

Residential Mobility of the Elderly for Independent Living

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Abstract

As aging is notably developed, the elderly find it challenging to get around in housing chosen in their midlife, and seek for an alternative residential setting enabling them to continue the independent living. This research focuses on the residential mobility of the elderly who have recently moved to senior housing, and also is to investigate their residential satisfaction at previous residence. As a cross-sectional study, the research adopts the self-administered questionnaire survey. The questionnaires are mailed out, and one out of the two responses is retrieved. To investigate the residential mobility of the elderly, the research model is constructed based upon Morris and Winter's Housing Adjustment Theory. The result shows that the residential mobility of elderly from previous residence is a need-based choice, want-driven behavior and demand-oriented decision to maintain continued independence and utilize resources available during the aging process. Also, it is found that the vast majority of both co-op and rental households are satisfied with their previous residential environment. The previous residential satisfaction of co-op elderly is significantly influenced by household and housing characteristics, housing norm status, and environmental needs for independent living while only housing norm status is a significant predictor to explain the previous residential satisfaction of rental elderly.

Keywords : The Elderly, Residential Mobility, Independent Living, Senior Housing, Congregate Housing, Aging in Place

1. INTRODUCTION

Most of the people enter old age residing in housing chosen for their appropriateness in midlife when they are healthy and independent. As age advances, they find that the residential setting doesn't fit their changing needs or preferences. In response to the arising circumstances, various senior housing options emerge and are available in the past few decades.

The housing alternatives vary from the availability of services and the degree of supportiveness for independent living. Depending upon the independence level of the elderly, residential settings can be largely categorized into 3 groups: independent living, semi-independent/semi-dependent living, and dependent living. Accordingly, the senior housing ranges from single-family home, townhouses, conventional apartments, congregate housing, assisted living and nursing homes. Included in dependent living setting are nursing homes that are settings that require intensive medical care services. A semi-dependent living setting includes assisted living that is a residential setting that offers individualized health and personal care services. On the contrary to the two settings, independent living settings are burgeoning in the past few years and in particularly, congregate housing that is described as multi-unit living arrangements that generally provide group meals and often offer limited services.

In fact, the residential setting for independent living like congregate housing is more likely to be favored by the government in that it enables the elderly to utilize their equity and economic resources and the cost is less expensive than other types of residential settings for dependent living and semi-dependent living. As the number of senior housing for independent living has been escalating in the last several decades, it's of importance that the factors that influence the decision of recent movers

to the living arrangements are reviewed.

This research is designed to investigate the residential mobility of the elderly who are recent movers to two kinds of congregate housing for the elderly in Midwest – senior co-op housing and senior rental housing. The specific goals of the study are to examine the residential satisfaction of the elderly at previous residence and to find out the factors that prompt their residential mobility.

2. LITERATURE REVIEW

(1) Housing Adjustment Theory

Morris and Winter's Housing Adjustment Theory (HAT) (1978, 1994) is a sociologically based theory predicting household housing behavior as a result of residential satisfaction. According to the HAT model, housing adjustment behavior occurs as a result of a gap between housing conditions as evaluated by households and their needs or norms. The model assumes causal relationships between the variables at a different stage and includes five stages – assessment of constraints, normative identification of housing deficits, residential satisfaction, propensity to move/adjust, and actual housing behavior (adjustment/adaptation) (Morris & Winter, 1978, 1994).

Constraints are defined as factors that affect a household's ability to engage in successful adjustment behavior. By definition, there are five types of constraints: 1) predispositions or psychological dimensions of the household such as apathy, achievement motivation or value orientations; 2) organizational constraints that deal with the household's ability to solve problems and make decisions; 3) resource constraints such as income, time, skills, and knowledge; 4) market conditions such as supply and price factors; and 5) discrimination based on such factors as sex, race, ethnicity, and age (Crull, Bode &

Morris, 1991). The constraints are influenced and measured by socio-economic characteristics of households.

The second stage is normative housing deficits that are defined as a gap between the current housing condition and the housing prescribed by the norms divided into two categories: cultural norms and household norms. Cultural norms are defined as societal standards that are the perceived acceptable conditions. Household norms are standards against which the conditions perceived by the household are determined and affected by cultural norms. Household norms may or may not share the cultural norms in that they depend on the conditions of constraints such as household's preference, household life cycle stage, and other situations (Crull, Bode & Morris, 1991). Housing norms are categorized into six types: tenure, structure, space, quality, expenditure, and neighborhood. With the housing norms in response to the five types of constraints, households evaluate their housing condition, and if the housing condition does not meet their norms or needs in response to the constraints, deficits in tenure, structure, space, quality, expenditure, and neighborhood occur that cause stress.

