/IADL Limitations. ADLs are activities that satisfy basic physical needs, including bathing, dressing, eating, transferring, toileting, and maintaining continence (Edemekong et al., 2022). IADLs are essential functions necessary for an individual to live independently in a community and include activities somewhat more complex than ADLs such as using transportation, shopping, managing finances, preparing meals, keeping house, managing communication with others, and taking medications (Edemekong et al., 2022).

Older adults have reported feeling concerned that if their ADL and/or IADL function were impaired, they would need to move within a few years (Carpenter et al., 2007). However, contrary to these concerns, other studies have reported either no significant association (Ewen et al., 2014) or an inverse association between decreased ADL or IADL functioning and moving (Choi, 1996). The cause of these unexpected findings was explained by the study results of Miller et al. (1999). In their study, among older adults with reduced ADL and IADL functioning, those who received assistance were significantly less likely to move than were those who did not. Perhaps the need to move was reduced because the older adults who participated in the previous studies received assistance for functional decline (Choi, 1996; Ewen et al., 2014). Therefore, it is possible that, unlike other health problems, ADL and IADL limitations induce aging in place in older adults if these adults receive some assistance at home.

Several studies have investigated the relationship between ADLs and depression, finding that older adults with reduced ADL function were more likely to be depressed than were other older adults (Conde-Sala et al., 2019; Dey, 2021; Fan et al., 2021; Lue et

al., 2010; Luppá et al., 2012; Makizako et al., 2015; Oserowsky et al., 2021; Weyerer et al., 2013; Yang et al., 2015). These studies included European older adults (Conde-Sala et al., 2019; Luppá et al., 2012; Weyerer et al., 2013), female Indian older adults (Dey, 2021), middle-aged and older adults in China and Taiwan (Fan et al., 2021; Lue et al., 2010; Yang et al., 2015), Japanese older adults (Makizako et al., 2015), and American older adults (Oserowsky et al., 2021). Limitations in ADLs increase depression in older adults regardless of these adults' culture and gender. Also, older adults with impaired IADLs experienced more depression than did those without such impairments (Schoevers et al., 2000; Yang et al., 2015).

Consistent results have been obtained in studies investigating the relationship between ADLs and well-being. For measures of well-being, subjective well-being (Werngren-Elgström et al., 2009), life satisfaction (Boccaccio et al., 2021), psychosocial well-being (Carmel & Bernstein, 2003), and quality of life (Baernholdt et al., 2012) were used. Despite utilizing different tools to measure well-being, these studies consistently found that a decline in well-being was associated with ADL impairment and ADL dependence. In addition, Carmel and Bernstein (2003) found a relationship between ADLs and well-being among older women.

Hospital Stays. Older adults are likely to be hospitalized for various reasons such as chronic disease, falls, injuries, and pain. Therefore, it can be hypothesized that hospitalization is related to the moving of older adults in that the hospitalization of older adults could reflect severity of the health problem either an acute health crisis or progression of a more chronic health condition. However, few studies have examined the relationship between hospitalization and moving within the community for older adults.

Choi (1996) found no relationship between number of hospitalizations and moving. Miller et al. (1999) investigated whether older adults had been hospitalized in the previous year and the relationship between moving among older adults aged 55 years and over living in the community. It was found that there was no relationship between the two.

Depressive symptoms were found to be more severe in older adults who were currently or who had been hospitalized during the past 12 months than in those who were not (Davydow et al., 2014; N. Li et al., 2016; O'Brien et al., 2018). Conversely, older adults who had depressive symptoms at time of hospitalization or showed depressive symptoms at discharge were found to show gradual improvement in depressive symptoms over time after discharge (Brown et al., 2012; Ciro et al., 2012; Fulop et al., 2003). However, depressive symptoms may be newly developed if social support and daily living skills are not satisfied after discharge (Ciro et al., 2012). Conversely, Prina et al. (2012) found that older adults with depression had a higher hospitalization rate than did those without depression. In other words, depression and hospitalization might have a bidirectional relationship. Hospitalized older adults experienced low levels of life satisfaction and well-being, particularly if they felt a lack of safety after their discharge from the hospital (Tsuchiya-Ito et al., 2019). Older adults with high psychological well-being were found to have a lower hospitalization rate than were older adults who did not (Dagani et al., 2013).

Falls. Falls are prevalent among older adults, with 27.5% of adults over 65 years of age (35.6 million) experiencing a fall in 2018 in the United States (Moreland et al., 2020). Falls can cause fractures, head injuries, and so on. These injuries can leave older

adults with permanent disabilities or cause them to reduce their daily activities for fear of further falls (Centers for Disease Control and Prevention [CDC], 2021). In addition, in a study using the HRS, half of those aged 65 and over who experienced a fall reported a 50% or greater possibility of moving within 2 years (Stoeckel & Porell, 2010). In a qualitative study of older women living in senior housing, more than half reported experiencing an illness or a fall before moving (Ewen & Chahal, 2013).

Studies investigating the relationship between falls and depression have reported an inconsistent association. For example, Choi et al. (2019) found that older adults who had depression had a higher incidence of falls than did those who were not depressed and that these older adults had increased depressive symptoms afterward. However, a cross-sectional study by Ní Mhaoláin et al. (2012) showed that even among those who fell, only older adults with physical frailty—not those without frailty—had depressive symptoms. Studies investigating the relationship between falls and well-being have been rare, though one study reported that older adults who experienced falls had lower life satisfaction (Hajek & König, 2017). As such, evidence for the relationship between falls and mental health is inconsistent, and in particular, falls and depression may influence each other.

Cognitive Function. Older adults with cognitive decline, such as Alzheimer’s disease or other types of dementia, frequently move to retirement housing, assisted living facilities, nursing homes, or Alzheimer’s special care units, depending on the severity of their decline (Alzheimer’s Association, 2019). However, in the early stages of cognitive decline, most live independently in the community and use medication to delay the decline’s progress (Alzheimer’s Association, n.d.). Carpenter et al. (2007) found that

older adults with cognitive impairment and those without cognitive impairment did not differ in their level of concern about the possibility of moving in the near future. In some tension with these results, a study using the HRS showed that older adults tend to move as cognitive impairment worsens (Friedman et al., 2016). While the former study was about moving concerns, the latter study measured whether the person moved or not, so the latter study may have more accurately measured the relationship between cognitive function and moving.

Several studies have investigated the relationship between various levels of cognitive function and depression. For example, subjective memory complaints and other self-reported measures of cognitive function (Balash et al., 2013) and cognitive decline, measured using cognitive function tests (Conde-Sala et al., 2019; Routledge et al., 2017; Yu et al., 2021), have shown a simultaneous decline in cognitive function and rise in depression in older adults. Similarly, several studies have shown cognitive function to be generally associated with well-being. For example, cognitive decline, memory problems, and cognitive decline in certain subdomains were found to be associated with poor well-being, lower life satisfaction (Tsuchiya-Ito et al., 2019), lower quality of life (Baernholdt et al., 2012), and poor mental well-being (Llewellyn et al., 2008; Routledge et al., 2017). However, another study found that self-rated cognition was associated with subjective well-being in middle age but not in older age (Braun et al., 2017).

Financial Difficulties

While people may experience financial difficulties throughout their lives, older adults may also experience financial difficulties due to certain typical age-related events. For example, older adults may face financial difficulties if their or their spouse's health

deteriorates (Choi, 1996). Such financial difficulties may induce older adults to move into smaller or lower priced homes and/or to sell their homes (Banks et al., 2010). In a study using the Longitudinal Survey of Aging, more than 25% of older adults were found to have moved due to financial difficulties (Choi, 1996). According to a study using the same data set, older adults in their 80s and older tended to move due to health problems, whereas those in their mid-70s and younger tended to move for financial reasons (Miller et al., 1999). But evidence for the relationship between income and moving has been inconsistent. One study found that income was not related to moving (Coulter & Scott, 2015), while another reported that low-income older adults were more likely to move than were their higher income counterparts (Colsher & Wallace, 1990).

Financial hardship may affect the physical health of older adults not only by reducing access to necessities, including medical treatment, but also by acting as a stressor and affecting these adults' mental health. For example, several studies examining older adults' experience of financial difficulties, such as financial strain and perceived financial stress, have found to be associated with experiencing depression (Conde-Sala et al., 2019; Hiilamo & Grundy, 2020; Lue et al., 2010). In addition, studies measuring financial strain using extent of financial debt, lack of money for food (Boima et al., 2020), rent payment burden (Jenkins Morales & Robert, 2020), and meal skipping (Anderson, 2020) have also found that older adults with these financial strains experienced depression.

Prior research has reported the well-being of older adults with financial difficulties as being poorer than that of older adults without financial difficulties. Due to lack of financial resources, financially dependent older women were found to have lower

life satisfaction and lower subjective well-being than older men (Dey, 2021). Tsuchiya-Ito et al. (2019) found that older adults with what they called “economic status problems”—difficulty paying for prescriptions, medical care, heating or cooling the home, and the basic necessities of food, clothing, and shelter—had a low level of life satisfaction.

Renter Status

Nineteen percent of those aged 50 years and over were renters in 2021 (AARP, 2021). In general, 88% of renters spent more than 30% of their income on housing costs (U.S. Census Bureau, 2017a). Similarly, older adults who are renters have lower incomes and higher housing cost burdens, and these older adults are more likely to move than are older adults who are homeowners (Choi, 1996; Li et al., 2022). Also, older adult renters were found to be more likely to move than were homeowners, with older male tenants being more likely to move than older female tenants (Miller et al., 1999). Thus, older adult renters in insecure housing were more likely to move than those in secure housing (Power, 2022).

In most cases, the mental health of renters is worse than that of homeowners. For example, homeowners were found to have lower depressive symptoms than were renters (Park et al., 2022; Park & Seo, 2021). Also, homeowners were more satisfied with their lives (Park et al., 2022). However, when a mortgage remained, the well-being of a homeowner fell to the level of a renter, but the level of depression was still higher in the renter (Park et al., 2022). After a person became a homeowner, their level of depression was, for a while, lower than that of a renter, but after 4 years, homeownership was no longer related to depression (Courtin et al., 2018).

Stressful Environmental Conditions

Among the factors that determine moving suggested by Wiseman's (1980) model are stressful environment conditions—in particular, dissatisfaction with a house or neighborhood. In the present study, dissatisfaction with a neighborhood is measured using neighborhood disorder and lack of perceived neighborhood cohesion, and dissatisfaction with a house is measured using housing deterioration.

Neighborhood Disorder. Neighborhood disorder is a concept derived from social disorganization theory (Sampson & Raudenbush, 2001). Social disorganization can be described as a disorderly condition that arises when a community fails to establish effective informal social control (Steenbeek & Hipp, 2011). While disorder in a local community cannot be considered a direct cause of crime, it can be regarded as a visible signal in the community that may act as a precursor to future criminal activities (Sampson & Raudenbush, 1999). Several studies have found that conditions of residence influence decisions to consider moving or to move. For example, in a qualitative study, Pinkster et al. (2014) investigated whether neighborhood disorder was a reason for moving and concluded that it was not a significant cause of migration. However, only nine of the 26 participants in this study were 55 years of age or older, so it is difficult to generalize these study results to older adults. According to a study by Dugan (1999), people who experienced property crime or violent crime were more likely to move. According to a study by Dugan (1999), people who experienced property crime or violent crime were more likely to move; in addition, satisfaction with their neighborhood was also related to the likelihood of moving. Although the foregoing was not studies of older adults, they support the possibility that neighborhood disorder may act as a push factor in older

adults.

Some studies have shown that older adults who perceived a higher level of neighborhood disorder had higher depressive symptoms (Baranyi et al., 2020; Bierman, 2009; Cho & Townsend, 2020; Tang et al., 2017). These studies included unmarried female older adults (Cho & Townsend, 2020); older Chinese Americans (Tang et al., 2017); U.K., U.S., and European older adults who participated in a longitudinal panel study (Baranyi et al., 2020); and older adults in the Washington, DC, metropolitan area (Bierman, 2009). While I could locate no studies on well-being and neighborhood disorder specific to older adults, young adults who experienced neighborhood disorder have demonstrated low quality of life (Jaśkiewicz & Wiwatowska, 2018). Therefore, if older adults live in a neighborhood with high neighborhood disorder, their well-being will likely decrease.

Lack of Perceived Neighborhood Cohesion. *Perceived neighborhood cohesion* is a concept that subjectively measures mutual trust and mutual benefit between neighbors (Sampson et al., 1997). Based on the study result that psychological distress, such as hopelessness and negative affect, increased as social cohesion decreased (Kim, Chen, et al., 2020), the present study conceptualized low perceived neighborhood cohesion as an environmental stressor.

Few studies have investigated whether social cohesion was a push factor for moving. De Jong (2020) found that low social cohesion was the most substantial push factor for considering moving. In this study, older adult respondents perceived the social cohesion of a moved-to community as being higher than that of the community they moved from, but this was only true for those aged 55–64 years and not for those aged 65

or older. Similarly, adults over 18 have also been found to tend to move to residential areas with high social cohesion (Zhu et al., 2014). Therefore, if high social cohesion in a new neighborhood is a pull factor, it seems reasonable to propose that low social cohesion in a current neighborhood is a push factor.

Several studies have found consistent results of social cohesion and level of mental health in older adults being related (Baranyi et al., 2020; Choi & Matz-Costa, 2017; Clark & Ledwith, 2006; Kim, Chen, et al., 2020; Tang et al., 2017). In U.K., U.S., and European older adults who participated in a longitudinal panel study (Baranyi et al., 2020), the higher the social cohesion of their neighbors, the lower their depressive symptoms. Older Chinese Americans living in neighborhoods with high social cohesion showed lower levels of depression and anxiety symptoms (Tang et al., 2017). For those 50 years of age and older living in California, the more they perceived low social cohesion, the worse their psychological health, including depression and hopelessness; however, this result was only significant for older adults with ADL limitations (Choi & Matz-Costa, 2017). In one of two studies using the HRS, older adults who perceived higher social cohesion felt less powerless and pessimistic (Luo, 2008). In another study, perceived low social cohesion was associated with lower psychosocial well-being and higher psychological distress (Kim, Chen, et al., 2020). Similarly, Gao et al. (2017) found that the higher the social cohesion, the higher the well-being of older adults.

Housing Interior Conditions. As older adults tend to live long in one house, more than 70% of older adults live in houses built before 1990 (Choi et al., 2019). Therefore, older adults may be more likely than other age groups to be living in housing that needs repairs and maintenance. Also, home modifications may be necessary as the

health and/or function of older adults deteriorates. When there is physical deterioration inside and outside a home, it has been found to cause dissatisfaction with the home in older adults (Phillips et al., 2005). In addition, older adults have a financial burden to maintain and repair their housing and have, as a result, been found to be more likely to move into housing requiring less maintenance (Abramsson & Hagberg, 2020). For example, older adults moved when they were dissatisfied with their housing or perceived their mobility inside or accessibility from outside the housing to be low (Erickson et al., 2006). Accordingly, housing interior and exterior problems can be regarded as a push factor that causes older adults to move, because it lowers housing quality and imposes financial burdens.

Several studies have obtained consistent results indicating that in poorer living environments, older adults are more likely to experience depressive symptoms (Fang et al., 2019; Sasaki et al., 2018). For example, in Fang et al.'s (2019) study on older adults in China, depression symptoms increased when the materials for a house were of low quality, when the fuel for cooking was of low quality, when there was a toilet without a seat, when there was a water leak, and when there were no shower or bath facilities. Sasaki et al. (2018) investigated the relationship between housing type and depression in Japanese older adults who moved after a natural disaster. Those living in temporary shelters made from trailers were more likely to experience depressive symptoms than were those who did not relocate or who moved to standard housing. It was found that older adults living in trailer housing complained about inadequate lighting, heating, air circulation, space size, noise and privacy issues, and lack of a bathtub. In other words, the poor living environment of the trailer housing was related to an increase in depression

among these older adults.

The evidence for a relationship between housing deterioration and well-being, however, is inconsistent. For example, Lu (2021) found that older adults living in housing with poor lighting and/or flooring conditions had lower life satisfaction. Conversely, Phillips et al. (2005) showed that housing conditions such as lighting, number of occupants, and temperature were not related to psychological well-being. Although the foregoing studies used different conditions to measure the living environment, most of them found that a poor living environment had a generally adverse effect on the mental health of older adults.

Indicators of Social Support as a Moderator

Social support is the presence of a supportive system around an individual that provides emotional and affectionate care and positive interactions, providing listening, understanding, and help when needed (Kim & Ross, 2009). Coyne and Downey (1991) argued that social support could protect mental health by providing a variety of sources of experience, advice, and information to enable individuals to deal with stress.

Many studies have investigated the relationship between social support and mental health. Wang et al. (2018) analyzed longitudinal quantitative studies in the literature that examined the relationship between social support and various mental health problems. Most of the studies included in this review were conducted with adults in North America and Europe, and in most, adults with high subjective social support at baseline had a decreased level of depression measured after a certain period compared with their depression measured at baseline. However, a few studies have found high social support not to be related to changes in depression. The review results of Wang et

al. 2018) were consistent with the study results of Tengku Mohd et al. (2019), who systematically reviewed the relationship between depression and specific social support measures such as marital status, living arrangement, network size, frequency of contact, satisfaction with social support, and support from family and children among Asian older adults living in the community. In most studies, depression was lower when social support was high or satisfactory, but there were also results showing no relationship between social support satisfaction and depression or, in men, no relationship between social support and depression. Lee and Yang (2021) systematically reviewed the relationship between social support and depression in older adults in Korea, finding 28 out of 30 studies showing that higher social support was associated with lower depression. Wang et al. also included studies with quality of life as an outcome, and in these, high social support at baseline had a positive relationship with quality of life in the long run. Still, one of the studies reviewed found that level of social support was not related to quality of life. Conversely, some studies not included in these systematic reviews have found higher social support to be related to higher life satisfaction and quality of life (Carmel & Bernstein, 2003; Dumitrache et al., 2017).

Social support has been shown to buffer the relationship between various predictors and mental health. Kim and Ross (2009) found that social support buffered the relationship between neighborhood disorder and depression. In addition, social support has been shown to buffer the relationship between life satisfaction and health impairment such as ADLs, chronic disease, self-rated health (Dumitrache et al., 2017). Accordingly, life satisfaction has been found to increase as social support increases for older adults with health impairments. These findings imply that social support protects mental health

by buffering the detrimental effects of stress and adverse life events.

In the present study, social networks, social participation, and living with others were used as indicators to measure social support. In the social convoy model, the basis of social support is argued to be social networks and social activities (Kahn & Antonucci, 1980). In the above studies, various supports within social networks—such as family, friends, and acquaintances—were used as measures of social support. Social support can be improved by increase in the size of one’s social network and increased contact brought about through social activities. Further, living with others may indicate whether older adults live with someone who provides social support. Thus, social networks, social activities, and living with others, as indicators of social support, indirectly measure potential resources that can provide social support.

Living With Others and Mental Health. The percentage of older adults living alone increases with age, with 42% of those aged 65 years and over and 58% of those aged 80 and over living alone in 2018 in the United States (JCHS, 2019b). Older adults living alone may have difficulty, for example, managing a garden or a large house (Bekhet et al., 2009; Carpenter et al., 2007; Stimson & McCrea, 2004), and they may have less sense of duty to family or to work (van Diepen & Mulder, 2009). Accordingly, older adults living alone have been found to be more likely to consider or to implement a move than are older adults living with a family member or partner (Granbom et al., 2019; Stimson & McCrea, 2004; van Diepen & Mulder, 2009). In addition, older adults living alone have demonstrated more concern about moving than have their counterparts (Carpenter et al., 2007).

Older adults living alone have been found to have higher levels of psychological

distress, including depression, than have older adults living with family or other people (Oshio & Kan, 2019). For example, Chou et al. (2006) and Dey (2021) found that older women living alone had higher depressive symptoms than did women living with someone else. In addition, older adults living alone showed lower levels of both psychological well-being (Demey et al., 2014) and subjective well-being (Han et al., 2021) than did older adults living with a partner or spouse.

Evidence for the relationship between older adults living with others and their mental health, however, is inconsistent. One study reported that living alone was not related to depressive symptoms in female older adults (Honjo et al., 2018). Another study showed that living with other people did not affect the mental health of older adults (Chou et al., 2006). Also, living with children or grandchildren was found to reduce subjective well-being and life satisfaction (Han et al., 2021). Therefore, mental health in older adults may vary depending on who they live with. The studies that found that living alone and mental health were not related were studies targeting older adults in China (Chou et al., 2006) and in Japan (Honjo et al., 2018). Therefore, there is a possibility that geographical and cultural differences between the United States and other countries may have influenced these study results.

Social Network and Mental Health. Moving can damage or change the social networks that underpin social support for older adults. Networks with family and relatives are likely to remain regardless of moving, but non-kin networks such as those involving friends and neighbors may be lost in a move (Badawy et al., 2019). Further, in contrast to those who move voluntarily, forced or otherwise involuntary movers have been found to have difficulties forming a social network after moving and/or to not

receive sufficient social support post-move (Huang et al., 2017; Starker, 1990).

When older adults are socially isolated, their depressive symptoms often increase (del Pozo Cruz et al., 2021; Luppá et al., 2012). Also, in a study measuring older adults' social networks by frequency of contact with family members or other people, the higher the number of contacts within social networks, the higher the older adults' life satisfaction (Berglund et al., 2016). When social networks were measured by family ties, social interaction, and social activities, closer social networks were found to be positively related with higher levels of well-being (Litwin & Stoeckel, 2013).