The third stage is residential satisfaction defined as a state of the level of contentment with current housing conditions. As the normative housing deficits perceived by the household become salient, the satisfaction with the residential environment is low.

In the fourth stage, the propensity to move, the household is inclined to reduce the dissatisfaction with its residential environment by choosing a housing adjustment behavior such as making changes in the housing condition (e.g., moving, remodeling, or making additions), making change in the household (e.g., adaptation, household norms change or household composition change), or regeneration (e.g., pathology).

The final stage is the actual housing behavior which is the interplay between constraints and needs or norms. Of all forms of housing behavior, residential mobility is regarded as the desirable housing behavior that is guided by norm, motivated by households and accepted by others (Crull, Bode & Morris, 1991).

Elderly households are more likely to be homeowners, live in single-family homes, and have more bedrooms than any other types of households. Generally, the housing conditions of the elderly households are in line with their cultural and household norms, and thus, elderly households are satisfied with their residential environment (Zhu & Shelton, 1996). In spite of the perception, as age increases, elderly households have special needs that do not arise from housing norms, and it is hard to draw a conclusion that the long-time residence may no longer meet the age-related needs. Given the fact that overall well-being for the elderly rests upon life satisfaction, of which housing satisfaction is viewed as a major determinant (Baillie & Peart, 1992; Golant, 1992; Lawton, 1986a; Lawton, 1986b), the residential environment for the elderly needs to accommodate their special needs such as physical limitations and other services. Therefore, it is

important to examine the needs and preferences of the elderly who move and their assessment of the new residential environment.

(2) Residential Mobility

Morris and Winter (1978, 1994) define residential mobility as changing in residence within the same labor and housing markets. In other words, residential mobility includes housing-related, short-distance, local moves. By extension, certain assumptions are made to analyze the motivation of the elderly to move.

The first assumption is that the elderly make their own decision to move. Therefore, residential mobility relies on the voluntary decision made by the elderly, and thus the involuntary move is not viewed as a housing adjustment behavior. The second assumption is that residential mobility of the elderly is based on home-to-home moves. Since the residential mobility decision made by the elderly is a housing-related move, it does not include housing relocation that is motivated by medical service or intensive care such as moves to nursing homes. The third assumption is that residential mobility of the elderly is a short-distance move, so that it means change in residence within a neighborhood, a city or a county.

Therefore, residential mobility for the elderly is expected to enhance overall well-being through a new residential environment designed to meet their special needs and to reduce their housing dissatisfaction. The most common and popular residential mobility by the elderly is to relocate from single family detached houses to multifamily senior housing that supports independent living needs.

Compared to other population, the elderly are less likely to move although they have few constraints limiting actual housing behavior. The majority of the elderly prefer to age in place, but still the number of them who want to move is sizable. Morris and Winter (1994) explained that after age 65, age, per se, is unlikely to predict the desire to move, and major life disruptions and changes related to the aging process become important factors. In Morris and Winter's housing adjustment model, residential mobility of the elderly is typically driven by either major life disruptions or loss of independence in the process of aging. In fact, age is likely to increase the possibility of life disruptions and loss of personal independence. To compensate for deficits that stem from loss of independence that arises from life disruptions and chronic conditions, the elderly who experience dissatisfaction with their current residential environment but have few constraints are likely to choose residential mobility. Clapham, Means and Munro (1993) pointed out that residential mobility of the elderly is precipitated by retirement, widowhood, and mobility problems. The elderly who moved tend to have fewer people in their households, higher educational attainment levels, higher monthly housing costs, and higher housing quality than non-movers (Meeks & Sweaney, 1998). In addition, housing tenure affects the residential mobility behavior of the elderly; less than 15% of the elderly who

own a home changed their residences while about 45% of the elderly in rental housing moved (U.S. Department of Housing and Urban Development, 2000).

Although most of the elderly want to stay in their long-time residence and community, residential mobility of the elderly mainly arises from physical change and lifestyle. However, the elderly often face lack of information of senior housing options. The elderly have few sources of detailed knowledge of senior housing options, so that they heavily rely on advice from family and friends, rather than professional resources on moving (American Association of Retired Persons, 1999).

Generally, residential mobility of the elderly is recognized as a want-driven, need-based choice caused by the interaction between their resources and environment. Consequently, the new residential environment to which the elderly choose to move continues to allow them to live independently, and it often tends to be smaller, safer, more secure, easier to maintain, more affordable, more supportive, and closer to services needed. Given the fact that housing behavior is viewed as the interplay between desire for better quality (pull factors) and responses to stress (push factors), residential mobility for the elderly is to seek out congruence between people and environment, which becomes a supportive environment.