Social Activities and Mental Health. As older adults age, their physical abilities may decrease, leading to decreased physical activity. However, older adults may increase their participation in various social activities, such as volunteering, hobbies, leisure pursuits, and socializing. Research has shown that older adults tend to move to retirement communities where they can participate in social activities (Crisp, Windsor, Anstey, & Butterworth, 2013), from which it can be inferred that social activities are important to older adults. In a study investigating the relationship between volunteering and moving, older adults who participated in formal volunteering in religious, educational, health-related, or other charitable organizations were less likely to move than were those who did not volunteer (Shen & Perry, 2014). However, while White older adults who participated in volunteering were found to move less, for Black older adults volunteering was not related to moving (Perry et al., 2018). These studies suggest that older adults who participate in social activities are less likely to move. However, this tendency may differ depending on older adults' demographic characteristics and/or social ties.

The importance of social activities to older adults' mental health can be seen in

the relationships between social activities and well-being and between social activities and depression. Older adults who participated in volunteering demonstrated higher well-being than did older adults who did not, but no relationship between volunteering and depression was found (Fekete et al., 2020). However, in the same study, as combined hours of volunteering, housework, and paid work increased, well-being increased and depression decreased (Fekete et al., 2020). In addition, when time volunteering exceeds 100 hours per year, depression has been found to decrease, and the level of well-being-related items such as positive affect, optimism, and purpose in life has been found to be high (E. S. Kim, Whillans, et al., 2020). Leisure activities of older adults have also been positively related to mental health. As older adults engaged in leisure activities frequently, older women were found to experience improved psychological well-being, and older men felt less lonely than older adults who did not engage in leisure activities (Gu & Sok, 2018). Overall, participation in social activities can revitalize the lives of older adults, reduce depression (Cong et al., 2015; Holtfreter et al., 2017; Jang & Chiriboga, 2011; Källdalen et al., 2013), and increase well-being (Vozikaki et al., 2018). In addition, as the number and diversity of activities increases, life satisfaction has been found to improve and loneliness to decrease (Gilmour, 2012); further, well-being has been found to increase as the quality of social activities increases (Litwin & Stoeckel, 2013).

Literature Gap

The relationship between push factors and mental health is likely mediated via moving. However, so far, there has been no investigation of how the mental health of older adults changes when push factors cause moving. Accordingly, the present study

investigated whether the relationship between push factors and mental health outcomes is mediated through moving.

Previous studies on the relationship between moving and mental health have additional limitations. They typically have investigated the relationship between only a few push factors and moving. Therefore, examination of the relationship between *all* push factors and moving is necessary.

In addition, no studies have been conducted on the mechanisms that buffer the detrimental effects of moving on the mental health of older adults. However, several studies have shown that social support can reduce depression and support well-being by helping to manage stress (Alcañiz et al., 2020; Brown et al., 2009; Han et al., 2007; Kim, 2001; Wu & Chiou, 2020), suggesting that indicators of social support are likely to buffer the relationship between the stressful event of moving and mental health.

Theoretical Frameworks

The conceptual framework of this dissertation is derived from Wiseman's (1980) behavioral model of older adults' migration, stress process theory (Pearlin, 1989), and the social convoy model (Kahn & Antonucci, 1980), supporting the relationship between push factors and moving, the relationship between moving and mental health, and the moderating role of indicators of social support, respectively.

Wiseman's Behavioral Model of Older Adults' Migration

Wiseman's (1980) behavioral model of older adults' migration proposes a moving process in which older adults periodically reevaluate their residential status and decide whether to move on the basis of whether their current residence meets their needs. The model suggests that triggering mechanisms cause reevaluation of residential status.

Triggering mechanisms that influence individuals to move can be divided into push factors and pull factors.

The migration process can be commonly applied to all people regardless of life stage, while push and pull factors can be configured differently depending on place in the life cycle. For example, young people typically move for marriage, job changes, housing purchases, better housing, or safer schools for their children (Geist & McManus, 2012), whereas older adults tend to move due to life events such as retirement (Saito et al., 1999), a spouse's death (Bonnet et al., 2010; Choi, 1996), or decline in the health of a spouse or self (Choi, 1996). Wiseman (1980) suggested that health of oneself or one's spouse, death of a spouse, lack of socioeconomic resources, stressful environmental conditions, financial difficulties, and being a renter act as push factors for older adults. Recreational amenities, vacation experiences, availability of activities, and social contacts act as pull factors.

Since push factors indicate that a current residential status is not meeting the needs of older adults, these factors may induce involuntary moving and cause stress. Therefore, push factors may be detrimental determinants of the mental health of older adults.

Stress Process Theory

According to Pearlin's (1989) stress process theory, the series of processes through which an individual experiences stress is influenced by the social structure and social status embedded in the individual. Social structure refers to social and economic class, race and ethnicity, gender, and age (Pearlin, 1989). The social structure dictated by age indicates that recognizing stressful situations may differ from those of other

generations due to older adults' unique social structure position.

Stress can be classified as both an episodic life event and a chronic strain. An episodic stressor can be a single event, such as bereavement, divorce, or job loss. A chronic strain may include environmental factors such as poverty, lack of safety, and disorder at the neighborhood level and personal factors such as chronic illness and relationships with friends and acquaintances. The push factors in the present study include both episodic stressors and chronic strains. For example, poor self-rated health, ADL limitations, IADL limitations, impaired cognitive function, financial difficulties, neighborhood disorder, lack of perceived neighborhood cohesion, housing deterioration, and renter status are likely to be chronic strains, whereas hospital stays and falls are likely to be episodic stressors.

Pearlin (1989) classified a stressor occurring first as a primary stressor and a stressor caused by the primary stressor as a secondary stressor. Whatever motivates it, moving is considered a stressful event (Murray, 1999). Older adults who prefer aging in place may perceive the experience of moving differently than do members of other age groups. Therefore, if a push factor triggers moving, it will likely cause considerable stress in older adults. Per stress process theory, since push factors induce moving, and both push factors and moving can cause stress, push factors may become primary stressors and moving may become a secondary stressor.

Pearlin (1989) argued that although it is difficult to establish a clear cause-and-effect relationship between stressful situations and health, stressful situations have the potential to be detrimental to one's health. Health includes physical health and mental health outcomes such as depression and anxiety. Since moving and push factors act as

stressors, this theory supports the relationship between moving and mental health and the relationship between push factors and mental health. However, Pearlin argued that social support is a resource for dealing with unexpected problems and mediating external stress. This argument supports the assumption of the present study that indicators of social support buffer the relationship between moving and mental health.

Social Convoy Model

The social convoy model asserts that social support acts as a determinant of well-being by directly affecting external stress or by moderating stress (Kahn & Antonucci, 1980). Kahn and Antonucci defined convoy as a structure for giving and receiving social support. In other words, social support is generated by interactions within an individual's network of family, friends, and other people. This social support is activated when an individual experiences unwanted or unexpected changes in his or her life, buffering the stress caused by these changes.

Kahn and Antonucci (1980) argued that roles and environments change according to the life cycle and that forms and amounts of social support require adjustment in response to these changes. Therefore, it is necessary to apply the life-course perspective to understand older adults' social support. Older adults may experience health decline, retirement, and moving as they age, and older adults experiencing these things need appropriate social support to handle the associated stresses. Supportive relationships can also be changed by events such as divorce, bereavement, and the moving of children. Thus, the social convoy model supports the idea that if there is adequate social support to deal with the stresses experienced by older adults, the effects of unwanted relocation on older adults' well-being and depression can be buffered.

Conceptual Framework for the Study

The conceptual framework of the study is presented in Figure 1. I adapted Wiseman's (1980) behavioral model of older adults' migration to explain the triggering mechanisms of moving among older adults. Even though the triggering mechanisms include push and pull factors, the present study focused only on push factors. Aim 1, shown in orange, is to identify the push factors affecting the moving of older adults. Hypothesis 1 posits that push factors will be positively associated with the moving of older adults, and Wiseman's behavioral model supports Hypothesis 1. Aim 2, shown in blue, is to investigate whether the relationship between push factors and mental health (depression and well-being) is mediated by moving. Hypothesis 2 proposes that push factors will be associated with greater depression and lower well-being via moving. According to stress process theory, push factors can act as a primary stressor and moving can act as a secondary stressor. Therefore, stress process theory supports Hypothesis 2. Aim 3, shown in green, is to examine the moderating role of indicators of social support on the relationship between moving and depression in older adults. On this basis, Hypothesis 3 postulates that indicators of social support will reduce the influence of moving on depression and well-being outcomes. Stress process theory and the social convoy model support Hypothesis 3.

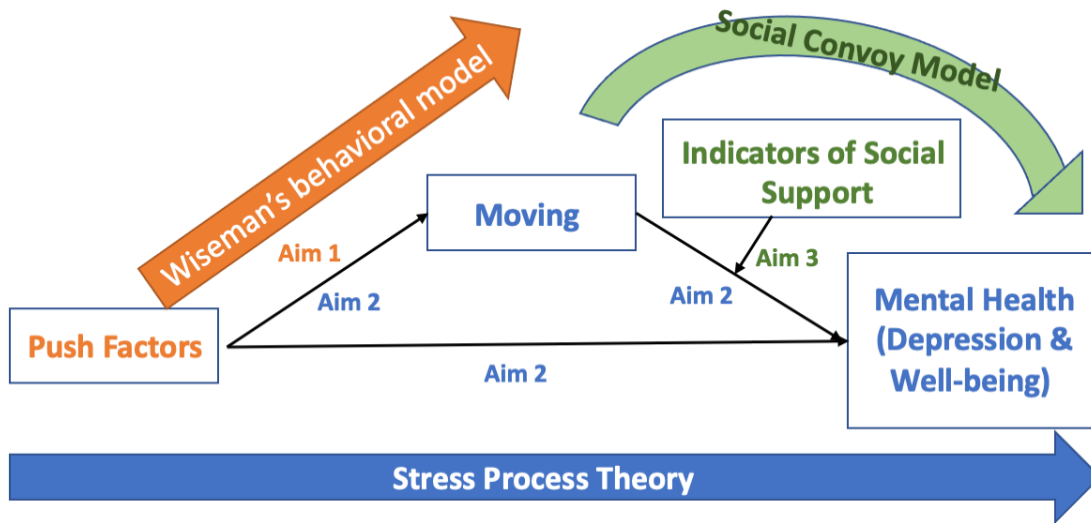


Figure 1. *Conceptual Framework of the Study*

Chapter 3: Method

This chapter provides a comprehensive description of my research methodology, including information on the sample, the measures, and the analytic approach. The study utilized a secondary data set, namely the National Health and Aging Trends Study (NHATS)—specifically Rounds 6 and 7 (out of a total of 11 rounds). Logistic regression was used to investigate Aim 1, whereas structural equation modeling (SEM) was used to investigate Aims 2 and 3.

Sample

NHATS is an ongoing study of a representative population of Medicare beneficiaries aged 65 years and older. NHATS uses a stratified three-stage sample design of Medicare beneficiaries in 95 counties and 655 ZIP codes. The purpose of NHATS is to facilitate research to improve the quality of life of older adults by reducing disability and promoting health and independent functioning. To achieve this goal, NHATS collects a variety of health information through face-to-face interviews that can measure disability processes and outcomes and the social, physical, and technological environments of participants. Use of NHATS allowed me to investigate the effects of push factors, moving, and indicators of social support on the mental health of older adults.

The first round of NHATS was launched in 2011. Round 1 collected data from 8,500 participants, and since then data has been collected annually from the same participants. As the number of participants declined due to attrition, additional samples were recruited in 2015, collecting data from a refreshed sample of 8,334 participants. To provide sufficient statistical power, data for this dissertation study came from those who participated in both Rounds 6 (2016) and 7 (2017), when the largest numbers of

participants moved. As shown in Figure 2, I excluded participants for the following reasons: (1) They were not in both Rounds 6 and 7 ($n = 964$), (2) they did not provide self-reported information (i.e., had a proxy respondent [$n = 1,102$]), or (3) they resided in a long-term care facility—including residential care and nursing home—in Round 6 or Round 7 ($n = 354$). In addition, this study included only older adults who moved *within* the community, because the main factor for older adults moving to a long-term care facility is a decline in mental and/or physical health (Angel et al., 2004; Branch & Jette, 1982; Fortinsky et al., 1999; Gu et al., 2007; Nihtilä et al., 2008). The final sample size for the study was 4,856 participants.

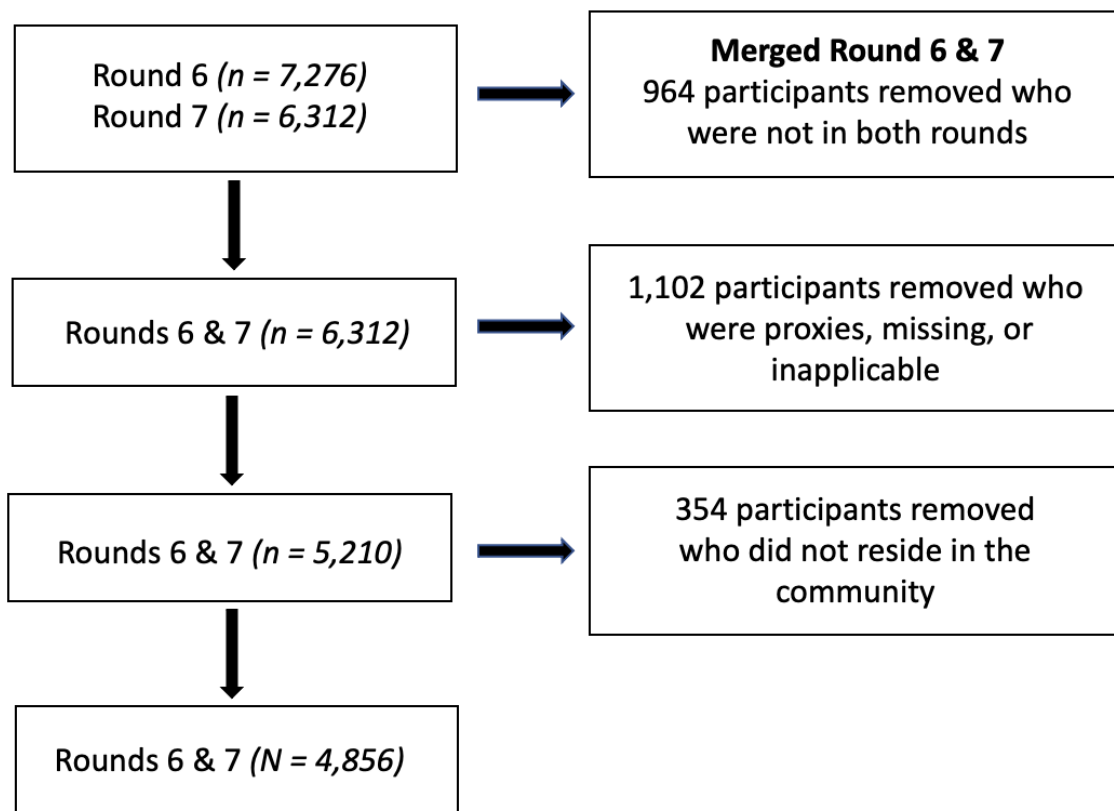


Figure 2. *Flow Chart of Sample Sizes*

Measures

Table 1 (presented in Chapter 4) shows the summary of all variables, including independent and dependent variables, a mediator, and moderators. The summary includes a list of constructs; indicators of each construct; and measurements, codes, and score ranges of each indicator.

Dependent Variables

Depression. The first outcome was *depression* in Round 7. Depression was assessed using the two-item PHQ-2. One item asked about little interest or pleasure over the last month, and the other asked about the frequency of feeling down, depressed, or hopeless over the last month. Each item is scored on a four-point Likert-type scale (1 = *not at all*, 2 = *several days*, 3 = *more than half the days*, 4 = *nearly every day*), with a minimum of one point and maximum of four points of the mean.

Well-Being. The second outcome was *well-being* in Round 7. Well-being in each round was measured using 11 items capturing three domains: positive and negative affect, sense of control, and psychological well-being (Kasper & Freedman, 2017). Seven of the 11 items were scored on a three-point Likert-type scale (1 = *not at all*, 2 = *a little*, 3 = *a lot*), while four items were scored on a five-point Likert-type scale (1 = *every day* [7 days a week], 2 = *most days* [5–6 days a week], 3 = *some days* [2–4 days a week], 4 = *rarely* [once a week or less], 5 = *never*). Well-being was scored on a scale ranging from 11 to 52, with the mean ranging from 1.0 to 5.2. Seven items were reverse-coded such that the higher the well-being score, the higher the well-being level. Well-being had an acceptable level of internal consistency, with a Cronbach's alpha of .75.

Mediator: Moving

Whether a participant had moved was measured by whether that participant lived at the same address in Round 7 as they did in Round 6. This was a dichotomous measure, scored 0 (*yes* [the same address]) or 1 (*no* [not the same address]).

Push Factors

I examined four types of push factors: health problems, financial difficulties, renter status, and stressful environmental conditions. All these push factors were retrieved from Round 6.

Health Problems. Health problems had six indicators: self-rated health, ADL limitations, IADL limitations, hospital stays, falls, and cognitive function.

Self-Rated Health. *Self-rated health* was measured with the question “Would you say that in general, your health is excellent, very good, good, fair, or poor?” scored on a five-point Likert-type scale, with higher scores indicating poorer health. However, it was reverse-coded such that higher scores indicated better health.

ADL Limitations. Five items measured *ADL limitations*: eating, bathing, toileting, dressing, and getting out of bed. These were measured by whether participants needed help performing each task, with each item recorded as 1 (*yes*) or 0 (*no*). ADL limitations scores ranged from 0 to 5.

IADL Limitations. Five items measured *IADL limitations*: doing laundry, cooking meals, shopping, tracking medications, and banking. Each item was measured by two variables: (1) whether someone helps performing each task and (2) if someone helps with the task, whether the reason is related to health or functioning issues. If participants performed the task by themselves, it was coded 0 (*no help*), while if someone helped and the reason was health or functioning issues, it was coded 1 (*help*). However, even if

someone helped performing the task, if the reason was “other reason” or “service/someone from residence,” it was coded 0 (*no help*). Each item response was recorded as “yes” or “no,” and IADL limitations scores ranged from 0 to 5.

Hospital Stays. *Hospital stays* were measured by whether there had been a hospital stay or stays in the past 12 months. This was a dichotomous measure, scored 0 (*no* [no hospital stays]) or 1 (*yes* [hospital stays]).

Falls. *Falls* were assessed by a question measuring whether a participant had fallen in the past 12 months. This was a dichotomous measure, scored 0 (*no* [no fall]) or 1 (*yes* [at least one fall]).

Cognitive Function. *Cognitive function* was measured with 33 items in three domains: orientation, memory, and executive functioning. The orientation domain was measured by recall of date and president/vice president names, the memory domain by immediate and delayed word recall, and the executive functioning domain by clock drawing. I used the codes from the NHATS technical paper, which provides guidance on how to code items to develop a cognitive function variable (Kasper et al., 2013). The score ranges were 0–8 for the orientation domain, 0–20 for the memory domain, and 0–5 for the executive functioning domain. The range of scores for cognitive function, combining these three domains, was 0–33; this was a continuous variable.

Medicaid. *Medicaid* was measured with a question about whether a participant was covered by Medicaid. This was a dichotomous measure, scored 0 (*no* [not covered by Medicaid program]) or 1 (*yes* [covered by Medicaid program]). Medicaid eligibility for older adults is 133% or less of the federal poverty level. Therefore, in this study, Medicaid was used as a proxy for determining whether older adults had low income and

financial difficulties.

Renter Status. *Renter status* had two attributes, scored 0 (*owner*) or 1 (*renter or other non-homeowner*).

Stressful Environment Conditions. *Stressful environmental conditions* had three indicators: neighborhood disorder, lack of perceived neighborhood cohesion, and housing interior condition.

Neighborhood Disorder. *Neighborhood disorder* refers to the disorder in the neighborhood in which a participant lived, as observed by the NHATS interviewer. Neighborhood disorder was measured on the basis of three items: litter or glass on the sidewalk or street, graffiti on building walls, and vacant houses or stores. Each item was scored on a four-point Likert-type scale (1 = *none*, 2 = *a little*, 3 = *some*, 4 = *a lot*), and I included “not observed” in “none.” Neighborhood disorder was scored by averaging the scores for the three items, with a range from 1 to 4; it had an acceptable level of internal consistency, with a Cronbach’s alpha of .73.

Lack of Perceived Neighborhood Cohesion. *Perceived neighborhood cohesion* was reported by participants and measured by three items asking whether neighbors knew each other well, wanted to help each other, and trusted each other. Each item was scored on a three-point Likert-type scale (1 = *agree a lot*, 2 = *agree a little*, 3 = *do not agree*). Perceived neighborhood cohesion was scored by averaging the scores of the three items, with a range from 1 to 3 and higher scores indicating less perceived neighborhood cohesion. Lack of perceived neighborhood cohesion had an acceptable level of internal consistency, with a Cronbach’s alpha of .75.

Housing Interior Condition. The NHATS interviewer observed *housing interior*

condition and measured with five items: paint peeling, in-home pests, broken furniture in-home, flooring needs repairs, and tripping hazards in-home. Each item had a “yes” or “no” option; overall scores ranged from 0 to 5, with higher scores indicating poorer housing interior condition. Housing interior condition had an acceptable level of internal consistency, with a Cronbach’s alpha of .74.

Moderator: Indicators of Social Support

I included three indicators of social support from Round 7: *living with others*, *social networks*, and *participation in social activities*. NHATS does not include a direct social support measure.

Living With Others. *Living with others* was measured by living arrangement, coded as 0 if living alone and 1 if living with a spouse, partner, or other people.

Social Network Size. *Social network size* indicated the size of the participant’s social network. Participants were asked to name up to five people with whom they could talk about important events. Therefore, it was a count variable, with scores ranging from 0 to 5.

Participation in Social Activities. *Participation in social activities* was measured by five items asking whether participants were engaged in religious activities, club activities, outings, volunteer activities, or friend or family visits. I added the scores for these five items, resulting in a final score of 0–5.

Covariates

I controlled for several demographic characteristics as covariates in the models on the basis of prior work indicating that they are associated with depression and well-being among older adults. I included the following demographic characteristics as covariates

for both outcomes: age (Fang et al., 2018; Ji et al., 2021; Rodriguez-Blazquez et al., 2012; Sialino et al., 2020), gender (Abrams & Mehta, 2019; Jang et al., 2011; Ji et al., 2021; Sialino et al., 2020), education level (Abrams & Mehta, 2019; Murata et al., 2008), and race (Azar et al., 2005; Hooker et al., 2019; Lincoln, 2020; Moon et al., 2021; Russell et al., 1993; Tang et al., 2019). All these covariates were retrieved from Round 6. Also, depression from Round 6 was used as a covariate in an analytic model with a depression outcome. Well-being from Round 6 was used as a covariate in an analytic model with a well-being outcome.

Age. Participants' *age* was a categorical variable, coded as follows: 0 = "65–69 years," 1 = "70–74 years," 2 = "75–79 years," 3 = "80–84 years," 4 = "85–89 years," and 5 = "90+ years." I combine Categories 0 and 1, 2 and 3, and 4 and 5, resulting in the new categories 0 = "65–74 years," 1 = "75–84 years," and 2 = "85+ years."

Gender. Male participants were coded 0, and female participants were coded 1.

Education Level. Participants' *education level* was combined and categorized as follows: 0 = "high school diploma or below" and 1 = "associate or above."

Race. *Race* was originally categorized as White (non-Hispanic), Black (non-Hispanic), other (American Indian/Asian/Native Hawaiian/Pacific Islander/other specify, non-Hispanic), and Hispanic. I recategorized race into three groups: 0 = "White," 1 = "Black," and 2 = "other race."

Analytic Approach

To address the aims of the study, I used several steps of data analysis. I conducted (1) preliminary analyses, including univariate and bivariate analyses, to identify the characteristics of the study sample and missing data patterns and to evaluate the

relationships between all covariates and independent variables (IVs); (2) logistic regression to analyze Aim 1; and (3) SEM models to analyze Aims 2-1, 2-2, 3-1, and 3-2. I used Stata Version 17 (StataCorp, 2021) to conduct preliminary analyses and logistic regressions and MPlus Version 8.3 (Muthén & Muthén, 1998–2017) to conduct SEM analyses.

Preliminary Analyses

NHATS was sampled with a complex design, using stratum and cluster, and data were collected every year, so weights are provided to handle sampling bias and nonresponse bias. Since this study used a subsample targeting only older adults living in a community, the stratum and cluster variables dealing with stratification and clustering in the NHATS design were used together with the analytic weight for all levels of analyses.

After careful cleaning of the data, I conducted univariate analyses to assess the characteristics of all variables in this study. Univariate analyses assessed mean, range, standard deviation, skewness, and kurtosis for continuous variables and frequencies of the nominal variables. The bivariate analyses assessed the relationships with variables of interest. Since Stata does not provide independent-samples *t*-tests and correlations for weighted data, I used logistic regression to analyze the relationships between moving and continuous independent and dependent variables and covariates. Also, I used linear regression to analyze the relationships between dependent variables (depression and well-being) and IVs and covariates (Sribney, n.d.). Further, I assessed multicollinearity among all covariates and IVs. The mean variance inflation factor (VIF) to test multicollinearity

was 1.26. This result showed that there was no multicollinearity among all covariates and IVs.

Missingness Test

I assessed missing data patterns to decide how to treat the missing data, depending on whether data were missing at random and how missingness affected analytic assumptions. Per missing data patterns, 2% of the sample had at least one missing value when change in depression was the outcome variable, and 6% of the sample had at least one missing value when change in well-being was the outcome variable. Among these, 54 cases of change in depression were missing, and 257 cases of change in well-being were missing. In addition, I performed two Little's missing completely at random (MCAR) tests. One test included all covariates, IVs, and change in depression, while the other included all covariates, IVs, and change in well-being. The results of the MCAR test for change in depression, ($\chi^2 = 195.224$, $df = 91$, $p < .001$), and change in well-being, (Chi-square = 319.857, $df = 108$, $p < .001$), were significant. These results indicated that the missingness of both tests were not random. Therefore, this study used a full information maximum likelihood (FIML) estimation approach to deal with missing data.

Multivariate Analyses/Hypothesis Testing

Measurement Model. Before conducting SEM for Aims 1–3-2, I conducted confirmatory factor analyses (CFAs) to test the relationships between neighborhood disorder and its observed items, between lack of perceived neighborhood cohesion and its observed items, between well-being in Round 6 and its observed items, and between well-being in Round 7 and its observed items. Since a Likert-type scale attribute was used for all latent variables, I used a weighted least square mean and variance adjusted

(WLSMV) estimator. Also, the subpopulation function was used to include only a subsample of community-dwelling older adults in the analyses.

Since both neighborhood disorder and lack of perceived neighborhood cohesion comprised only three items, both CFAs were saturated. The model fits of well-being in Round 7, $\chi^2=527.688$, $df=44$, $p < .001$, root-mean-square error of approximation (RMSEA) = .048, comparative fit index (CFI) = .953, Tucker–Lewis index (TLI) = .941, standardized root-mean-square residual (SRMR) = .048, and well-being in Round 6, $\chi^2=536.019$, $df=44$, $p < .001$, RMSEA = .048, CFI = .960, TLI = .951, SRMR = .047, were good. Since the model fits of each CFA test were good, I conducted three measurement models.

The first measurement model included neighborhood disorder, lack of perceived neighborhood cohesion, and depression. Even though CFAs of depression in Rounds 6 and 7 were not conducted because each depression had only two items, they still needed to be tested as a latent variable in the measurement models. The second measurement model included neighborhood disorder, lack of perceived neighborhood cohesion, and well-being in Rounds 6 and 7. The third measurement model included all latent variables, which were neighborhood disorder, lack of perceived neighborhood cohesion, depression in Rounds 6 and Round 7, and well-being in Rounds 6 and 7. The covariance ($\beta = 0.834$, $p < .001$) between depression and well-being, and the correlation ($r = -.54$, $p < .001$) between them were high. Therefore, I used separate models for depression and well-being outcomes to test Aims 2 and 3.

Aim 1: Identify the Push Factors Affecting the Moving of Older Adults. To identify the push factors on the moving of older adults, I conducted a logistic regression

as shown in Figures 3. To get the odds ratio (*OR*), a maximum likelihood estimator should be used. However, since the sample was weighted, a maximum likelihood with robust standard errors (MLR) estimator should be used. Therefore, to get an *OR*, I conducted a logistic regression using Stata. I investigated whether four push factors affected the moving of older adults and analyzed the relationship between each push factor and moving. Before performing a logistic regression, I assessed whether assumptions were met. There are four assumption checks for a logistic regression: ratio of cases to variables, goodness of fit, multicollinearity, and outliers. Multicollinearity mean $VIF = 1.22$. There was no variable VIF over 1.50.

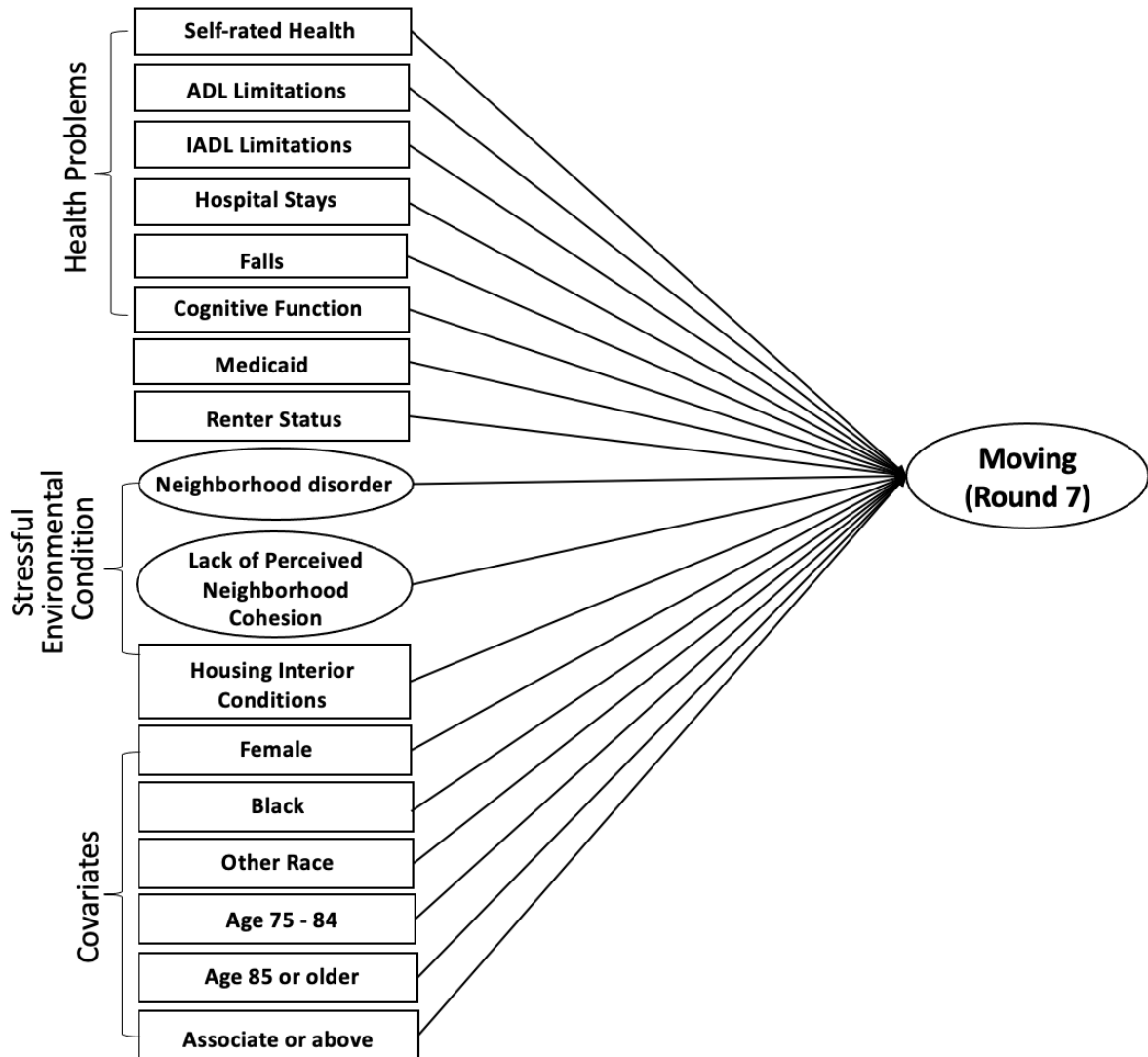


Figure 3. Analytic Model of Research Aim 1. ADL = activities of daily living; IADL = instrumental activities of daily living; Associate = associate’s degree.

Aims 2-1 and 2-2: Investigate Whether the Relationship Between Push Factors and Mental Health (i.e., Depression and Well-Being) Forms Indirect Pathways via Moving. On the basis of Wiseman’s (1980) behavioral model of older adults’ migration and social stress theory (Schmidt et al., 2017), moving may intervene in the relationship between push factors and mental health. To address these aims, I used two SEM models after controlling for covariates to investigate the relationship between push factors and mental health via moving (Cheong & MacKinnon, 2012). Since there

were two exogenous variables with depression and well-being, I conducted two SEM models with each exogenous variable, as shown in Figures 4 and 5. I used an MLR estimator, a missing data estimation approach of FIML, for both SEM models to deal with missing data. As covariates, I included demographic characteristics and push factors that did not influence moving on the basis of the results of Aim 1's logistic regression. Although these push factors may not have been associated with moving in this study, they were supported by Wiseman's model as influences on moving, so it was desirable to control for their potential confounding effects.

Model Fit. I evaluated the measurement and the SEM models with the model fit by using multiple fit indices: the chi-square goodness-of-fit index, the CFI, the TLI, the SRMR, and the RMSEA. The chi-square goodness-of-fit index indicated good model fit as the index was statistically nonsignificant ($p < .05$). Adequate model fit is indicated by the scores of the CFI and the TLI being more than .95 and the scores of the RMSEA and the SRMR being less than .05 (Hu & Bentler, 1999).

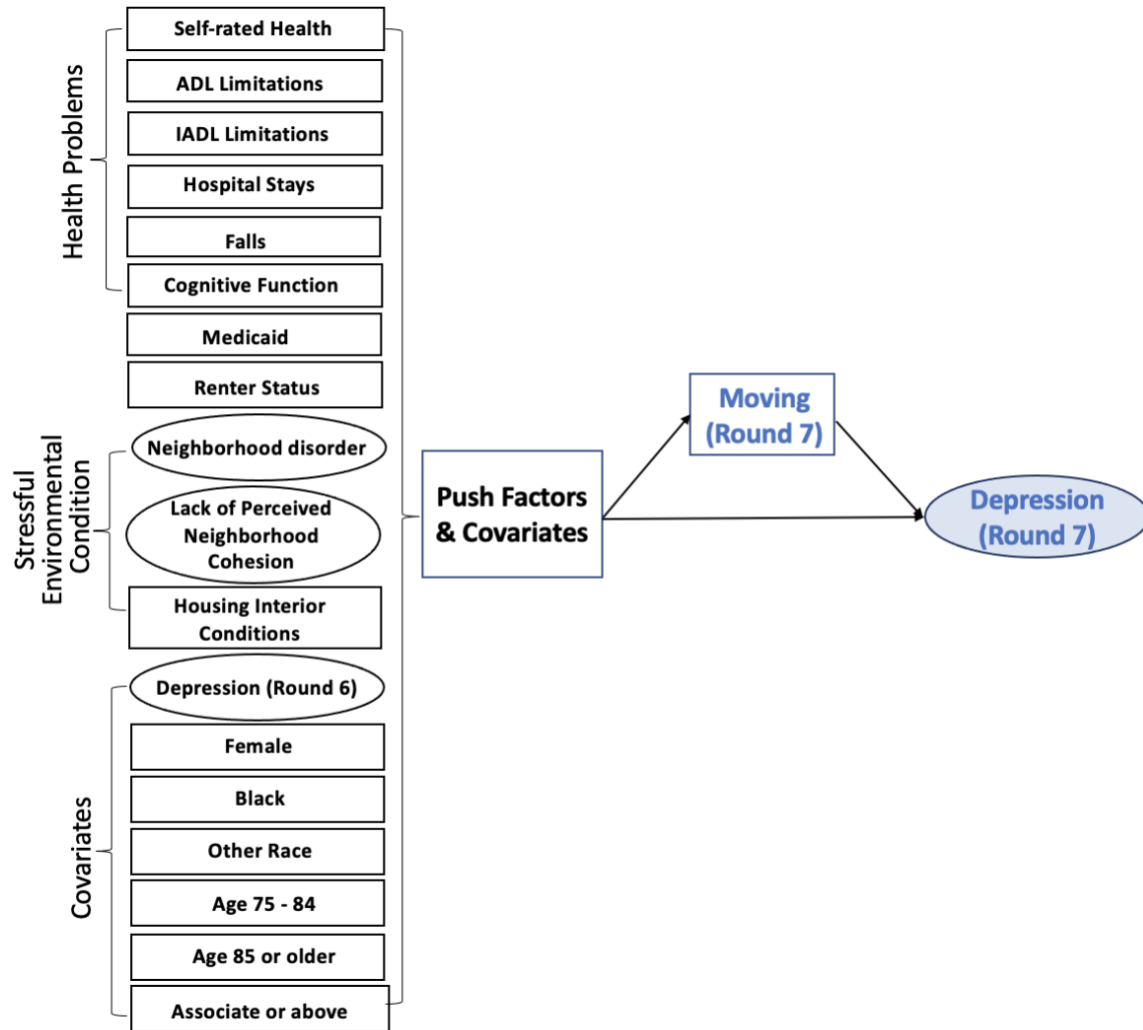


Figure 4. *Analytic Model of Research Aim 2-1.* ADL = activities of daily living; IADL = instrumental activities of daily living; Associate = associate’s degree.

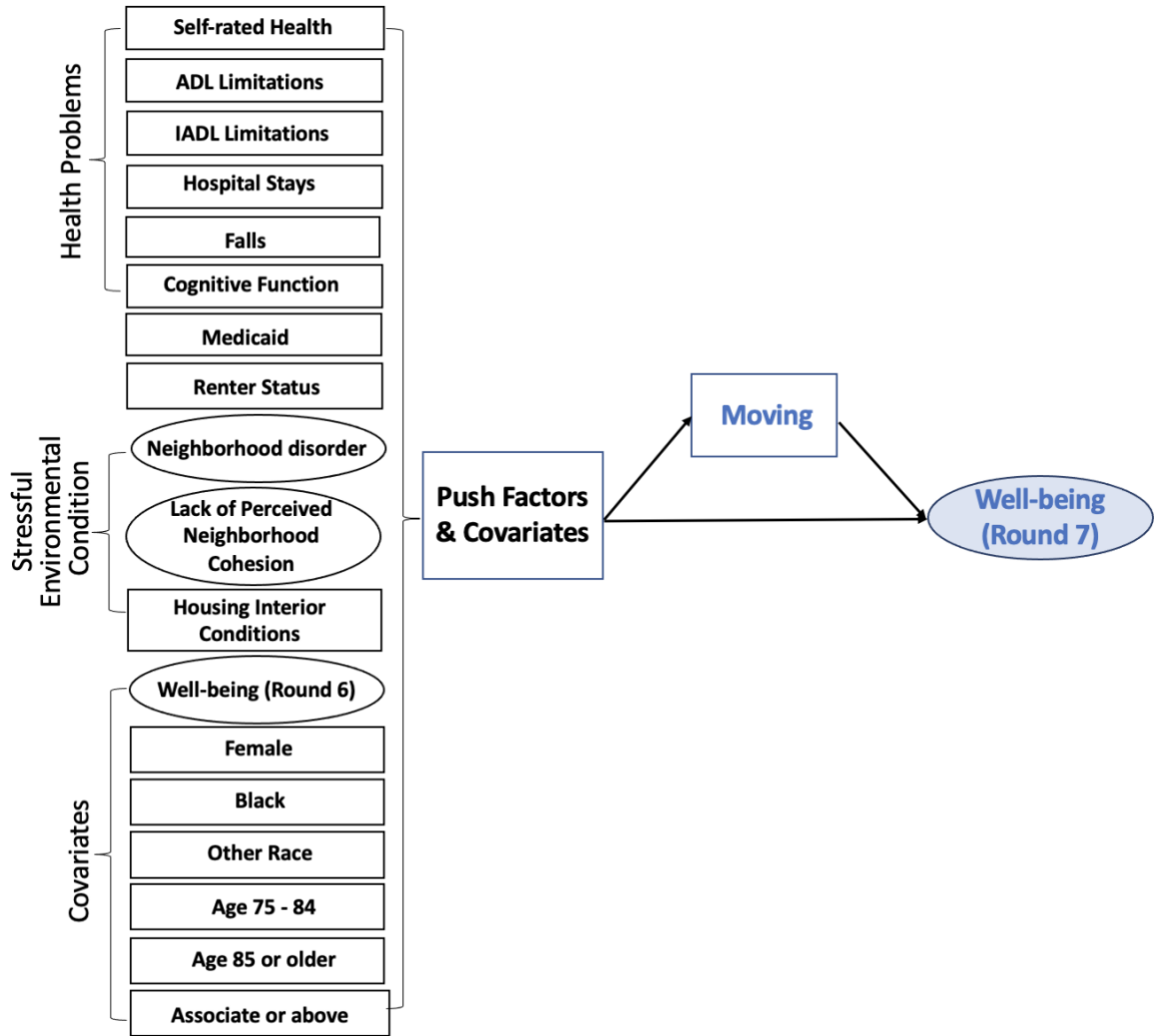


Figure 5. *Analytic Model of Research Aim 2-2.* ADL = activities of daily living; IADL = instrumental activities of daily living; Associate = associate’s degree.

Aims 3-1 and 3-2. Aims 3-1 and 3-2 were to examine the moderating role of indicators of social support on the relationship between moving and the mental health of older adults. A latent interaction model was used to evaluate the moderation effects of indicators of social support. I conducted separate latent interaction models for the dependent variables, depression and well-being. In moderation analyses with depression as a dependent variable, each indicator of social support was included as a moderator between moving and depression. As shown in Figure 6, when depression was an outcome variable, three mediated moderation analyses were performed: Model 3-1-1 (living with others as a moderator), Model 3-1-2 (social network size as a moderator), and Model 3-1-3 (participation in social activities as a moderator). Similarly, when well-being in Round 7 was an outcome variable, three moderation analyses were performed: Model 3-2-1 (living with others as a moderator), Model 3-2-2 (social network size as a moderator), and Model 3-2-3 (participation in social activities as a moderator). For each interaction variable, I conducted three moderated mediation models. The moderators—living with others, social network, and participation in social activities—are all manifest variables. Therefore, I used a define function to define the interaction variables, and “Algorithm=integration” for each model. Since the WLSMV estimator was not allowed for “Algorithm=integration,” MLR was used.