(3) Economic Status of the Elderly

Most the elderly have shrinking income resources. According to the Social Security Administration in 1996, the main sources of income for the elderly were Social Security, income from assets (e.g., interest, dividends on savings and investments, or rental income), private pensions, earnings, and public assistance (American Association of Retired Persons, 1999; U.S. Department of Housing and Urban Development, 2000). Most the elderly depend heavily on Social Security. The Census Bureau in 1997 found that 92% of the elderly benefited from Social Security, which accounted for 40% of their income (Schultz, 2001; U.S. Department of Housing and Urban Development, 2000). About a third of them received a public or private pension, and most of them had income that came from assets such as interest (62%), dividends on savings and investments (20%), or rental income (10%) (U.S. Department of Housing and Urban Development, 2000).

Income disparity of the elderly is exacerbated by household type, gender, and housing tenure. The median income of the elderly is higher than that of individual the elderly. The median income for individual the elderly in 1998 was \$13,768 per person compared to \$31,398 for households headed by the elderly (American Association of Retired Persons, 1999). Income disparity of the elderly also varies by housing tenure. The median household income was \$20,280 for the elderly who are homeowners and \$10,867 for the elderly who are renters (American Association of Retired Persons, 1999).

Gender is one factor influencing income disparities of the elderly. Elderly women are more economically vulnerable than their male counterparts. About one-half of

the elderly women, but less than one-fifth of the elderly men in 1995 had incomes less than \$10,000 per year (U.S. Department of Housing and Urban Development, 2000). Economic vulnerability of elderly women stems from the wage gap between gender and less participation in the labor market, and thus reflects the differential poverty rate. In 1998, the total number of the elderly below poverty level was about 3.4 million, and the poverty rate of the elderly women was higher (12.8%) than for the elderly men (7.2%) (American Association of Retired Persons, 1999).

The elderly are typically homeowners, and it is natural that their largest asset is their home equity. However, this asset is not easily liquidated nor converted into cash that permits use for living expenses. The median net worth of households headed by the elderly in 1993 (liabilities subtracted from assets) was \$37,600 (American Association of Retired Persons, 1999), and home equity in 1993 accounted for about 44% of their total net worth (U.S. Department of Housing and Urban Development, 2000). The Federal Reserve Board's 1995 Survey of Consumer Finances reported that the median home equity of the elderly owning a home was \$76,000, and the elderly who are homeowners had a median net wealth of \$141,300 while the elderly who are renters had \$6,460 (U.S. Department of Housing and Urban Development, 2000). However, considering net worth without home equity, the net worth drops dramatically. The median net worth of the elderly who are homeowners without home equity in 1993 was \$20,642 for households headed by the elderly (U.S. Department of Housing and Urban Development, 2000).

With shrinking income resources, the percentage spent by the elderly on housing and medical-related expenses increases as their age advances. The elderly are likely to spend a great proportion of their budget on housing and health care, so that they lower the spending on other expenditures such as transportation, apparel, insurance and entertainment (Schultz, 2001). Therefore, the provision for affordable housing is critical the elderly with limited income sources.

(4) Social Status of the Elderly

One of the hardest life transitions in old age is loss of spouse or immediate family members who are main caregivers. The elderly women are likely to survive longer than the elderly men, and are more likely to live alone and be widows. In 1998, 75% of the elderly men were married but only 43% of the elderly women were married (American Association of Retired Persons, 1999). Forty-five percent (8.4 million) of the elderly women in 1998 were widows, and 2.0 million men were widowers; divorced elderly persons accounted for 7% (7% of men, 6% of women) (American Association of Retired Persons, 1999). The 2000 Census Survey showed that households with one or more people aged 65 years and older accounted for 23.4% of total households in the nation, and one-person households made up 39.4% of households with one or more people aged 65 years and older (U.S. Bureau

of the Census, 2002).

The high proportion of widowhood and living alone among the elderly women is also attributed to the longevity of women. The gender ratio of longevity is 143 the elderly women for every 100 elderly men (U.S. Department of Housing and Urban Development, 2000). The disparity sharply increases with age. In the 65 to 69 age group, the gender gap was 119 women for every 100 men, and the ratio became 248 women for every 100 men in the 85 years and older group (U.S. Department of Housing and Urban Development, 2000).

In addition to loss of spouse, retirement triggers lack of meaningful role opportunities with an emphasis on social activities. Social activities encourage the elderly to participate in social interactions that support companionship and friendship, and relieve psychological concerns.

(5) Health Status of the Elderly

Loss of independence becomes one of the most critical life disruptions among the elderly, and the incidence of health crisis increases with age. A substantial number of the elderly suffer from disability problems. In 1994-1995, 52.5% of the elderly had one or more disabilities, and 33.4% had at least one severe disability (American Association of Retired Persons, 1999). The elderly with disability problems have difficulty getting around in their home and maintaining it by themselves in an adequate way.