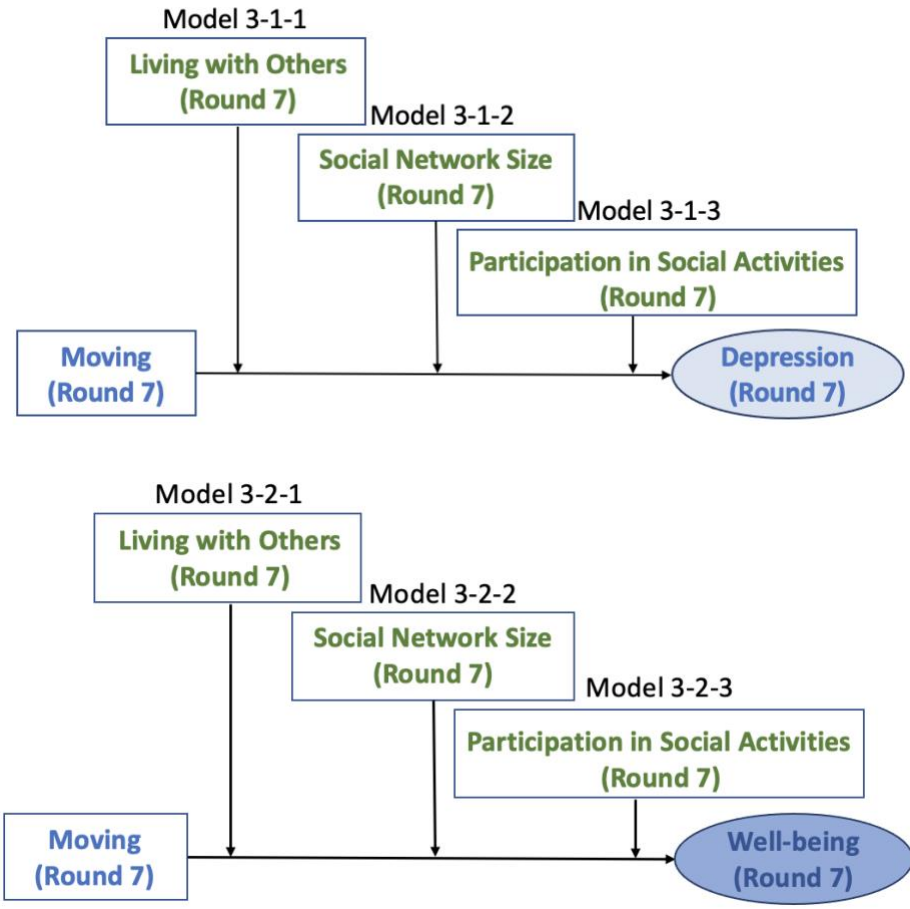


Figure 6. Analytic Model of Research Aims 3-1 and 3-2

Power Analysis

Logistic Regression Model

I calculated the sample size using a formula suggested by Bujang et al. (2018): $n = 100 + 50i$. In this formula, 50 is the event per variable, and i is the number of independent variables. Since the number of independent variables was 11 in this model, $100 + 50 \times 11 = 650$. Therefore, a minimum of 650 was needed for this study, and since the final sample size for the study was 4,856 participants, Aim 1 had sufficient power.

SEM Model

In this study, the minimum sample size was calculated according to a framework using the fit assessment of covariance structure models proposed by MacCallum et al. (1996). This framework determines the minimum sample size required to achieve a given power level by testing the null hypothesis of not-good fit. Calculating the minimum sample size begins with discussion of the interval halving procedure used to determine the minimum value of N required to achieve a given power level. I used .80 for the power, .05 for alpha, and .05 and .08 for the null and alternative values of RMSEA. The degree of freedoms were 168 for Aim 2-1 and 750 for Aim 2-2.

According to the SAS program code provided by MacCallum et al. (1996), first, they set $N_i = 100$ to calculate the actual power. Then they increase N_{i+1} by 100 until the actual power exceeds the given power level. When the actual power exceeds the given power level, the minimum sample size exists between the last N value (N_{i+n}) and the previous N value (N_{i+n-1}). Then, the new N value (N_n) is set as the intermediate value between the last N value (N_{i+n}) and the previous N value (N_{i+n-1}), and the actual power is calculated. Through repetition of this process, the value of N at which the actual power becomes equal to the given power becomes the minimum sample size. Per the results of the power analyses using the SAS code, the minimum sample size of Aim 2-1 was 94, and the minimum sample size of Aim 2-2 was 39. Since the models in Aims 3-1 and 3-2 included more variables, the degrees of freedom of those aims would be higher. Therefore, the minimum sample size would be smaller, indicating that the minimum sample size of Aims 2-1, 2-2, 3-1, and 3-2 was 94.

Chapter 4: Results

Characteristics of Community-Dwelling Older Adults

The characteristics of the weighted sample is shown in Table 1. On average, on a scale of 0–8, the depression score in Round 7 was 2.81, and the depression score in Round 6 was 2.79. This indicated that older adults had depressive symptoms between none and several days a month, so on average the depression level of older adults in this sample were not severe. On a scale of 1–41, the well-being score in Round 7 was 34.46, and the well-being score in Round 6 was 34.49. This indicated that older adults felt positive affect for at least some days or evaluated their lives somewhat positively. The mean score of self-rated health was 3.42 on a scale of 1–5, indicating that older adults perceived their overall health condition to be between good and very good. The ADL score was 0.17, indicating that most older adults had no or less than one ADL limitation. However, the IADL score was 1.78, meaning that, on average, older adults had about two IADL limitations. Among 4,856 older adults, almost two in 10 (18.08%) were hospitalized, and three in 10 (29.67%) had fallen in the previous year.

Only one in 10 participants (10.25%) was covered by Medicaid, indicating that a small number of these older adults had low incomes. The majority of older adults (78.39%) owned their home. On average, the neighborhood disorder score was low, 1.05 on a scale of 1–4, indicating that it was rare to observe litter or glass on the sidewalk, graffiti on building walls, or vacant houses or stores. Perceived neighborhood cohesion was high: 2.41 on a scale of 1–3. Number of interior housing problems was low: 0.15 on a scale of 0–5. Nearly eight in 10 participants were White (78.59%), followed by other races (13.46%) and Black (7.95%). The majority of the sample (54.85%) was female.

Nearly six in 10 older adults were ages 65–74 years (57.72%), followed by ages 75–84 (33.32%), and ages 85 or older (8.96%). Over half of the older adults (58.49%) had associate’s, bachelor’s, or higher degrees. In this sample, 4.9% of older adults moved into the community between Round 6 (2016) and Round 7 (2017), which is higher than the moving rate of U.S. older adults in 2017, which was 3.5% (JCHS, 2018). Most older adults (72.15%) lived with family members or other individuals. The average social network size was 2.29. On average, older adults participated in three out of five social activities.

Table 1

Weighted Univariate Analysis of All Variables (Moving, Mental Health, and Social Support from Round 7, Other Variables From Round 6)

Variable	Attribute	Weighted	
		<i>M (SE)</i>	<i>n (%)</i>
Depression (Round 7)	0–8	2.81 (0.02)	4,856 (100)
	Missing		0 (0.00)
Well-being (Round 7)	1–41	34.46 (0.09)	4,856 (100)
	Missing		0 (0.00)
Self-rated health	1–5	3.42 (0.02)	4,854 (99.04)
	Missing		2 (0.04)
ADL limitations	0–5	0.17 (0.01)	4,856 (100)
IADL limitations	0–5	1.78 (0.03)	4,856 (100)
Hospital stays	0. No		3,970 (81.75)
	1. Yes		878 (18.08)
	Missing		8 (0.17)
Falls	0. No		3,415 (70.33)
	1. Yes		1,441 (29.67)
	Missing		0 (0.00)
Cognitive function	0–32	20.04 (0.11)	4,856 (100)
	Missing		0 (0.00)
Medicaid	0. No		4,278 (88.09)
	1. Yes		498 (10.25)
	Missing		80 (1.66)
Renter status	0. Own		3,807 (78.39)

Table 1 continued

	1. Rent or other		1,009 (20.77)
	Missing		40 (0.84)
Neighborhood disorder	1–4	1.05 (0.01)	4,794 (98.72)
	Missing		62 (1.28)
Lack of perceived neighborhood cohesion	1–3	2.41 (0.01)	4,830 (99.47)
	Missing		26 (0.53)
Housing deterioration	0–5	0.15 (0.01)	4,855 (99.97)
	Missing		1 (0.03)
Female	0. Male		2,192 (45.15)
	1. Female		2,664 (54.85)
	Missing		0 (0.00)
Race	0. White		3,816 (78.59)
	1. Black		386 (7.95)
	2. Other		654 (13.46)
	Missing		0 (0.00)
Age	0. 65–74		2,803 (57.72)
	1. 75–84		1,618 (33.32)
	2. 85+		435 (8.96)
Education	0. High school diploma or below		2,016 (41.51)
	1. Associate or above		2,840 (58.49)
Depression (Round 6)	0–8	2.79 (0.02)	4,856 (100)
	Missing		0 (0.00)
Well-being (Round 6)	1–5.1	34.49 (0.09)	4,856 (99.55)
	Missing		0 (0.00)
Moving	0. No		4,618 (95.10)
	1. Yes		238 (4.90)
	Missing		0 (0.00)
Living with others	0. No		1,352 (27.85)
	1. Yes		3,504 (72.15)
	Missing		0 (0.00)
Social network size	0–5	2.29 (0.04)	4,856 (100)
	Missing		0 (0.00)
Participation in social activities	0–5	2.94 (0.03)	4,851 (99.89)
	Missing		5 (0.11)

Note. ADL = activities of daily living; IADL = instrumental activities of daily living; number of observations = 6,312; population size = 40,151,026; number of subpopulation observations = 4,856; subpopulation size = 34,072,448.

Relationship Between Push Factors and Moving, Depression, and Well-Being

Table 2 presents the results of the weighted bivariate analyses between push factors and moving, between push factors and depression in Round 7, and between push factors and well-being in Round 7 by subpopulation regressions.

The results of the weighted bivariate analyses between push factors and covariates and moving are as follows; some health problems including self-rated health, hospital stays and cognitive function were not significantly related to moving whereas older adults with ADL limitations ($t(56) = 3.84, p < .001$) and IADL limitations ($t(56) = 2.93, p = .005$), and older adults experienced falls ($t(56) = 2.69, p = .009$) were more likely to move than were older adults in the opposite group. However, older adults with cognitive decline were less likely to move than those without ($t(56) = -5.18, p < .001$). Renters were more likely to move than were homeowners ($t(56) = 7.28, p < .001$). Stressful environmental factors—neighborhood disorder, neighborhood cohesion, and housing interior condition—were not significantly associated with moving. Older adults who moved were more likely to have higher levels of depression ($t(56) = 2.46, p = .017$), and lower levels of well-being in Round 6 ($t(56) = -5.78, p < .001$). Also, depression in Round 7 ($t(56) = 3.63, p = .001$) and well-being in Round 7 ($t(56) = -4.88, p < .001$) were not associated with moving.

Gender, race, and education level were also not significantly related to moving. The oldest-old (aged 84 and over, $t(56) = 4.92, p < .001$), were more likely to move than were the youngest-old (aged 65–74). Among indicators of social support, only participation in social activities was negatively associated with moving ($t(56) = -2.66, p = .010$). However, social network size and living with others were not associated with

moving.

The results of the weighted bivariate analyses between push factors and covariates and depression in Round 7 are as follows: Higher the self-rated health ($t(56) = -17.63, p < .001$), fewer the ADL ($t(56) = 5.12, p < .001$) and IADL limitations ($t(56) = 3.29, p = .002$), and higher levels of cognitive function ($t(56) = -6.67, p < .001$) were associated with lower depression among older adults. However, older adults who had been hospitalized ($t(56) = 4.13, p < .001$) or had had a fall ($t(56) = 6.23, p < .001$) were more likely to be depressed than were older adults who had not. In addition, older adults with low income, indicated by receiving Medicaid benefits ($t(56) = 5.67, p < .001$), or older adults who were renters or other types of non-homeowners ($t(56) = 4.05, p < .001$), had higher levels of depression than did older adults with higher incomes and who were homeowners. Regarding stressful environmental conditions, higher neighborhood disorder ($t(56) = 2.72, p = .009$), lower neighborhood cohesion ($t(56) = -7.26, p < .001$), and worse housing interior condition ($t(56) = 4.52, p < .001$) were associated with higher depression.

Female older adults ($t(56) = 3.25, p = .002$) were more likely to be depressed than were male older adults, and participants who were Black ($t(56) = 5.09, p < .001$) or of other races ($t(56) = 3.92, p < .001$) were more likely to be depressed than were White participants. The oldest-old (aged 85 or over, $t(56) = -2.83, p = .007$) were more likely to be depressed than the youngest-old (aged 65–74). All indicators of social support were significantly associated with depression in older adults. Older adults living with others ($t(56) = -3.51, p = .001$) were less depressed than older adults living alone. The larger the size of their social network ($t(56) = -2.90, p = .005$) and the greater their participation in

social activities ($t(56) = -13.59, p < .001$), the less likely older adults were to be depressed. Finally, depression in Round 7 was positively associated with depression in Round 6 ($t(56) = 27.77, p < .001$) and negatively associated with well-being in Rounds 6 ($t(56) = -3.08, p = .003$) and 7 ($t(56) = 3.34, p = .001$).

The results of the weighted bivariate analyses between push factors and covariates and well-being in Round 7 are as follows: Higher self-rated health ($t(56) = 19.70, p < .001$), fewer ADL ($t(56) = -26.77, p < .001$) and IADL limitations ($t(56) = -18.16, p < .001$), and higher levels of cognitive function ($t(56) = 21.25, p < .001$) were associated with higher well-being. However, older adults who had been hospitalized ($t(56) = -9.52, p < .001$) or had had a fall ($t(56) = -9.27, p < .001$) were more likely to have lower well-being than were older adults who had not. Older adults who received Medicaid ($t(56) = -8.94, p < .001$) or older adults who were renters or other types of non-homeowners ($t(56) = -15.71, p < .001$) were also more likely to have lower well-being than were older adults in the other group. In terms of stressful environmental conditions, the higher the neighborhood disorder ($t(56) = -2.07, p = .043$), the lower the neighborhood cohesion ($t(56) = 6.33, p < .001$), and the worse the housing interior condition ($t(56) = -1.26, p < .001$), the lower the well-being of older adults.

The well-being levels of female older adults ($t(56) = -3.62, p = .001$) were lower than those of male older adults, and participants who were Black ($t(56) = -2.85, p = .006$) or of other races ($t(56) = -2.36, p = .022$) were more likely to have lower well-being than were White participants. The well-being levels of the middle-old (aged 75–84 years, $t(56) = -7.08, p < .001$) and the oldest-old (aged 85 and over, $t(56) = -27.42, p < .001$) were lower than those of the youngest-old (aged 65–74). All indicators of social support

showed a significant relationship with the well-being of older adults. Older adults living with others ($t(56) = 4.37, p < .001$) were more likely to have higher well-being levels than were older adults living alone. The larger the size of their social network ($t(56) = -3.86, p < .001$) and the greater their participation in social activities ($t(56) = 17.42, p < .001$), the higher the level of well-being of older adults. Finally, well-being in Round 7 had a significant relationship with well-being in Round 6 ($t(56) = 46.98, p < .001$) and with depression in Rounds 6 ($t(56) = -12.28, p < .001$) and 7 ($t(56) = -3.15, p = .003$).

Table 2

Weighted Bivariate Analyses Between Moving, Depression, Well-Being, and All Variables (Moving, Mental Health, and Social Support From Round 7, Other Variables From Round 6)

Variables	Moving		Depression		Well-being	
	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
Depression in Round 7	2.46	.017	–	–	-3.15	.003
Well-being in Round 7	-5.78	.000	3.34	.001	–	–
Self-rated health	-1.71	.094	-17.63	.000	19.70	.000
ADL Limitations	3.84	.000	5.12	.000	-26.77	.000
IADL Limitations	2.93	.005	3.29	.002	-18.16	.000
Hospital Stays	2.71	.074	4.13	.000	-9.52	.000
Falls	2.69	.009	6.23	.000	-9.27	.000
Cognitive Function	-5.18	.000	-6.67	.000	21.25	.000
Medicaid	1.39	.169	5.67	.000	-8.94	.000
Renter Status	7.28	.000	4.05	.000	-15.71	.000
Neighborhood Disorder	-.34	.732	2.72	.009	-2.07	.043
Lack of Perceived Neighborhood Cohesion	-1.48	.143	-7.26	.000	6.33	.000
Housing Interior Condition	-.82	.416	4.52	.000	-1.26	.211
Female	1.30	.200	3.25	.002	-3.62	.001
Race (White) F						
Black	.99	.325	5.09	.000	-2.85	.006
Other	-.85	.397	3.92	.000	-2.36	.022
Age (65-74) F						
75-84	.21	.832	.54	.593	-7.08	.000
85+	4.92	.000	-2.83	.007	-27.42	.000
Education	-.00	.977	-5.22	.000	12.80	.000
Depression in Round 6	3.63	.001	27.77	.000	-12.28	.000
Well-being in Round 6	-4.88	.000	-3.08	.003	46.98	.000
Moving	–	–	2.49	.016	-5.72	.000
Living with Others	-5.29	.000	-3.51	.001	4.37	.000
Social Network Size	1.05	.299	-2.90	.005	3.86	.000
Participation in Social Activities	-2.66	.010	-13.59	.000	17.42	.000

Note. Variables in parentheses are reference variables. ADL = activities of daily living; IADL = instrumental activities of daily living.

CFAs and Measurement Models

CFAs

Before conducting the measurement models, I conducted CFAs for neighborhood disorder, lack of perceived neighborhood cohesion, and well-being in Rounds 6 and 7 to test whether the item of each latent variable accurately captured the number of constructs. The standardized factor loading coefficients for neighborhood disorder, lack of perceived neighborhood cohesion, and well-being in Rounds 6 and 7 are shown in Table 3 and 4. The three items of neighborhood disorder were assessed, and the standardized factor loadings of each item were above .80, which is very high. However, the CFA model was saturated ($df = 0$). Therefore, the model fit could not be assessed. As with the results of the CFA for neighborhood disorder, the standardized factor loadings of each item in lack of perceived neighborhood cohesion were above .70, which is high. However, the CFA model for neighborhood cohesion was also saturated.

The standardized factor loading coefficients for well-being in Round 6 ranged from .354 to .811. Since most of them were over .400 and the sample size was over 150 ($n = 4,840$), the results of the CFA were reliable (Mertler & Reinhart, 2017). Also, the model fit was good, $\chi^2 = 536.019$ ($df = 44$), $p < .001$, CFI = .960, TLI = .951, RMSEA = .048, SRMR = .047. Similar to the results of the CFA for well-being in Round 6, the standardized factor loading coefficients for well-being in Round 7 ranged from .389 to .816. Also, the model fit was good, $\chi^2 = 527.688$ ($df = 44$), $p < .001$, CFI = .953, TLI = .941, RMSEA = .048, SRMR = .048. Even though the chi-square results were significant in both CFAs for well-being in Rounds 6 and 7, other fit indices were good, indicating that the model fits of both CFAs were good.

Table 3*Results of Confirmatory Factor Analysis of Latent Variables*

Latent variable	Observed item	Factor loading	SE	p
Neighborhood disorder	Order_1	.887	.021	<.001
	Order_2	.931	.021	<.001
	Order_3	.869	.023	<.001
Lack of perceived neighborhood cohesion	Cohes_1	.718	.015	<.001
	Cohes_2	.992	.017	<.001
	Cohes_3	.710	.016	<.001
Well-being in Round 6	Wellbe_R6_1	.745	.010	<.001
	Wellbe_R6_2	.520	.017	<.001
	Wellbe_R6_3	.777	.010	<.001
	Wellbe_R6_4	.476	.014	<.001
	Wellbe_R6_5	.749	.017	<.001
	Wellbe_R6_6	.811	.014	<.001
	Wellbe_R6_7	.397	.025	<.001
	Wellbe_R6_8	.613	.020	<.001
	Wellbe_R6_9	.354	.019	<.001
	Wellbe_R6_10	.533	.026	<.001
	Wellbe_R6_11	.419	.022	<.001
Well-being in Round 7	Wellbe_R7_1	.733	.014	<.001
	Wellbe_R7_2	.514	.017	<.001
	Wellbe_R7_3	.776	.012	<.001
	Wellbe_R7_4	.492	.015	<.001
	Wellbe_R7_5	.701	.015	<.001
	Wellbe_R7_6	.816	.016	<.001
	Wellbe_R7_7	.389	.024	<.001
	Wellbe_R7_8	.604	.021	<.001
	Wellbe_R7_9	.406	.022	<.001
	Wellbe_R7_10	.561	.024	<.001
	Wellbe_R7_11	.405	.019	<.001

Table 4*Global fit of Confirmatory Factor Analysis of Latent Variables*

Latent Variable	χ^2	df	RMSEA	CFI	TLI	SRMR
Neighborhood disorder	.000***	0	.000	1.000	1.000	.001
Lack of perceived neighborhood cohesion	.000***	0	.000	1.000	1.000	.000
Well-being in Round 6	536.019***	44	.048	.960	.951	.047
Well-being in Round 7	527.688***	44	.048	.953	.941	.048

Note. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root-mean-square residual. *** $p < .001$.

Measurement Model 1

I conducted three measurement models. As shown in Table 5, the first measurement model included neighborhood disorder, neighborhood cohesion, and depression in Rounds 6 and 7. The model fit was excellent, $\chi^2 = 157.204$ (df = 29), $p < .001$, CFI = .988, TLI = .981, RMSEA = .030, SRMR = .037. This indicated that SEM models for Aims 2-1 and 3-1 could be structured with those latent variables.

Measurement Model 2

As shown in Table 6, the second measurement model included neighborhood disorder, neighborhood cohesion, and well-being in Rounds 6 and 7. Initially, the model fit of the second measurement model was poor, $\chi^2 = 3524.089$ (df = 344), $p < .001$, CFI = .901, TLI = .891, RMSEA = .044, SRMR = .071. A modification was conducted on the basis of modification indices (MIs) and EFC to improve the model fit. The error covariances were added in the second model, which were “with statement” items between well-being in Rounds 6 and 7, items within well-being in Round 7, and items within well-being in Round 6. A total of 23 error covariances were added, and these are listed in Table 6. After re-specification of the second measurement model, its model fit was improved, $\chi^2 = 860.205$ (df = 321), $p < .001$, CFI = .983, TLI = .980, RMSEA = .019, SRMR = .044. This indicated that SEM models for Aims 2-2 and 3-2 could be structured with those latent variables.

Table 5*Measurement Model With Depression (N = 4,856)*

Variable	Observed item	Factor loading	SE	<i>p</i>	
Neighborhood disorder	Order_1	.919	.021	<.001	
	Order_2	.912	.021	<.001	
	Order_3	.850	.025	<.001	
Lack of perceived neighborhood cohesion	Cohes_1	.721	.015	<.001	
	Cohes_2	.967	.016	<.001	
	Cohes_3	.736	.015	<.001	
Depression in Round 6	Depre_R6_1	.760	.015	<.001	
	Depre_R6_2	.803	.015	<.001	
Depression in Round 7	Depre_R7_1	.770	.017	<.001	
	Depre_R7_2	.802	.016	<.001	
Global fit					
χ^2	<i>df</i>	RMSEA	CFI	TLI	SRMR
156.108***	29	.030	.988	.981	.037

Note. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root-mean-square residual.

****p* < .001.

Table 6*Measurement Model With Well-Being*

Latent variable	Observed item	Factor loading	SE	<i>p</i>
Neighborhood disorder	Order_1	.917	.022	<.001
	Order_2	.907	.021	<.001
	Order_3	.858	.023	<.001
Lack of perceived neighborhood cohesion	Cohes_1	.717	.017	<.001
	Cohes_2	.965	.019	<.001
	Cohes_3	.745	.017	<.001
Well-being in Round 6	Wellbe_R6_1	.686	.012	<.001
	Wellbe_R6_2	.522	.019	<.001
	Wellbe_R6_3	.726	.013	<.001
	Wellbe_R6_4	.438	.015	<.001
	Wellbe_R6_5	.719	.017	<.001
	Wellbe_R6_6	.816	.014	<.001
	Wellbe_R6_7	.389	.027	<.001
	Wellbe_R6_8	.598	.022	<.001
	Wellbe_R6_9	.368	.020	<.001
	Wellbe_R6_10	.533	.025	<.001

Table 6 continued

Well-being in Round 7	Wellbe_R6_11	.430	.022	<.001		
	Wellbe_R7_1	.678	.014	<.001		
	Wellbe_R7_2	.515	.017	<.001		
	Wellbe_R7_3	.723	.012	<.001		
	Wellbe_R7_4	.481	.015	<.001		
	Wellbe_R7_5	.716	.015	<.001		
	Wellbe_R7_6	.802	.016	<.001		
	Wellbe_R7_7	.383	.024	<.001		
	Wellbe_R7_8	.611	.021	<.001		
	Wellbe_R7_9	.375	.022	<.001		
	Wellbe_R7_10	.571	.024	<.001		
Wellbe_R7_11	.419	.019	<.001			
Error covariances						
Wellbe_R6_1 with Wellbe_R7_1	.380	.018	<.001			
Wellbe_R6_2 with Wellbe_R7_2	.520	.013	<.001			
Wellbe_R6_3 with Wellbe_R7_3	.330	.018	<.001			
Wellbe_R6_4 with Wellbe_R7_4	.372	.013	<.001			
Wellbe_R6_5 with Wellbe_R7_5	.560	.031	<.001			
Wellbe_R6_6 with Wellbe_R7_6	.404	.044	<.001			
Wellbe_R6_7 with Wellbe_R7_7	.473	.021	<.001			
Wellbe_R6_8 with Wellbe_R7_8	.588	.029	<.001			
Wellbe_R6_9 with Wellbe_R7_9	.533	.020	<.001			
Wellbe_R6_10 with Wellbe_R7_10	.442	.044	<.001			
Wellbe_R6_11 with Wellbe_R7_11	.508	.018	<.001			
Wellbe_R6_3 with Wellbe_R6_1	.337	.022	<.001			
Wellbe_R7_3 with Wellbe_R7_1	.302	.023	<.001			
Wellbe_R7_9 with Wellbe_R7_7	.263	.030	<.001			
Wellbe_R6_9 with Wellbe_R6_7	.207	.027	<.001			
Wellbe_R6_6 with Wellbe_R6_5	.354	.044	<.001			
Wellbe_R7_4 with Wellbe_R7_2	.150	.018	<.001			
Wellbe_R6_4 with Wellbe_R6_2	.144	.018	<.001			
Cohes_2 with Cohes_1	.450	.064	<.001			
Wellbe_R7_6 with Wellbe_R7_5	.286	.042	<.001			
Wellbe_R6_10 with Wellbe_R6_9	.206	.043	<.001			
Wellbe_R6_8 with Wellbe_R6_4	.153	.029	<.001			
Wellbe_R6_4 with Wellbe_R6_1	.110	.018	<.001			
Global fit						
	χ^2	<i>df</i>	RMSEA	CFI	TLI	SRMR
Before mod.	3524.956***	344	.044	.901	.891	.071
After mod.	868.275***	322	.019	.983	.980	.045

Note. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root-mean-square residual; mod. = modification.

*** $p < .001$.

Measurement Model 3

As shown in Table 7, the third measurement model included all latent variables in the study: neighborhood disorder, neighborhood cohesion, depression in Rounds 6 and 7, and well-being in Rounds 6 and 7. The error covariances in the second measurement model were included in Measurement Model 3. Initially, the model fit of the second measurement model was good, $\chi^2 = 1200.978$ (df = 427), $p < .001$, CFI = .979, TLI = .976, RMSEA = .019, SRMR = .046. However, a warning sign was shown: “The latent variable covariance matrix is not positive definite.... Problem involving variable depression in Round 7.” Therefore, a modification was conducted. Three more error covariances of observed items between depression in Rounds 6 and 7 (Depre_R7_1 with Depre_R6_1) and between well-being in Round 7 (Wellbe_R6_11 with Wellbe_R6_10, Wellbe_R7_11 with Wellbe_R7_10) were added. After re-specification of the second measurement model, the warning was solved, and the model fit of the third measurement model was still good, $\chi^2 = 1127.750$ (df = 423), $p < .001$, CFI = .981, TLI = .978, RMSEA = .019, SRMR = .044. Per the result of this measurement model, the correlation between well-being in Round 7 and depression in Round 7 was .834, and the correlation between well-being in Round 6 and depression in Round 6 was .825. This indicates that since well-being and depression had a high association, the model including well-being outcome and the model including depression outcome should be analyzed separately.

Table 7*Measurement Model With Depression and Well-Being*

Latent variable	Observed item	Factor loading	SE	p
Neighborhood disorder	Order_1	.922	.022	<.001
	Order_2	.905	.021	<.001
	Order_3	.853	.025	<.001
Lack of perceived neighborhood cohesion	Cohes_1	.600	.039	<.001
	Cohes_2	.848	.038	<.001
	Cohes_3	.834	.036	<.001
Depression in Round 6	Depre_R6_1	.692	.015	<.001
	Depre_R6_2	.882	.015	<.001
Depression in Round 7	Depre_R7_1	.723	.020	<.001
	Depre_R7_2	.856	.017	<.001
Well-being in Round 6	Wellbe_R6_1	.698	.012	<.001
	Wellbe_R6_2	.538	.018	<.001
	Wellbe_R6_3	.724	.012	<.001
	Wellbe_R6_4	.466	.014	<.001
	Wellbe_R6_5	.699	.018	<.001
	Wellbe_R6_6	.794	.015	<.001
	Wellbe_R6_7	.386	.026	<.001
	Wellbe_R6_8	.604	.021	<.001
	Wellbe_R6_9	.385	.019	<.001
	Wellbe_R6_10	.506	.026	<.001
	Wellbe_R6_11	.407	.022	<.001
Well-being in Round 7	Wellbe_R7_1	.695	.013	<.001
	Wellbe_R7_2	.528	.016	<.001
	Wellbe_R7_3	.718	.012	<.001
	Wellbe_R7_4	.500	.014	<.001
	Wellbe_R7_5	.698	.016	<.001
	Wellbe_R7_6	.786	.016	<.001
	Wellbe_R7_7	.381	.024	<.001
	Wellbe_R7_8	.615	.021	<.001
	Wellbe_R7_9	.395	.022	<.001
	Wellbe_R7_10	.542	.024	<.001
	Wellbe_R7_11	.396	.020	<.001
Error covariances				
Wellbe_R6_1 with Wellbe_R7_1		.360	.019	<.001
Wellbe_R6_2 with Wellbe_R7_2		.512	.014	<.001
Wellbe_R6_3 with Wellbe_R7_3		.337	.017	<.001
Wellbe_R6_4 with Wellbe_R7_4		.356	.014	<.001
Wellbe_R6_5 with Wellbe_R7_5		.579	.029	<.001
Wellbe_R6_6 with Wellbe_R7_6		.446	.041	<.001

Table 7 continued

Wellbe_R6_7 with Wellbe_R7_7	.474	.021	<.001			
Wellbe_R6_8 with Wellbe_R7_8	.585	.029	<.001			
Wellbe_R6_9 with Wellbe_R7_9	.527	.020	<.001			
Wellbe_R6_10 with Wellbe_R7_10	.461	.043	<.001			
Wellbe_R6_11 with Wellbe_R7_11	.517	.018	<.001			
Wellbe_R6_3 with Wellbe_R6_1	.327	.021	<.001			
Wellbe_R7_3 with Wellbe_R7_1	.289	.023	<.001			
Wellbe_R7_9 with Wellbe_R7_7	.257	.030	<.001			
Wellbe_R6_9 with Wellbe_R6_7	.201	.027	<.001			
Wellbe_R6_6 with Wellbe_R6_5	.399	.040	<.001			
Wellbe_R7_4 with Wellbe_R7_2	.130	.018	<.001			
Wellbe_R6_4 with Wellbe_R6_2	.118	.017	<.001			
Cohes_2 with Cohes_1	.478	.057	<.001			
Wellbe_R7_6 with Wellbe_R7_5	.328	.040	<.001			
Wellbe_R6_10 with Wellbe_R6_9	.205	.042	<.001			
Wellbe_R6_8 with Wellbe_R6_4	.128	.029	<.001			
Wellbe_R6_4 with Wellbe_R6_1	.074	.018	<.001			
Wellbe_R6_11 with Wellbe_R6_10	.169	.037	<.001			
Depre_R7_1 with Depre_R6_1	.371	.033	<.001			
Depre_R7_2 with Depre_R6_2	.151	.068	.026			
Wellbe_R7_11 with Wellbe_R7_10	.172	.038	<.001			
Global fit						
	χ^2	<i>df</i>	RMSEA	CFI	TLI	SRMR
Before mod.	3652.406***	449	.038	.913	.904	.066
After mod.	1125.603***	422	.019	.981	.978	.044

Note. RMSEA = root-mean-square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root-mean-square residual; mod. = modification.

*** $p < .001$.

Structural Equation Model

Aim 1: Identify the Push Factors Affecting the Moving of Older Adults

Table 8 and Figure 7 present the results of a logistic regression analysis to examine whether push factors were associated with moving of older adults, controlling for individual characteristics. Of the six health-related push factors, none were related to moving. However, hospital stays were nearly significant ($p = .051$), suggesting that hospitalized older adults were more likely to move than were older adults who were not hospitalized. Medicaid beneficiaries ($OR = 0.404, p = .023$) were less likely to move than were their wealthier counterparts. Renters and other non-homeowners ($OR = 3.820, p < .001$) were more likely to move than were homeowners. Stressful environmental factors—neighborhood disorder, lack of perceived neighborhood cohesion, and housing interior condition—were not associated with moving. Also, individual characteristics—including being female, race, age, and education—were not associated with moving.

Table 8

Weighted Logistic Regressions Between Moving and All Independent Variables and Covariates (n = 4,658)

Variable	<i>OR</i>	<i>SE</i>	<i>t</i>	<i>p</i>	CI
Constant	0.025	0.020	-4.50	.000	[0.005, 0.129]
Self-rated health	1.068	0.104	0.68	.500	[0.879, 1.299]
ADL limitations	0.793	0.138	-1.33	.188	[0.560, 1.123]
IADL limitations	1.101	0.077	1.38	.172	[0.958, 1.268]
Hospital stays	1.567	0.306	2.30	.025	[0.998, 2.153]
Falls	1.301	0.303	1.13	.263	[1.060, 2.316]
Cognitive function	0.995	0.027	-0.20	.839	[0.943, 1.049]
Medicaid	0.336	0.132	-2.78	.007	[0.153, 0.737]
Renter or other	3.896	0.759	6.98	.000	[2.638, 5.756]
Neighborhood disorder	1.318	0.435	0.94	.407	[0.680, 2.553]
Lack of perceived neighborhood cohesion	0.879	0.220	-0.52	.608	[0.532, 1.451]
Housing interior condition	0.924	0.128	-0.57	.569	[0.700, 1.219]
Female	1.043	0.204	0.21	.831	[0.704, 1.544]
Race (White)					
Black	1.136	0.268	0.54	.591	[0.708, 1.822]
Other	1.133	0.373	0.38	.705	[0.586, 2.193]
Age in years (65–74)					
75–84	0.705	0.145	-1.71	.093	[0.467, 1.063]
85+	0.675	0.220	-1.20	.234	[0.352, 1.297]
Associate's degree or above	1.074	0.149	0.52	.607	[0.814, 1.417]

Note. Variables in parentheses are reference variables. *OR* = odds ratio; CI = confidence interval; ADL = activities of daily living; IADL = instrumental activities of daily living; number of observations = 4,719; population size = 33,180,950.

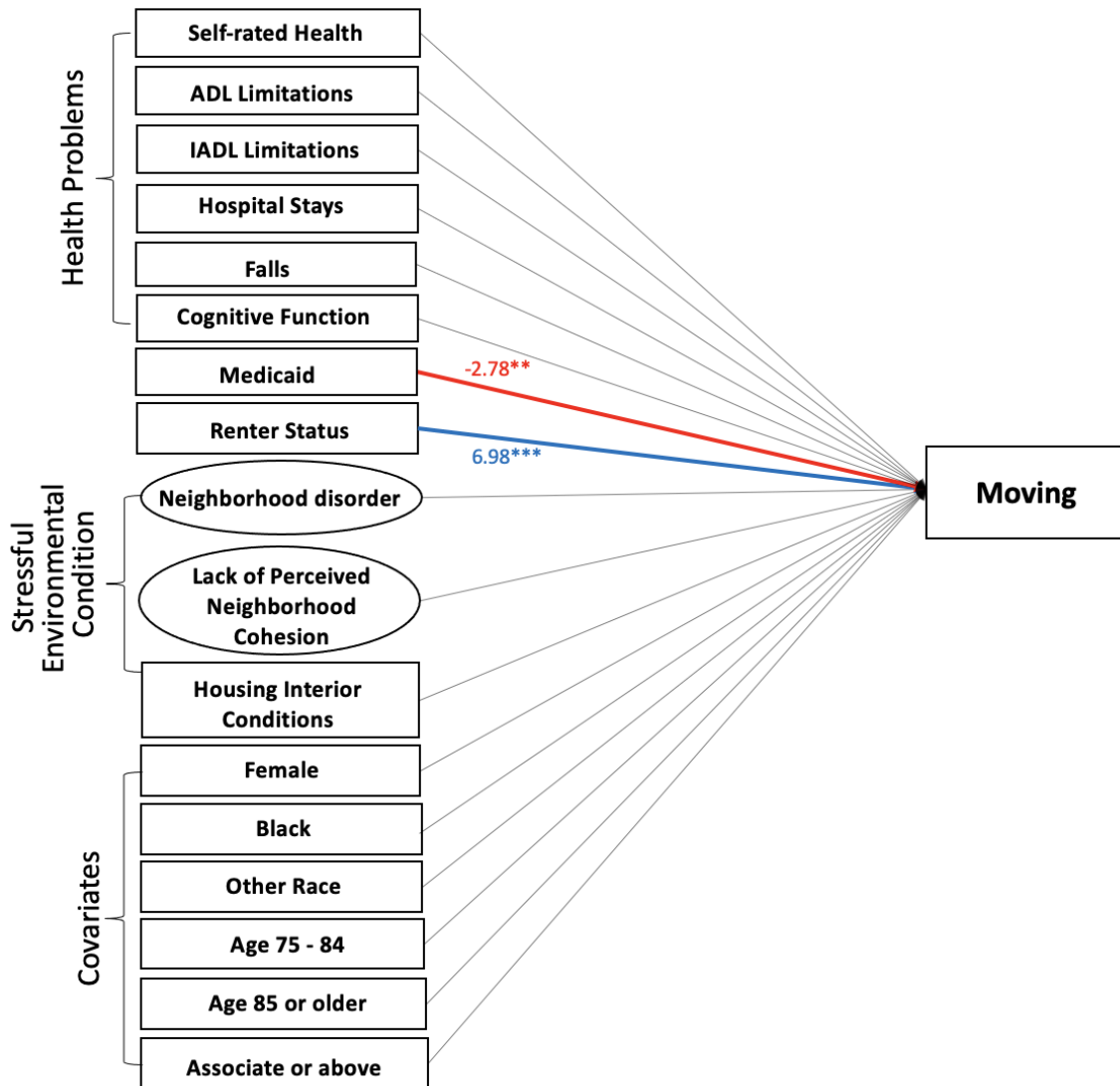


Figure 7. Relationships Between Push Factors and Moving. ADL = activities of daily living; IADL = instrumental activities of daily living; Associate = associate’s degree.
 ** $p < .01$. *** $p < .001$.

Aim 2-1: Investigate Whether the Relationship Between Push Factors and Depression Is Mediated by Moving

Table 9 and Figure 8 present the results of SEM analyses examining the mediation effect of moving on the relationship between push factors and depression. Older adults receiving Medicaid were less likely to move than were other older adults, and renters and other non-homeowners were more likely to move than were homeowners. This was consistent with the results of the logistic regression for Aim 1.

The relationships between push factors and depression were as follows: higher levels of self-rated health, lower numbers of ADL limitations, and lower levels of cognitive function were each associated with lower depression. Older adults who had had a fall were more likely to be depressed than were older adults who had not. Also, the worse the housing interior condition was, the more likely older adults were to be depressed. Female older adults were more likely to be depressed than were male older adults, and older adults with an associate's degree or higher education had lower levels of depression than did older adults with a high school diploma or less education.

Of all the push factors, only receiving Medicaid was found to be related to both moving and depression. However, moving did not mediate the relationship between any of the push factors and depression. The model fit of this SEM model was marginal, $\chi^2 = 867.494$ (df = 168), $p < .001$, CFI = .902, TLI = .872, RMSEA = .030, SRMR = .109. Only RMSEA had good fit.

Table 9

Weighted SEM Analyses on Mediation Effects of Moving Between Push Factors and Depression (n =4,755)

Variable	Direct effect		Indirect effect		
	Moving: B (SE)	Depression: B (SE)	Moving→depression: B (SE)		
Self-rated health	.025 (.047)	-.377 (.022)***	.000 (.001)		
ADL limitations	-.054 (.045)	.070 (.020)**	.000 (.003)		
IADL limitations	.064 (.049)	-.011 (.026)	.000 (.003)		
Hospital stays	.069 (.038)	.017 (.021)	.000 (.004)		
Falls	.046 (.046)	.082 (.022)***	.000 (.002)		
Cognitive function	-.037 (.055)	-.099 (.028)***	.000 (.002)		
Medicaid	-.119 (.046)**	.045 (.022)*	.000 (.006)		
Renter or other	.253 (.032)***	.019 (.026)	.000 (.013)		
Neighborhood disorder	.027 (.051)	.029 (.038)	.000 (.001)		
Lack of perceived neighborhood cohesion	-.032 (.062)	-.007 (.026)	.000 (.002)		
Housing interior condition	-.022 (.038)	.048 (.022)*	.000 (.001)		
Female	.015 (.048)	.114 (.025)***	.000 (.001)		
Race (White)					
Black	.015 (.028)	.004 (.016)	.000 (.001)		
Other	.012 (.045)	.011 (.026)	.000 (.001)		
Age in years (65–74)					
75–84	-.082 (.046)	-.013 (.021)	.000 (.004)		
85+	-.056 (.033)	-.016 (.016)	.000 (.003)		
Associate's degree or above	.026 (.045)	-.044 (.021)*	.000 (.001)		
Depression (Round 6)	.085 (.048)	.649 (.025)***	—		
Moving	—	.000 (.052)	—		
Global fit					
χ^2	<i>df</i>	RMSEA	CFI	TLI	SRMR
864.670***	168	.030	.902	.872	.109

Note. Variables in parentheses are reference variables. SEM = structural equation modeling; ADL = activities of daily living; IADL = instrumental activities of daily living; RMSEA = root-mean-square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root-mean-square residual.

* $p < .05$. ** $p < .01$. *** $p < .001$.

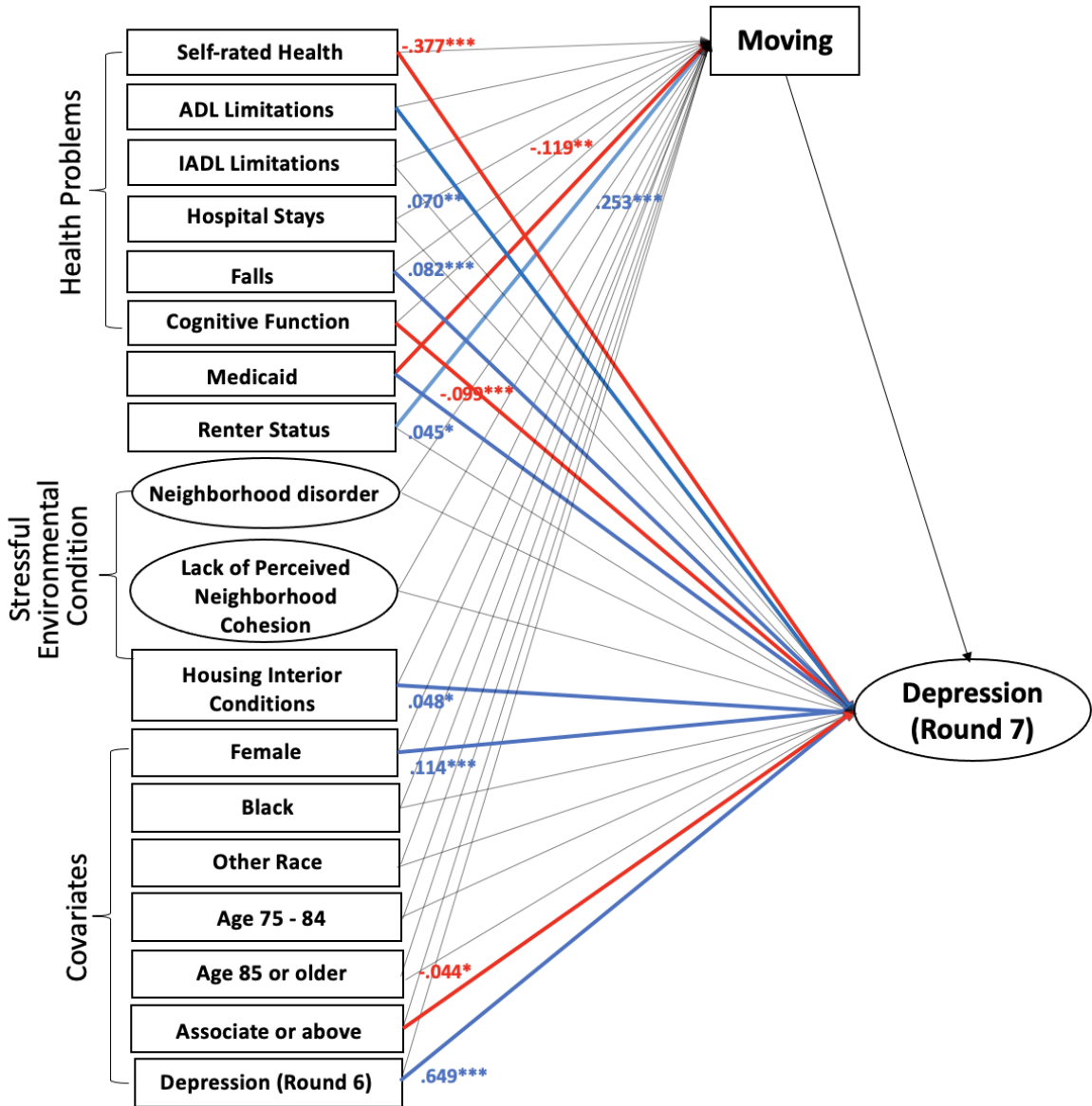


Figure 8. Mediation Effects of Moving on Relationships Between Push Factors and Depression. ADL = activities of daily living; IADL = instrumental activities of daily living; Associate = associate’s degree.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

Aim 2-2: Investigate Whether the Relationship Between Push Factors and Well-Being Is Mediated by Moving

Table 10 and Figure 9 present the results of SEM analyses examining the mediation effect of moving on the relationship between push factors and well-being. As reported above, among push factors, older adults receiving Medicaid were less likely to move, and renters and other non-homeowners were more likely to move than were homeowners. Also, the lower older adults' well-being in Round 6, the higher their likelihood of moving.

There were direct relationships between push factors and well-being. Among health-related factors, the higher their level of self-rated health and the higher their level of cognitive function, the higher the level of well-being of older adults. However, older adults who had had a fall had lower well-being than did older adults who had not. Also, the poorer the housing interior condition, the lower the level of well-being level of older adults. Female older adults had lower well-being than did male older adults, and Black and other race older adults had higher well-being than did White older adults. The oldest-old (aged 85 years and over) had lower well-being levels than older adults in the younger groups. The well-being level of older adults with an associate's degree or higher education was higher than that of older adults with a high school diploma or less education.

Among all push factors, only renters and other non-homeowners had a significant association with both moving and well-being in Round 7. However, moving did not mediate the relationship between any of the push factors and well-being. The model fit of

this SEM model was acceptable, $\chi^2 = 2062.058$ ($df = 754$), $p < .001$, CFI = .929, TLI = .921, RMSEA = .019, SRMR = .095. Only RMSEA had good fit.

Table 10

Weighted SEM Analyses on Mediation Effects of Moving Between Push Factors and Well-Being (n = 4,755)

Variable	Direct effect		Indirect effect		
	Moving: B (SE)	Well-being: B (SE)	Moving → Well-being: B (SE)		
Self-rated health	.025 (.047)	.396 (.021)***	.001 (.002)		
ADL limitations	-.054 (.045)	-.028 (.019)	-.003 (.003)		
IADL limitations	.064 (.049)	-.029 (.020)	.003 (.003)		
Hospital stays	.069 (.038)	.010 (.016)	.003 (.003)		
Falls	.046 (.046)	-.054 (.021)**	.002 (.003)		
Cognitive function	-.037 (.055)	.104 (.023)***	-.002 (.003)		
Medicaid	-.117 (.046)**	.026 (.021)	-.006 (.004)		
Renter or other	.253 (.032)***	-.078 (.022)***	.012 (.008)		
Neighborhood disorder	.032 (.052)	-.014 (.024)	.002 (.003)		
Lack of perceived neighborhood cohesion	-.019 (.061)	.028 (.019)	-.001 (.003)		
Housing interior condition	-.022 (.038)	-.045 (.015)**	-.001 (.002)		
Female	.013 (.048)	-.073 (.022)**	.001 (.002)		
Race (White)					
Black	.016 (.028)	.101 (.016)***	.001 (.001)		
Other	.012 (.045)	.103 (.023)***	.001 (.002)		
Age in years (65–74)					
75–84	-.082 (.046)	.002 (.021)	-.004 (.003)		
85+	-.056 (.033)	-.037 (.015)*	-.003 (.002)		
Associate's degree or above	.028 (.045)	.057 (.024)*	.001 (.002)		
Well-being (Round 6)	-.098 (.050)*	.761 (.018)***	—		
Moving	—	.047 (.030)	—		
Global fit					
χ^2	df	RMSEA	CFI	TLI	SRMR
2044.058***	750	.019	.930	.921	.094

Note. Variables in parentheses are reference variables. SEM = structural equation modeling; ADL = activities of daily living; IADL = instrumental activities of daily living; RMSEA = root-mean-square error of approximation; CFI = comparative fit index; TLI = Tucker–Lewis index; SRMR = standardized root-mean-square residual.

* $p < .05$. ** $p < .01$. *** $p < .001$.

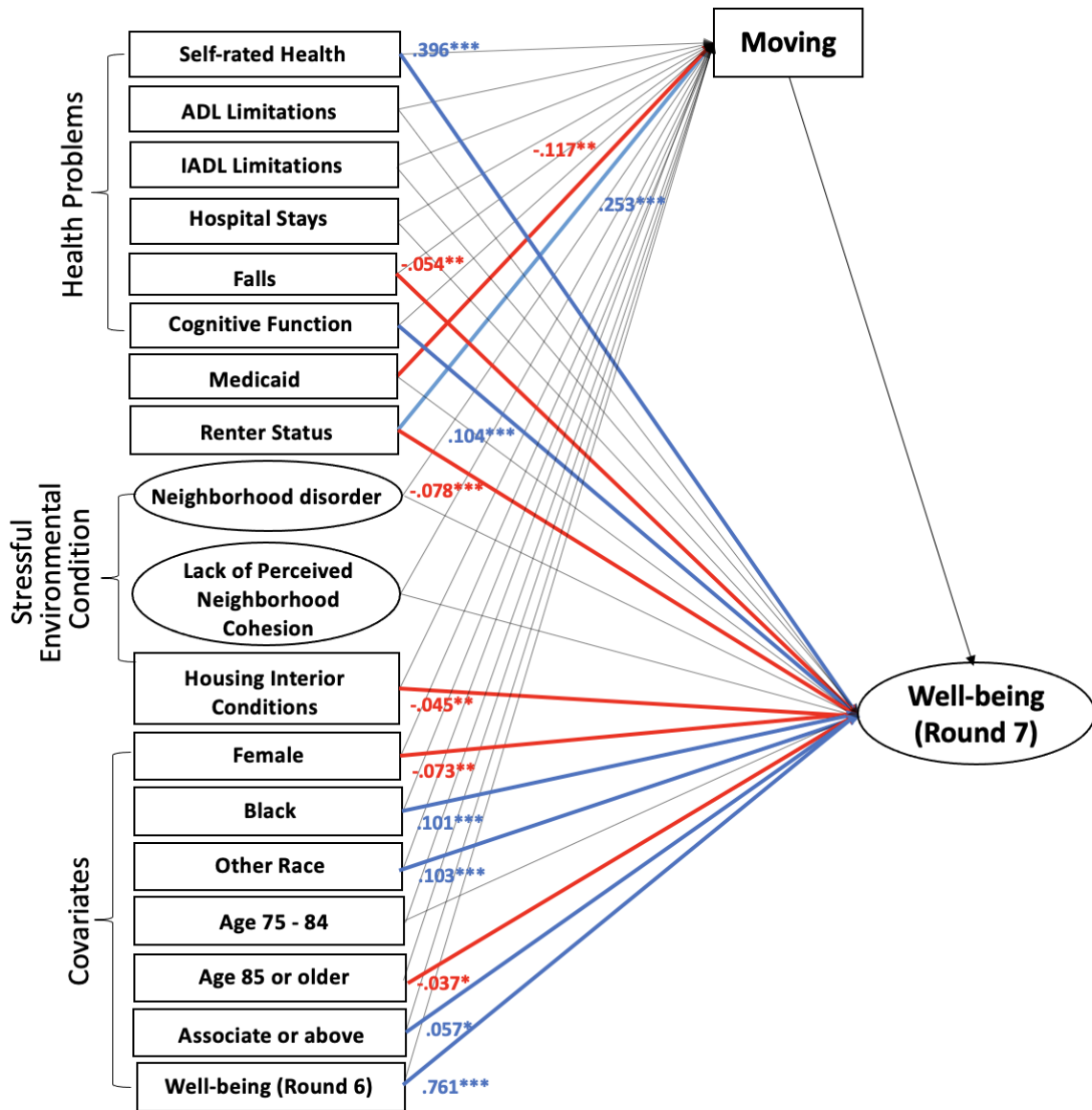


Figure 9. *Mediation Effects of Moving on Relationships Between Push Factors and Well-Being.* ADL = activities of daily living; IADL = instrumental activities of daily living; Associate = associate's degree.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

Aim 3-1: Examine the Moderating Role of Indicators of Social Support (i.e., Living with Others, Social Network Size, Participation in Social Activities) on the Relationship Between Moving and Depression of Older Adults

Table 11 and Figure 10 present the results of the moderation effect of each indicator of social support on the relationship between moving and depression. As shown in Model 3-1-1, which presents the results of the moderation effect of the interaction variable of living with others and moving, living with others did not have a significant relationship with depression, and interaction variables between living with others and moving did not have significant relationships with depression. That is, living with others did not moderate the relationship between moving and depression. As shown in Model 3-1-2, which presents the results of the moderation effect of social network size, social network size did not have a significant relationship with depression, and the interaction variable of social network size and moving did not have a significant relationship with depression. That is, social network size did not moderate the relationship between moving and depression. As shown in Model 3-1-3, which presents the results of the moderation effect of participation on social activities and moving, the greater the participation in social activities, the significantly lower the depressive symptoms in the present sample of older adults. However, the interaction variable of participation in social activities and moving had no significant relationship with depression. That is, participation in social activities did not moderate the relationship between moving and depression.

Table 11

Weighted SEM Analyses on Interaction Effects of Indicators of Social Support on Depression

Variable	Model 3-1-1 (<i>n</i> = 4,755)	Model 3-1-2 (<i>n</i> = 4,755)	Model 3-1-3 (<i>n</i> = 4,749)
	B (<i>SE</i>)	B (<i>SE</i>)	B (<i>SE</i>)
Self-rated health	-.172 (.025) ^{***}	-.172 (.025) ^{***}	-.158 (.025) ^{***}
ADL limitations	.039 (.027)	.039 (.027)	.037 (.027)
IADL limitations	.036 (.028)	.019 (.024)	.023 (.025)
Hospital stays	.001 (.021)	.001 (.021)	.000 (.021)
Falls	.047 (.020) [*]	.046 (.020) [*]	.047 (.020) [*]
Cognitive function	-.081 (.026) ^{**}	-.081 (.025) ^{**}	-.062 (.026) [*]
Medicaid	.043 (.026)	.046 (.026)	.040 (.026)
Renter or other	-.027 (.025)	-.024 (.024)	-.031 (.024)
Neighborhood disorder	.026 (.033)	.026 (.033)	.021 (.032)
Lack of perceived neighborhood cohesion	.016 (.024)	.017 (.023)	.026 (.024)
Housing interior condition	.010 (.023)	.010 (.023)	.005 (.023) [*]
Female	.051 (.024) [*]	.050 (.024) [*]	.059 (.024) [*]
Race (White)			
Black	.013 (.019)	.012 (.018)	.018 (.019)
Other	.009 (.025)	.006 (.025)	.004 (.025)
Age in years (65–74)			
75–84	-.021 (.020)	-.018 (.019)	-.016 (.019)
85+	-.013 (.019)	-.008 (.018)	-.008 (.018)
Associate’s degree or above	-.033 (.019)	-.032 (.019)	-.020 (.020)
Depression (Round 6)	.693 (.038) ^{***}	.692 (.037) ^{***}	.684 (.037) ^{***}
Moving	-.018 (.047)	.035 (.045)	-.025 (.053)
Living with others	-.035 (.026)		
Social network size		-.003 (.024)	
Participation in social activities			-.118 (.021) ^{***}
Interaction effect			
Living With Others x Moving	.019 (.045)		
Social Network Size x Moving		-.042 (.038)	
Participation in Social Activities x Moving			.021 (.046)
AIC	57,866.958	57,868.687	57,726.259
BIC	58,358.446	58,360.175	58,217.651

Note. Variables in parentheses are reference variables. SEM = structural equation modeling; ADL = activities of daily living; IADL = instrumental activities of daily living; AIC = Akaike information criterion; BIC = Bayesian information criterion.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

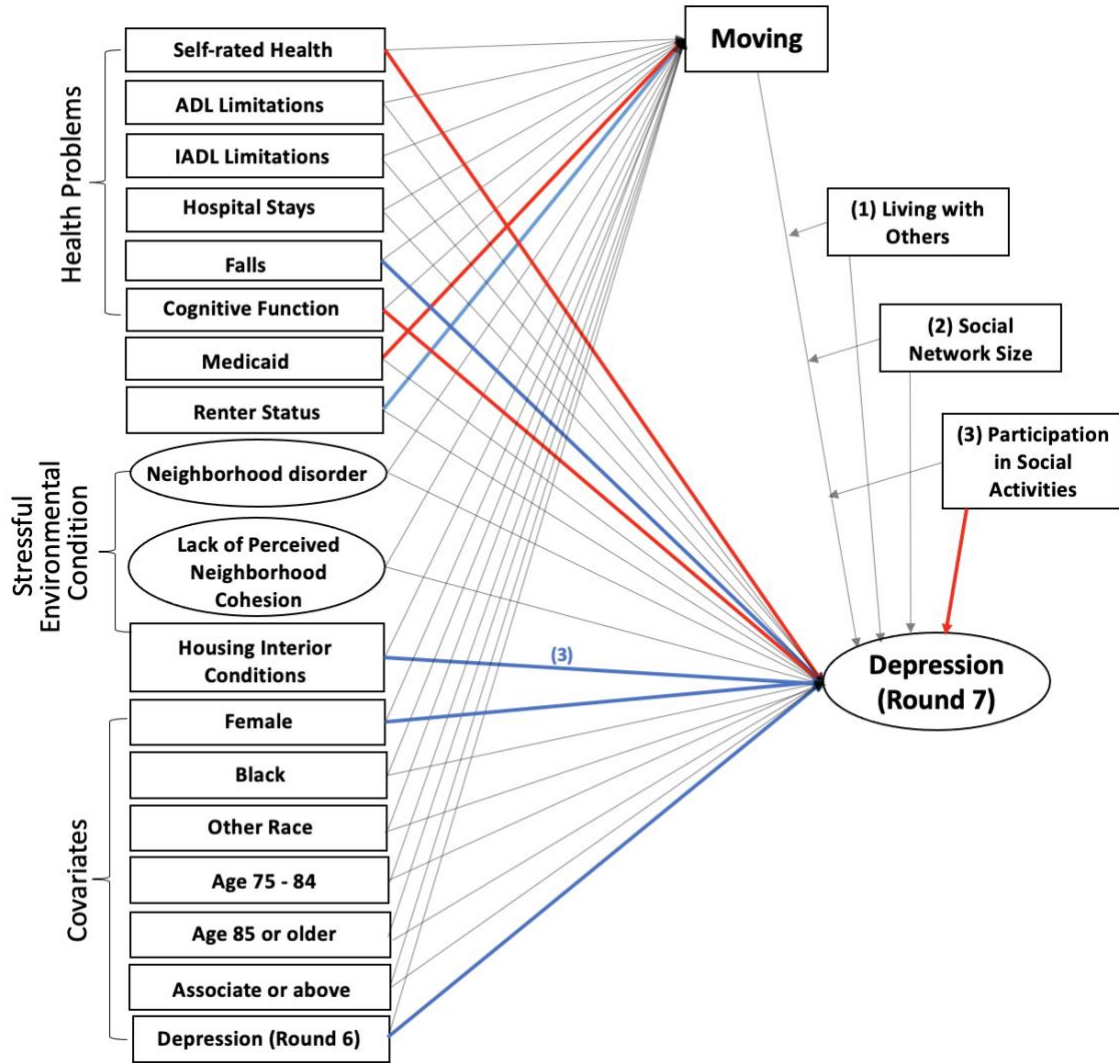


Figure 10. Interaction Effects of Indicators of Social Support on Depression. Red arrows indicate negative statistically significant relationships, and blue arrows indicate positive statistically significant relationships. ADL = activities of daily living; IADL = instrumental activities of daily living; Associate = associate’s degree. (3) indicates that the relationship between housing interior conditions and depression was significant only for the one moderator, which is participation in social activities.

Aim 3-2: Examine the Moderating Role of Indicators of Social Support on the Relationship Between Moving and Well-Being of Older Adults

Table 12 and Figure 11 present the results of the moderation effect of each indicator of social support on the relationship between moving and well-being.

As shown in Model 3-2-1, which presents the results of the moderation effect of the interaction variable of living with others and moving, living with others did not have a significant relationship with well-being, and the interaction variable between living with others and moving did not have a significant relationship with well-being. That is, living with others did not moderate the relationship between moving and well-being. As shown in Model 3-2-2, which presents the results of the moderation effect of social network size, social network size did not have a significant relationship with well-being, and the interaction variable of social network size and moving did not have a significant relationship with well-being. That is, social network size did not moderate the relationship between moving and well-being. Model 3-2-3 shows the results of the moderation effect of participation in social activities. As shown in Model 3-2-3, which presents the results of the moderation effect of participation in social activities, the more their participation in social activities, the higher the well-being of older adults. However, the interaction variable of participation in social activities and moving did not have a significant relationship with well-being. That is, participation in social activities did not moderate the relationship between moving and well-being.

Table 12

Weighted SEM Analyses on Interaction Effects of Indicators of Social Support on Well-Being

Variable	Model 3-2-1 (<i>n</i> = 4,755)	Model 3-2-2 (<i>n</i> = 4,755)	Model 3-2-3 (<i>n</i> = 4,749)
	B (<i>SE</i>)	B (<i>SE</i>)	B (<i>SE</i>)
Self-rated health	.103 (.020) ^{***}	.104 (.020) ^{***}	.095 (.020) ^{***}
ADL limitations	.010 (.021)	.010 (.020)	.012 (.021)
IADL limitations	−.046 (.018) [*]	−.041 (.016) ^{**}	−.045 (.016) ^{**}
Hospital stays	.008 (.015)	.008 (.015)	.008 (.015)
Falls	−.018 (.014)	−.018 (.014)	−.018 (.014)
Cognitive function	.018 (.019)	.015 (.019)	.002 (.018)
Medicaid	.000 (.020)	−.002 (.020)	.002 (.021)
Renter or other	−.013 (.016)	−.013 (.016)	−.006 (.016)
Neighborhood disorder	−.006 (.016)	−.006 (.017)	−.002 (.017)
Lack of perceived neighborhood cohesion	.029 (.021)	.028 (.022)	.021 (.022)
Housing interior condition	−.019 (.018)	−.020 (.018)	−.016 (.018)
Female	−.041 (.017) [*]	−.043 (.017) [*]	−.050 (.017) ^{**}
Race (White)			
Black	.037 (.012) ^{**}	.038 (.012) ^{**}	.035 (.012) ^{**}
Other	.042 (.018) [*]	.042 (.017) [*]	.044 (.018) [*]
Age in years (65–74)			
75–84	−.019 (.015)	−.020 (.015)	−.023 (.015)
85+	−.039 (.015) ^{**}	−.043 (.015) ^{**}	−.044 (.014) ^{**}
Associate’s degree or above	.052 (.017) ^{**}	.051 (.017) ^{**}	.042 (.017) [*]
Well-being (Round 6)	.840 (.019) ^{***}	.841 (.019) ^{***}	.833 (.020) ^{***}
Moving	.073 (.036) [*]	.029 (.029)	−.002 (.040)
Living with others	.018 (.021)		
Social network size		.019 (.016)	
Participation in social activities			.094 (.018) ^{***}
Interaction effect			
Living With Others x Moving	−.067 (.038)		
Social Network Size x Moving		−.016 (.028)	
Participation in Social Activities x Moving			.021 (.033)
AIC	188,169.522	188,176.476	187,795.515
BIC	189,146.031	189,152.986	188,771.834

Note. Variables in parentheses are reference variables. SEM = structural equation modeling; ADL = activities of daily living; IADL = instrumental activities of daily living; AIC = Akaike information criterion; BIC = Bayesian information criterion.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

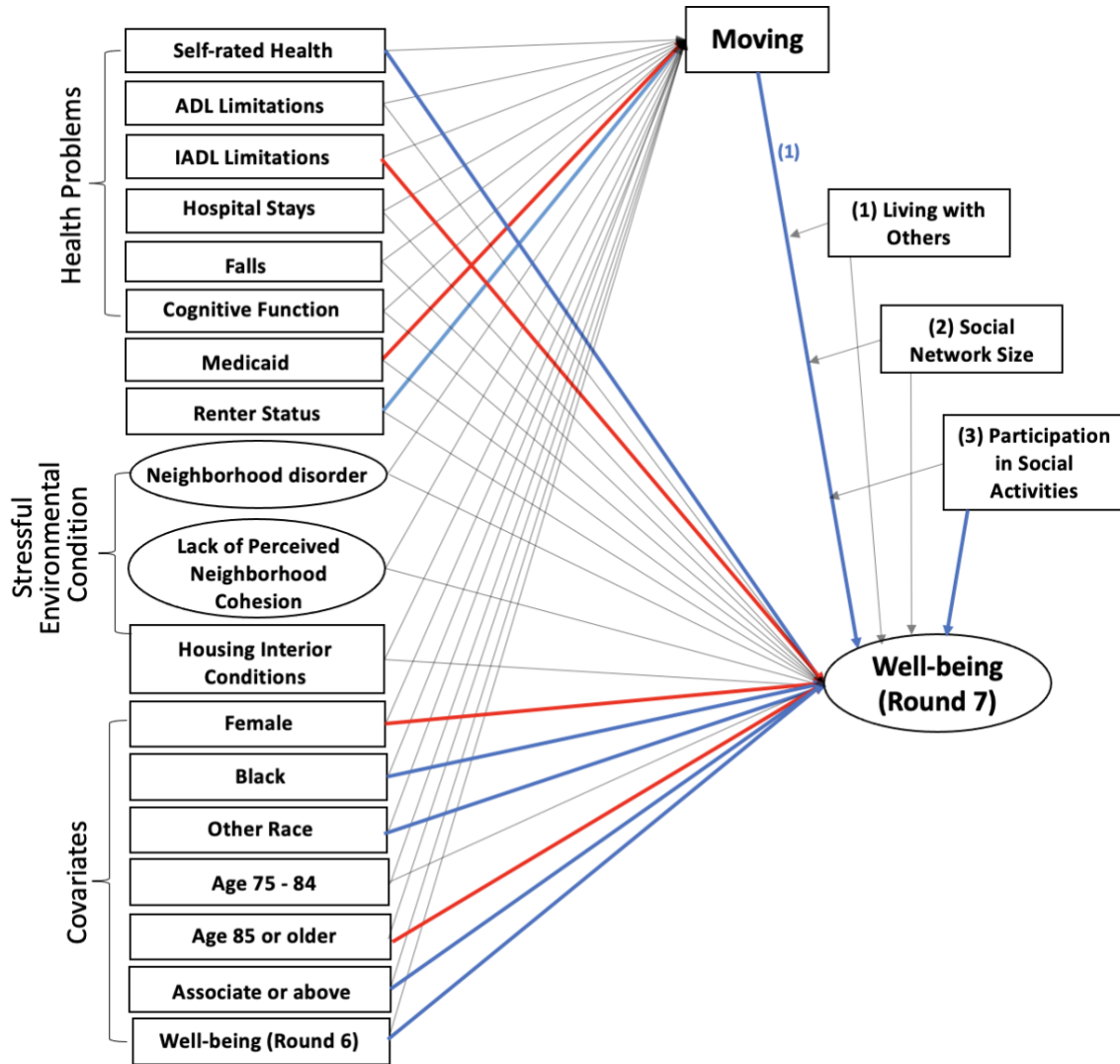


Figure 11. Interaction Effects of Indicators of Social Support on Well-Being. Red arrows indicate negative statistically significant relationships, and blue arrows indicate positive statistically significant relationships. ADL = activities of daily living; IADL = instrumental activities of daily living; Associate = associate’s degree.

Chapter 5: Discussion and Conclusion

The present study examined the role of push factors in the moving of older adults, informed by Wiseman's (1980) behavioral model of older adult migration. It also examined whether moving mediated the relationship between push factors and older adults' mental health outcomes, informed by stress process theory (Pearlin, 1989). Lastly, this study examined whether the associations between moving and depression and well-being in older adults varied by indicators of social support from the social convoy model (Kahn & Antonucci, 1980). To test these aims, I used logistic regression to identify push factors associated with moving, one group of SEM models to investigate the mediation role of moving, and another group of SEM models to examine the moderation role of indicators of social support. I found that older adults who experienced a hospital stay, were Medicaid beneficiaries, and were renters were more likely to move than were their counterparts. Some push factors directly affected mental health, but moving did not mediate the relationship between push factors and mental health. Also, indicators of social support did not affect the relationship between moving and mental health.

Aim 1: Identification of Push Factors Predicting Moving

Among key push factors proposed in Wiseman's (1980) model, this study found that health problems, financial difficulties, and homeownership influenced older adults' moving.

This study measured health problems using self-rated health, ADLs, IADLs, falls, hospital stays, and cognitive function. Of these, hospital stays were related to the moving of older adults. Older adults who had been hospitalized were 1.57 times more likely to move than were those who had not. Older adults are hospitalized due to various chronic

or acute diseases, infections, strokes, pneumonia, and so on (Foltz-Gray, 2012), and these primary symptoms can have aftereffects or result in disabilities even after discharge. For example, one study found that older adults with stroke may experience cognitive, physical, and emotional deterioration (Pruski, n.d.). In addition, older adults with cardiovascular issues such as stroke or congestive heart failure are more likely to move than are those without these issues (Lovasi et al., 2014). That is, hospitalization of older adults indicates the seriousness of their health condition or injury. Accordingly, hospitalized older adults may need help from others, so hospitalization can force older adults to move closer to or with their families.

Self-rated health, ADLs, IADLs, falls, and cognitive function were not related to moving. The findings of this study that ADL and IADL levels were not related to moving are consistent with the results of Miller et al. (1999), who found that older adults who needed assistance with ADLs and IADLs did not have to move because they received services in their homes. In addition, previous studies (Erickson et al., 2006; Tyvimaa & Kemp, 2011) have found that relatively gradual changes in indicators of health status—such as self-rated health, ADLs, IADLs, and cognitive function—do not affect moving. Older adults become accustomed to health conditions that gradually deteriorate, and therefore such health changes do not seem to drive moving. Although falls can cause rapid changes in health, they are not related to moving. In 2014, 29 million (28.7%) older adults had experienced a fall or falls in the previous 12 months in the United States, but of these only 24.4% were restricted from daily activities or saw a doctor for more than 1 day (Bergen et al., 2016). In other words, falls typically cause minor injuries rather than sudden changes in health or functioning in older adults, so they do not lead to moving.

In the present study, financial difficulties were measured by whether an individual received Medicaid benefits, and Medicaid beneficiaries were less likely to move than were those who did not receive Medicaid. This result indicates that low-income older adults receiving Medicaid benefits are more likely to age in place than are older adults in the other group. However, some studies, contrary to the results of the present study, have found that the lower the income of older adults, the higher their likelihood of moving (Edmonston & Lee, 2014; S. Li et al., 2022; Smetcoren et al., 2017). Given that most older adults prefer to age in place, low-income older adults seem to have an advantage in aging in place. However, attention should be paid to whether low-income older adults do not want to or cannot move out of their current residence. For example, a recent report found that members of low-income residents cannot move out of areas prone to natural disasters owing to a lack of resources (JCHS, 2019b). These individuals may not be able to move even if they want to, because they lack the financial means to do so. This assumption is also supported by research showing that renters are less likely to move when their income is lower (McHugh et al., 1990). In addition, older adults who are low-income homeowners may not be able to afford repairs or amenities such as grip bars, front ramps, or shower booth, but they may also lack the resources to move to a more accessible residence (Golant, 2008). In other words, some low-income older adults are not choosing to age in place but are forced to remain in place.

Finally, renters were 3.8 times more likely to move than were homeowners. This is also consistent with national statistics showing that 11% of renters aged 65–79 years and 8% of those age 80 and over moved in 2017–2018, while only 1%–2% of homeowners in those age groups moved (JCHS, 2019a). Regarding the reasons why

renters are more likely to move than are homeowners, several factors come into play. First, renters are generally more likely to experience forced relocation due to eviction or foreclosure than are homeowners (Desmond et al., 2015). Second, renters tend to have lower levels of satisfaction with their housing than do homeowners, and this is also associated with a higher likelihood of forced relocation (Desmond et al., 2015). Forced moves may prevent renters from finding a suitable residence as they may not have enough time or resources to search for an adequate dwelling (Desmond et al., 2015). In addition, when housing and neighborhood satisfaction are low, the likelihood of relocation increases (McHugh et al., 1990). Third, older adult renters are less likely than are older adult homeowners to have emotional attachment to their residence and community (Edmonston & Lee, 2014), which increases the likelihood of moving.

Aim 2: Mediation Effect of Moving Between Push Factors and Mental Health

The push factors in the present study can be classified as episodic stressors and chronic strains, as outlined in stress process theory (Pearlin, 1989). The stressor that occurs first among them is called the primary stressor, and a stressor resulting from the primary stressor is referred to as a secondary stressor (Pearlin, 1989). In his stress process theory, Pearlin argued that these stressors pose a potential threat to mental health. Push factors can be considered primary stressors, and moving resulting from push factors can be considered a secondary stressor. Therefore, push factors would act as primary stressors and have a direct or indirect impact on the mental health of older adults, through either moving or not moving. Accordingly, in this study I investigated the mediating effect of relocation between push factors and mental health using SEM models. However, the results only partially support stress process theory. I summarize the results for Aim 2 by

dividing them into two parts: the relationship of push factors to depression via moving and the relationship of push factors to well-being via moving.

Relationship of Push Factors to Depression via Moving

Moving to a new home or community is more than just a major life change—the cost, time, and energy involved in moving can be stressful as well (Kentucky Counseling Center, 2001). Accordingly, previous research has viewed moving as a stressor (Oishi, 2010), and I expected that the stress caused by moving would affect depression in older adults. However, in this study, moving did not mediate the relationship between push factors and depression.

It is possible that the stress or disadvantages caused by moving were offset by benefits that moving brought. For example, a strong attachment to a former community can negatively affect older adults' depression after moving (Zhang & Wang, 2020). However, if older adults move within the same community, moving may not affect their depression, because existing attachments are not damaged. In addition, previous housing may have had environmental obstacles, such as inaccessible bathtubs, level differences between rooms, and unsuitable toilet heights (Granbom et al., 2016). Therefore, moving to a more accessible environment may have a positive influence on depression.

Forty-seven percent of adults over age 50 in the United States would consider moving closer to family (AARP, 2021). As people age, their health typically declines. Depending on the condition of their health, older adults may need help from their families, who can be their most important source of social support. Therefore, if older adults move close to their families, they may receive social support in a timely manner. These advantages can be expected to offset the stress that older adults experience from

moving. In summary, the absence of a significant mediating effect of moving suggests that moving acts as a stressor but that the stress may be buffered by positive changes occurring during and after a move. Hence, it is possible that moving may not have an adverse effect on the depression level of older adults.

As shown in Appendix B, the pre-move depression scores in Round 6 were 2.78 and 2.99 for non-movers and movers, respectively, with movers having slightly higher levels of depression. However, the post-move depression scores in Round 7 were 2.81 and 2.94 for non-movers and movers, respectively, indicating that while non-movers experienced an increase in depression, movers showed a decrease. While movers still had higher levels of depression compared to non-movers, the difference between the two groups had decreased. These results suggest that factors that had previously negatively impacted depression of movers may have been alleviated by the move or that the social and/or physical environments of the new residence may have improved compared to the previous residence.

Notwithstanding the lack of impact on the relationship between moving and depression, it should be noted that push factors directly influence the depression levels of older adults. Among the push factors, health problems (i.e., self-rated health, ADL limitations, falls, cognitive function), Medicaid benefits, and housing interior conditions were significantly associated with depression in older adults. Also, gender and education were related to depression.

As health problems worsened, depression in older adults also worsened. Older adults with higher self-rated health had lower depression, which is consistent with the findings of previous studies of older adults (Conde-Sala et al., 2019; Fan et al., 2021; Lue

et al., 2010; Luppia et al., 2012). Self-rated health is a valid tool to measure the health of older adults (Schnittker & Bacak, 2014), and various studies have found that older adults are more likely to suffer from depression if they suffer from physical illness (Geerlings et al., 2001), showing that the physical health status of older adults induces changes in depression.

Depression in older adults worsened as ADL limitations increased, similar to the findings of several existing studies that have shown that degree of depression in older adults increases as ADL limitations increase (Conde-Sala et al., 2019; Dey, 2021; Fan et al., 2021; Lue et al., 2010; Luppia et al., 2012; Makizako et al., 2015; Oserowsky et al., 2021; Weyerer et al., 2013; Yang et al., 2015). When older adults cannot handle self-care—such as eating, grooming, and toileting—-independent living becomes difficult, and they need to receive help to perform ADLs. Also, since it becomes difficult for these older adults to go out alone, their time spent at home increases (Foley et al., 2019). Therefore, as ADL limitations increase, older adults may be isolated from society, with contact with family, relatives, and friends and overall social exchange—including social activities—decreasing (Huntsberry-Lett, 2023; Rubio et al., 2009). Several studies have found that older adults isolated from others are more likely to experience depressive symptoms (Inoue et al., 2023; Luo et al., 2021; Siegmund et al., 2021).

Older adults who experienced falls experienced higher depressive symptoms than did those who did not, consistent with the findings of Choi et al. (2019). However, Ní Mhaoláin et al. (2012) found that among older adults who experienced falls, only those with physical frailty were depressed. Falls can cause physical harm in older adults, in particular fractures of the hip (CDC, 2016). Such fractures can limit older adults'

mobility, and as their mobility is limited, older adults are more likely to experience depressive symptoms (Lee et al., 2012). Also, fear of falling can limit social and physical activities (CDC, 2016). Mobility limitations and/or reduced social and physical activities can socially isolate older adults, and social isolation can increase their depressive symptoms (Inoue et al., 2023; Luo et al., 2021; Siegmund et al., 2021). Therefore, given that falls have the potential to cause permanent disability and/or deterioration of ADLs in older adults (CDC, 2021), older adults who have experienced falls are likely to suffer from deterioration in mental health due to fear of falls and their aftereffects.

This study also found that as the cognitive function of older adults decreased, their depressive symptoms increased. This finding is similar to those of previous studies reporting that depression in older adults increases as level of cognitive function, measured by various tools, declines (Balash et al., 2013; Conde-Sala et al., 2019; Routledge et al., 2017; Yu et al., 2021). Further, several studies have found that older adults with reduced cognitive function felt lonely (Choudhury & Halder, 2022; Hajek & König, 2020; Sin et al., 2021). To measure cognitive function, these studies used planning and working memory (Sin et al., 2021); executive functions, including working memory, attentional control, and set shifting (Choudhury & Halder, 2022); and a word recall test (Hajek & König, 2020). Although the tools used to measure cognitive function were different, the results were the same. In addition, various studies have shown that older adults who feel lonely are more likely to experience depression (Hajek & König, 2020; Park et al., 2019). Therefore, older adults with reduced cognitive function are likely to feel lonely, which can cause depression in this population.

Older adults who were Medicaid beneficiaries, and therefore had low income,

were more depressed than were those who were not. Zare et al. (2022) found that women with low incomes were more depressed than women from other income groups. In addition, 42% of Medicaid-eligible older adults were diagnosed with depression (Byma et al., 2013), a very high number compared to the 18.4% of U.S. older adults aged 65 years and older experiencing depressive symptoms in 2019 (Villarroel & Terlizzi, 2020). This is particularly concerning because it included a tripling of credit card balances, a doubling of median debt, and an increase in other consumer debt from non-credit card purchases from 16% to 28% among those aged 65 and older between 2001 and 2016 (JCHS, 2019a). This shows that many older adults are experiencing financial pressure. Older adults receiving Medicaid benefits may experience more financial difficulties than do other older adults, because they have low incomes and few assets. Financial difficulties can cause financial stress in older adults, and several studies have found that the higher one's financial stress, the higher one's likelihood of experiencing depression (Guan et al., 2022). Therefore, Medicaid beneficiaries are more likely than non-beneficiaries to feel financial stress, which can lead to their experiencing depression.

Among stressful environmental conditions, only housing interior condition was associated with depression. The depression symptoms of older adults living in houses that had severe interior deterioration were worse than those of older adults living in houses that did not. Existing studies have also found that poorer housing conditions are correlated with higher depression in older adults (M. Fang et al., 2019; Sasaki et al., 2018). Housing conditions can be used to judge housing quality, and the present study measured the housing conditions of peeling paint, pests, broken furniture, flooring needing repairs, and tripping hazards. Housing quality is a critical criterion for residential

satisfaction, and there is a positive relationship between it and residential satisfaction (Ren & Folmer, 2017). One recent study reported that higher residential satisfaction is associated with lower likelihood of experiencing depression, particularly because such satisfaction lowers stress (J. H. Park & Choi, 2022). As such, since housing interior conditions influence residential satisfaction, they can affect older adults' depression through residential satisfaction.

Relationship of Push Factors to Well-Being via Moving

For many older adults, their home not only holds cherished memories, but it also creates a sense of attachment (Cloutier-Fisher & Harvey, 2009), while social interactions and activities within their community facilitate cultivation of social attachment (Garrett & Poulain, 2018; Rowles, 1993). Importantly, such attachment to a specific place is consistently associated with higher levels of well-being (Gilleard et al., 2007). Therefore, I anticipated that the well-being of older adults would deteriorate after moving as they might lose the aforementioned attachment as a result of a move. However, in this study, moving did not mediate the relationship between push factors and well-being.

Furthermore, as shown in Appendix B, the pre-move and post-move levels of well-being for non-movers were 34.57 and 34.49, respectively, while for movers, they were 33.01 and 33.86, respectively. Thus, both before and after the move, movers had lower levels of well-being compared to non-movers. However, while the well-being level of non-movers decreased from Round 6 to Round 7, the well-being of movers in Round 7 after the move was higher than in Round 6.

These findings suggest two possibilities. One is that older adults may not lose their attachments when relocating within their community. Around 58% of U.S. older

adults who moved between 2015 and 2019 relocated within their original county, with another 22.2% relocating within the same state (Mateyka & He, 2022). These findings suggest the possibility that most of these older adults who moved managed to maintain their previous attachments despite moving.

The other possibility is that compensatory benefits may offset any attachment losses that occur when older adults move to another community. Regardless of the factors that caused older adults to move, Kampfe (1999) found that when older adults were actively involved in the moving process, their well-being after moving was high. When older adults actively control the moving process, they may be able to choose the community, house, and amenities that they prefer. When moving to a community and a house with desired conditions, the satisfaction of older adults with their new community may increase, and when their satisfaction with a community after moving is high, the well-being level of older adults also increases (Ryff & Essex, 1992).

Although the present findings suggest that moving does not significantly affect the overall well-being of older adults, it was revealed that push factors such as health problems, homeownership, and housing interior conditions were significantly related to older adults' well-being. Among indicators of health problems, self-rated health, falls, and cognitive function were related to well-being in older adults. In contrast, ADL and IADL limitations and hospital stays were not related to well-being. The higher their levels of self-rated health, the higher the levels of well-being of older adults, a finding consistent with previous studies showing that levels of subjective well-being and life satisfaction were higher when older adults perceived their health as good (Bussière et al., 2021; Carmel & Bernstein, 2003).

Older adults who experienced falls showed a lower level of well-being than did those who did not, which is in line with the findings of Hajek and König (2017) that the life satisfaction of older adults who experienced falls was low. Older adults can suffer physical injuries due to falls, and their mobility will be restricted if the hip joint or hip itself is fractured. Mobility restrictions can limit older adults' outdoor activities (CDC, 2021), but it is also the case that mobility predicts well-being in older adults (Davis et al., 2015). Older adults who have experienced a fall may worry that they will fall again even if they are not physically injured (CDC, 2021). Such fears may make older adults reluctant to engage in outdoor activities, which can lead to their becoming socially isolated. Reduced outdoor activities and social isolation are both factors that decrease well-being in older adults (Qi et al., 2022; Ralph et al., 2022). That is, the experience of falls, whether they result in injuries or not, may socially isolate older adults, reducing their well-being.

The higher their level of cognitive function, the higher the level of well-being of older adults. The results of the present study are similar to those of previous research suggesting that older adults who have had a cognitive decline have low life satisfaction (Tsuchiya-Ito et al., 2019), low quality of life (Baernholdt et al., 2012), and low psychological well-being (Llewellyn et al., 2008; Routledge et al., 2017). The memory loss experienced by older adults with cognitive decline affects their ability to perform daily life functions (Jetten et al., 2010). For example, when cognitive function declines, older adults may forget how to cook, wash their face, or brush their teeth in the morning. As the ADL limitations of older adults increase, their dignity also declines (Klůzová Kráčmarová et al., 2022). They may feel ashamed or humiliated by their functional

decline, and they may be discriminated against by others. Hojman and Miranda (2018) measured dignity, shame, and humiliation in older adults and found that lower shame and humiliation was associated with higher subjective well-being. Therefore, the well-being of older adults with cognitive decline may deteriorate due to the decline in ADL function that frequently accompanies memory loss.

The well-being level of older adult renters was found to be lower than that of older adult homeowners; however, previous studies on the relationship between homeownership and well-being indicate this is a somewhat complicated relationship. In one previous study, the life satisfaction of older adult homeowners was higher than that of renters, but the life satisfaction of older adult homeowner who still had a mortgage did not differ from that of renters (Park et al., 2022). Further, in the case of renters, attachment or familiarity with home or community influenced their level of well-being (Bates et al., 2019). In addition, whether older adults have easy access to hospitals, grocery stores, and transportation is related to their well-being (JCHS, 2022). This is probably because the advantages of access to various resources in the community where older adults reside offset the disadvantages of being a renter. Thus, a renter's well-being may depend on their sense of attachment to the community and access to resources within the community, along with homeownership status.

The present study found worse housing interior conditions to be associated with lower well-being in older adults. The study measured housing interior conditions with peeling paint, pests, broken furniture, flooring needing repairs, and tripping hazards. However, previous studies have measured housing interior conditions using different tools, and the results have been inconsistent. One previous study has shown that lighting

and flooring conditions are related to life satisfaction (Lu, 2021). Emotional well-being has been found to increase or decrease depending on natural lighting conditions (Morales-Bravo & Navarrete-Hernandez, 2022). However, another study reported that lighting, number of occupants, and temperature were not related to psychological well-being (Phillips et al., 2005). It is possible that differences in the tools used to measure housing interior conditions and well-being contributed to the differences between the findings of the present study and those of previous studies.

However, these results may be attributable to older adults spending more time in their homes than do members of younger age groups. As their time spent at home increases, older adults may pay more attention to their home's condition. In addition, older adults who have difficulty walking are likely to be concerned about tripping hazards such as uneven or slippery floors, thresholds, and raised carpets. Older adults who stay at home longer than do people in other age groups are likely to recognize the importance of housing interior conditions.

Aim 3: Moderating Effect of Indicators of Social Support

According to the social convoy model (Kahn & Antonucci, 1980), social support can be expected to reduce stress because it helps people adapt to life changes.

Accordingly, in the present study, I hypothesized that social support would buffer the deterioration in mental health caused by moving. However, living with others, social network size, and participation in social activities, which were used as indicators of social support in this study, did not influence the relationship between moving and mental health.

This study revealed no significant differences in mental health after moving

between older adults living with others and older adults living alone. In other words, living with other people did not protect older adults' mental health. In previous studies, older adults who lived with other people were found to be less depressed and to have greater well-being than did those who lived alone (Demey et al., 2014; Oshio & Kan, 2019). Only 5% of adults over 50 in the United States would prefer to live with a family member or friend if they had to move (AARP, 2021). Older adults living alone were also found to be more likely to move to live near or with family (Granbom et al., 2019; Stimson & McCrea, 2004; van Diepen & Mulder, 2009). If older adults move to live with their family, their financial burden is reduced, and they can expect to receive care from their family, but they may feel stressed as they have to adapt to new life circumstances (Kusmaul, 2022). However, older adults who already live with their family or others may have poor well-being if living with these others results in less benefit than living alone or with a spouse. For example, Han et al. (2021) found that older adults living with multigenerational families had poorer well-being, especially when they were experiencing financial strain, compared to those living with spouses only. Therefore, living with family is not always beneficial to the mental health of older adults.

Also, social network size was not found to affect the mental health of older adults who moved. Social network size has been widely used to measure social support regardless of age (Han et al., 2007). However, the size of one's social network tends to decrease with age, and older adults tend to value the qualitative aspects of their social network more than its quantitative aspects. In other words, for older adults, it may be more important to understand the depths of their social relationships than it is the sheer numbers of them. For example, Fiori et al. (2006) found that the higher the quality of

older adults' relationship with their social network, the lower their depression. Therefore, the size of a social network does not necessarily reflect its quality, which is what older adults may value, and thus it may not be a suitable measure of social support for older adults.

Finally, in the present study, participation in social activities was the only indicator of social support directly related to depression and well-being in older adults. This result is consistent with previous research findings that older adults who participated in various social activities maintained low depression and high well-being in the long term (Cheng et al., 2021; Greaves & Farbus, 2006; Hong et al., 2009). However, participation in social activities did not moderate the relationship between moving and mental health. This means that the effects of participation in social activities on depression and well-being did not differ between older adults who moved and those who did not.

In this study, living with others, size of social network, and participation in social activities did not have a significant impact on the relationship between moving and mental health, possibly because the relationship between relocation and mental health was not found to be significant. Moreover, as shown in Appendix B, although the changes were not substantial, after the move, movers experienced a decrease in depression and an increase in well-being, regardless of indicators of social support. In other words, changes in depression or decreases in well-being as a result of moving were minimal, so any changes in mental health due to the intervention of indicators of social support would also be expected to be very small. Therefore, it is difficult to expect significant differences in mental health on the basis of variations in indicators of social

support.

Strengths and Limitations

The present study had several limitations. First, I was not able to access NHATS geographic data, so I could not determine the distances of moves. Therefore, I was not able to determine whether older adults moved within or outside of the community where their social support systems had already been established. It is likely that some did, since 55% of older adults who moved between 2019 and 2020 moved within the same county (U.S. Department of Health and Human Services, 2021). Second, in the NHATS data, income is collected every other round and was not collected in Round 6. For income in Round 5, only 50.8% of the total participants answered, and in the case of Round 7, only 57.4% answered, so the missing rate was very high. Therefore, I used Medicaid to measure financial difficulties. Since Medicaid eligibility includes various other assets, such as savings and housing, it might have caused the difference in results between this study and previous research. Third, the NHATS data set does not include items that directly measure social support. So, in this study, social network size, living with others, and participation in social activities, which are resources that can provide social support to older adults, were used. Accordingly, there is a limitation in that social support should be measured indirectly using existing indicators.

In this study, pull factors were not included as moving factors because NHATS does not include pull factors. However, both push and pull factors can play roles in the moving of older adults. For example, when older adults whose health conditions are abnormal enough to require hospitalization move, they may move closer to their families or move to a community with preferred amenities. Hospitalization is a push factor, but

choosing preferred amenities is a pull factor. Therefore, in this study, it was impossible to determine whether older adults were likely to have moved voluntarily or involuntarily.

According to Greaves and Farbus (2006), the well-being of older adults can vary depending on the duration of the follow-up period after a social activity intervention. This suggests that the mental health of older adults may also be influenced by the length of time elapsed since moving. However, in the present study, I was unable to utilize information on the exact timing of moving between Rounds 6 and 7, which prevented me from measuring whether the mental health of older adults changed depending on the time elapsed since moving.

Despite these limitations, this study has several strengths. Previous studies have examined moving using only some of the push factors presented in Wiseman's (1980) model, while in this study, I was able to include all the push factors presented in Wiseman's model from a nationally representative data set. This study is novel in examining whether moving mediates the relationship between push factors and mental health. Previous studies have studied the relationship between push factors and moving or the effects of push factors on mental health. This study was informed by a conceptual framework for older adults who migrated within the community, using Wiseman's behavioral model of older adults' migration, stress process theory (Pearlin, 1989), and the social convoy model (Kahn & Antonucci, 1980). This example can guide future research looking at the moving of older adults. That is, by using this framework, it is possible to understand factors that directly or indirectly affect the mental health of older adults and their relationships with factors affecting the moving of older adults. The push factors for moving within the community may differ from those for moving to assisted living or

long-term care facilities. However, it would be possible to apply the present framework to assess contributors to the mental health of older adults relocating to assisted living or long-term care facilities.

Implications

Implications for Practice

The present study demonstrated a direct relationship between various push factors and the mental health outcomes of depression and well-being in older adults. However, no mediating effect of moving was observed, indicating that moving is not a significant factor in the relationship between push factors and mental health outcomes in older adults. Therefore, social workers must prioritize addressing the push factors themselves—such as health problems, Medicaid coverage, and poor housing—rather than assuming that moving is necessarily associated with negative mental health outcomes.

Likewise, the nonsignificant mediating effect of moving implies that social workers need not adopt different approaches when working with older adults who have moved versus those who have not. Instead, social workers must consider the unique push factors that may impact the mental health of each older adult and develop interventions tailored to their specific needs.

Moreover, the current findings can guide social workers in developing more comprehensive evaluations and interventions that consider each older adult's unique circumstances and needs. For instance, social workers can assess whether older adults' decisions to age in place are voluntary or involuntary and whether financial hardship is preventing older adults from making appropriate housing choices (JCHS, 2019b). By taking these factors into account, social workers can provide personalized interventions,

such as linking older adults with relevant housing programs and services tailored to their individual needs, thus promoting their mental health and well-being.

In this study, although the relationship between moving and mental health did not change depending on participation in social activities, participation in social activities had a direct effect on mental health. Through these results, social workers will recognize that the mental health of older adults can be improved or maintained through participation in social activities. Accordingly, social workers need to encourage older adults to participate in various social activities in the community while developing varied activities that take into consideration the interests and service accessibility of older adults.

Implications for Policy

The present study results imply that it is necessary to develop customized policies targeting high-risk older adults to prevent deterioration in their mental health. According to the findings, low-income renters receiving Medicaid benefits are at greater risk of mental health decline than are other groups of older adults. Housing programs such as the housing choice voucher program, public housing, and assisted housing for low-income renters can promote housing stability for renters.

However, these housing programs may not be the best option for older adults who want to stay in their current residence. Home repair or renovation support that can increase older adults' satisfaction in their current residence may be a better option. For example, a housing-improvement program provides loans to help older adults with poor housing interior conditions renovate or repair their homes. However, the primary beneficiaries of the program are homeowners. Renters can take out a loan only with their landlord's permission or when the lease period exceeds a specified duration. In other

words, renters have fewer opportunities to repair or renovate their homes, even though they often have poorer housing conditions than homeowners. Also, even if renters do take out a loan from this program to renovate or repair their home, if they have to move out within a short period, they may not be fully compensated for the costs they have incurred. Therefore, it is necessary to institutionally ensure that renters can adequately extend the rental period, through a contract with the landlord, when they repair or renovate the house they are renting. In this way, renters exposed to a more vulnerable residential environment than homeowners would be able to easily use this housing-improvement program. Institutional supplementation is needed to use the improved residential environment for an extended period. In addition, renters need to consider subsidies for repairs and renovations rather than loans.

Implications for Research

By testing all the push factors proposed in Wiseman's (1980) behavioral model of older adults migration, this study has provided a comprehensive understanding of what causes older adults to move out of their current residence. However, push factors may be just a part of the moving process, with pull factors determining where older adults decide to relocate. For example, when renters must move due to the expiration of their leasing contract, their housing satisfaction after moving is likely to increase if they can move to their preferred residence or community (Molin & Timmermane, 2003). Such housing satisfaction can positively affect older adults' the mental health. Unlike some previous studies, this study found no relationship between moving and mental health. The possibility that pull factors influenced these results that cannot be ruled out. If the influence of pull factors is significant enough to offset the harmful effects of push factors,

maintenance of or improvement in older adults' mental health after moving can be expected. Accordingly, it is necessary to investigate the combined effects of these factors on older adults' moving and mental health by considering push and pull factors together.

This study examined changes over a 1-year period, and future research should measure longer term changes in mental health. Given that push factors have a direct relationship with the mental health of older adults, it is necessary to observe changes in push factors over a long period. Accordingly, further research must observe changes in push factors and mental health across multiple rounds before and after moving.

When moving within the community where they currently live, older adults will not be exposed to the stress they would experience when adjusting to a completely new environment. Moving out of one's current community or even state can lead to stressful adjustment to an unfamiliar environment, and if older adults' social support is concentrated in their current residence, long-distance moving can lead to their experiencing a loss of social support. In other words, older adults who move long distances can expect the double impact of stress affecting their mental health and loss of the social support that can buffer such stress. Accordingly, it is necessary to investigate whether there is a difference in social support and mental health according to the distance that older adults move.

In this study, self-rated health was found to be associated with both depression and well-being, while other health indicators showed inconsistent relationships with depression or well-being. The difference between self-rated health and other health indicators is interesting as self-rated health reflects older adults' comprehensive health conditions. Therefore, it is necessary to investigate whether self-rated health and other

health indicators have a combined effect on depression or well-being. For example, it would be interesting to examine how self-rated health differs between older adults who have experienced falls and those who have not, and how falls and self-rated health have a complex relationship with depression or well-being.

Conclusion

The present study investigated whether push factors and moving are related to mental health in older adults. First, in this study, factors that can affect the moving of older adults were identified by including various push factors reflecting Wiseman's (1980) model. Among several factors measuring health, only hospitalization experience was related to moving in older adults. Renters were more likely to move, while Medicaid beneficiaries were less likely to move. Although only a small number of these push factors were related to moving, many more were related to depression and well-being.

Among health issues, self-rated health, falls, and cognitive function were all related to depression and well-being, showing that the physical health of older adults is inseparably related to their mental health. Medicaid beneficiaries were more depressed than the opposite group, and renters reported lower levels of well-being than did homeowners. In addition, housing interior conditions were related to depression and well-being, implying that their house is an essential factor in the mental health of older adults.

These push factors were directly related to older adults' depression and well-being, but moving did not shape the relationship. In addition, indicators of social support did not moderate the relationship between relocation and mental health in older adults. However, participation in social activities was associated with lower levels of depression and higher levels of well-being among older adults. These findings suggest that social

services should prioritize addressing the push factors that directly impact the mental health of older adults and assess the individualized needs of each older adult regardless of their moving status. Further, policies should be developed for older adults who are at a higher risk of experiencing mental health decline, such as Medicaid beneficiaries and renters. Lastly, this study highlights the need for further research to investigate the effects of pull factors and moving distance on mental health outcomes in older adults.

Appendix A: Summary of All Variables

Construct	Indicator	Measure	Code	Score
Dependent Variables				
Mental health	Depression (Round 7)	Little interest pleasure	1 (Not at all) to 4 (Nearly every day)	Use total score (range: 2–8)
		Down depress hopeless	1 (Not at all) to 4 (Nearly every day)	
	Well-being (Round 7)	Feel cheerful	1 (Every day) to 5 (Never)	Use total score (range: 11–41)
		Feel bored	1 (Every day) to 5 (Never)	
		Feel full of life	1 (Every day) to 5 (Never)	
		Feel upset	1 (Every day) to 5 (Never)	
		Life has meaning purpose	1 (Agree a lot) to 3 (Agree not at all)	
		Feels confident	1 (Agree a lot) to 3 (Agree not at all)	
		Gave up improving life	1 (Agree a lot) to 3 (Agree not at all)	
		Likes living situation	1 (Agree a lot) to 3 (Agree not at all)	
		Self determination	1 (Agree a lot) to 3 (Agree not at all)	
		Wants-finds way to do	1 (Agree a lot) to 3 (Agree not at all)	
		Adjusts to change	1 (Agree a lot) to 3 (Agree not at all)	
Independent Variables				
Health problems	Self-rated health (Round 6)	Overall health condition	1 (Poor) to 5 (Excellent)	Reverse-coded
	ADL limitations (Round 6)	Need help eating	0 = No; 1 = Yes	Use total score (range: 0–5)
		Need help bathing	0 = No; 1 = Yes	
		Need help toileting	0 = No; 1 = Yes	
		Need help dressing	0 = No; 1 = Yes	
		Need help get out bed	0 = No; 1 = Yes	

Appendix A continued

IADL limitations (Round 6)	Difficulty in doing laundry	0 = No; 1 = Yes	Use total score (range: 0–5)
	Difficulty in cooking meals	0 = No; 1 = Yes	
	Difficulty in shopping	0 = No; 1 = Yes	
	Difficulty in tracking medications	0 = No; 1 = Yes	
	Difficulty in banking	0 = No; 1 = Yes	
Hospital stays (Round 6)	Hospital stays last 12 months	0 = No; 1 = Yes	Use total score (range: 0–33)
Falls (Round 6)	Fallen in last 12 months (last month + last year)	0 = No; 1 = Yes	
Cognitive function (Round 6)	Orientation	0–8	
	Memory	0–20	
	Executive functioning	0–5	
Financial difficulties	Cover by state Medicaid program	0 = No; 1 = Yes	
Chronic movement factor	Renter status (Round 6)	0 = Own; 1 = Rent; 2 = Other	
Stressful environmental conditions	Neighborhood disorder (Round 6)	Litter or glass on sidewalk	Average score of 3 items (range: 1–4)
		Graffiti on building walls	
		Vacant houses or stores	
Lack of perceived neighborhood cohesion (Round 6)	People know each other well	1 (None) to 4 (A lot)	Average score of 3 items (range: 1–3)
		1 (None) to 4 (A lot)	
		1 (None) to 4 (A lot)	
Housing interior condition (Round 6)	People willing to help each other	1 (Agree a lot) to 3 (Do not agree)	Use total score (range: 0–5)
		1 (Agree a lot) to 3 (Do not agree)	
		1 (Agree a lot) to 3 (Do not agree)	
Housing interior condition (Round 6)	Paint peeling in home	0 = No; 1 = Yes	Use total score (range: 0–5)
	Pests in home	0=No; 1=Yes	
	Broken furniture in home	0 = No; 1 = Yes	
	Flooring needs repair	0 = No; 1 = Yes	
	Home other tripping hazard	0 = No; 1 = Yes	

Appendix A continued

Demographic	Gender (Round 6)	Gender	0 = Male; 1 = Female
	Race (Round 6)	Race and ethnicity	0 = White; 1 = Black; 2 = Other
	Age (Round 6)	Age (years)	0 = 65–74; 1 = 75–84; 2 = 85+
	Education (Rounds 1 & 5)	Education level	0 = Below high school & high school diploma; 1 = Above high school graduate
Mental health	Depression (Round 6)	Same as depression (Round 7)	
	Well-being (Round 6)	Same as well-being (Round 7)	
Moving	Moving (Round 7)	Different address	0 = No; 1 = Yes
Indicators of social support (moderators)	Living with others (Round 7)	Living arrangement	0 = Living alone; 1 = Living with others
	Social network size (Round 7)	Number in social network	0–5
	Participation in social activities (Round 7)	Attend religious services	0 = No; 1 = Yes
		Club meetings group activities	0 = No; 1 = Yes
		Go out for enjoyment	0 = No; 1 = Yes
		Do volunteer work	0 = No; 1 = Yes
		Visit friends or family	0 = No; 1 = Yes
			Total score range: 0–5)

Note. ADL = activities of daily living; IADL = instrumental activities of daily living.

Appendix B: Weighted Bivariate Analysis of Moving and All Variables

Variable	Non-Mover (n = 4,631)	Mover (n = 225)	Total (N=4,856)	<i>t</i>
	n (%) / M (SE)	n (%) / M (SE)	n (%) / M (SE)	
Well-being7, <i>M (SE)</i>	34.49 (0.09)	33.86 (0.45)	34.36 (0.09)	-5.78***
Depression7, <i>M (SE)</i>	2.81 (0.03)	2.94 (0.11)	2.82 (0.02)	4.16***
Female, n (%)				1.27
Male	1,997 (43.12)	95 (42.22)	2,092 (43.08)	
Female	2,634 (56.88)	130 (57.78)	2,764 (56.92)	
Race				
White	3,246 (70.09)	143 (63.56)	3,389 (69.79)	
Black	946 (20.43)	58 (25.78)	1,004 (20.68)	1.03
Other	439 (9.48)	24 (10.67)	463 (9.53)	-0.80
Age				
65-74	1,778 (38.39)	104 (46.22)	1,882 (38.76)	
75-84	2,009 (43.38)	86 (38.22)	2,095 (43.14)	0.21
85+	844 (18.23)	35 (15.56)	879 (18.10)	5.20***
Education				-0.55
High school diploma or below	2,140 (46.21)	102 (45.33)	2,242 (46.17)	
Associate or above	2,491 (53.79)	123 (54.67)	2,614 (53.83)	
Self-rated health, <i>M (SE)</i>	3.42 (0.02)	3.34 (0.08)	3.42 (0.02)	-1.75
ADL Limitations, <i>M (SE)</i>	0.17 (0.01)	0.18 (0.05)	0.17 (0.01)	4.92 ***
IADL Limitations, <i>M (SE)</i>	1.78 (0.03)	1.86 (0.12)	1.78 (0.03)	2.98**
Hospital Stays				5.47***
No	3,725 (80.56)	162 (72.00)	3,887 (80.16)	
Yes	899 (19.44)	63 (28.00)	962 (19.84)	
Falls				2.85**
No	3,225 (69.64)	143 (63.56)	3,368 (69.36)	
Yes	1,406 (30.36)	82 (36.44)	1,488 (30.64)	
Cognitive Function, <i>M (SE)</i>	20.06 (0.11)	19.70 (0.41)	20.04 (0.11)	-6.03***
Medicaid				1.52
No	3,949 (86.83)	186 (86.11)	4,135 (86.80)	
Yes	599 (13.17)	30 (13.89)	629 (13.20)	
Renter Status				8.41***
Own	3,573 (77.67)	114 (51.12)	3,687 (76.45)	
Rent or Other	1,027 (22.33)	109 (48.88)	1,136 (23.55)	
Neighborhood Disorder, <i>M (SE)</i>	1.06 (0.01)	1.07 (0.02)	1.06 (0.01)	-0.33
Lack of Perceived Neighborhood Cohesion, <i>M (SE)</i>	2.42 (0.01)	2.30 (0.07)	2.41 (0.01)	-1.53

Appendix B continued

Housing Interior Conditions, <i>M (SE)</i>	0.15 (0.01)	0.14 (0.03)	0.15 (0.01)	-0.75
Living with Others				-5.49***
No	1,471 (31.76)	63 (28.00)	1,534 (31.59)	
Yes	3,160 (68.24)	162 (72.00)	3,322 (68.41)	
Social Network Size, <i>M (SE)</i>	2.29 (0.04)	2.33 (0.15)	2.29 (0.04)	1.08
Participation in Social Activities, <i>M (SE)</i>	2.95 (0.03)	2.70 (0.09)	2.94 (0.03)	-2.68*
Depression 6, <i>M (SE)</i>	2.78 (0.02)	2.99 (0.09)	2.79 (0.01)	4.18***
Well-being 6, <i>M (SE)</i>	34.57 (0.09)	33.01 (0.59)	34.49 (0.09)	-4.88***

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

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