When declining capabilities are coupled with neighborhood deterioration, the elderly experience an increase in vulnerability and a growing concern for lack or loss of control over their immediate environment. The growing incidence of health crisis and disabilities leads to emotional and functional concerns including fear of criminal victimization, safety and security (Burby & Rohe, 1990; Golant, 1992). Therefore, safe and accessible housing with ease of maintenance is important for elders with diminishing physical vigor.

As health declines, many the elderly seek either in-home housing-related services or other types of assistance, or move to alternative housing that better meets their needs. Most the elderly seek out various solutions that help them remain in their long-time dwellings. In spite of the strong preference for aging in place, the elderly do change their residence, and change in residence increases with age. One report revealed that only 5% of the elderly between the age of 65 and 85 in 1980-1996 changed residences, but for the age group of 85 years and older the trend rose slightly (U.S. Department of Housing and Urban Development, 2000).

3. METHOD

The research goals are to determine the satisfaction of the elderly with their previous residential environment and to identify factors that prompt the residential mobility of the elderly to move to their current senior housing. To meet the research goals, the variables are extracted from

the Housing Adjustment Theory and at the same time drawn from literature review. Data collection is implemented by using a self-administered questionnaire survey. The constructed questionnaire is reviewed by a panel of professionals including gerontologists, sociologists, social workers, and professors in the relevant fields.

The sampling frame is drawn based upon a list of independent living arrangements in Midwest. It is of particular interest to focus on both senior co-op housing and senior rental housing in the Twin Cities area. The survey tool is distributed in the selected senior housing communities, and one out of two responses is retrieved. Two hundred eighty responses in total are analyzed by using statistical techniques.

4. RESULTS

(1) Household and Housing Characteristics of the Elderly

The average age of co-op householders are 75.9 while rental householders are on average 75.7 years old. The age of the elderly householders participating in this study fall into between 65 and 84. The gender of co-op householders are more likely to be male-headed than rental householders (59.1% and 33.9%, respectively). In other words, the couples are much dominant in senior co-op housing than in senior rental housing. The co-op householders are more likely to be college-educated than their rental counterparts (36.3% and 21.1%, respectively). Regardless of the housing type, most of the elderly households are retired while living at previous residence, previously lived in old housing, and resided in the previous housing for several decades. There are significant differences between the co-op and rental households in terms of household and housing characteristics. Co-op elderly households are more likely to be couples, have college educations, and have adequate previous income than rental counterparts. In addition, it is likely that co-op households previously own a single-family home while rental elderly households are single-headed, predominantly female-headed.

(2) Housing Norm Status

Housing norms at previous residence are measured using the perceptions of the households on five indicators – structure, space, quality, expenditure, and neighborhood satisfaction. Neighborhood satisfaction is comprised of four items – location, safety and security, neighbors, and proximity to friends and relatives. As presented in Table 1, satisfaction with structure, expenditure, and neighborhood between the two housing types is statistically significant at the $p = .05$ level.

① Structure satisfaction

The majority of the households are satisfied with their previous housing structure type, and co-op households are more likely to be satisfied with previous structure type than rental households. Nine out of ten co-op households

Table 1. Percentage Distribution of Housing Norm Status Perceived by the Elderly at Previous Residence

Characteristics	Co-op		Rental	
	Number (N=171)	Percentage (100%)	Number (N=109)	Percentage (100%)
Structure*				
Satisfied	157	91.8	86	78.9
Neither	3	1.8	5	4.6
Dissatisfied	3	1.8	7	6.4
Missing	8	4.7	11	10.1
Space				
Satisfied	162	94.7	97	89.0
Neither	2	1.2	1	0.9
Dissatisfied	1	0.6	5	4.6
Missing	6	3.5	6	5.5
Quality				
Satisfied	158	92.4	95	87.2
Neither	5	2.9	2	1.8
Dissatisfied	5	2.9	9	8.3
Missing	3	1.8	3	2.8
Expenditure**				
Satisfied	152	88.9	73	67.0
Neither	2	1.2	4	3.7
Dissatisfied	11	6.4	19	17.4
Missing	6	3.5	13	11.9
Neighborhood**				
Satisfied	125	73.1	63	57.8
Neither	13	7.6	13	11.9
Dissatisfied	18	10.5	26	23.9
Missing	15	8.8	7	6.4

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

indicate satisfaction with previous housing structure while about four-fifths of the rental households are satisfied. A chi-square test indicated a significant association in satisfaction with previous housing structure type between the two housing types (co-op and rental housing), $\chi^2 (2, N = 261) = 7.097, p = .029$.

② Space satisfaction

Another housing norm status is space satisfaction, and the households are asked about satisfaction with size of the previous dwelling and number of bedrooms.

Satisfaction with previous space norm scores the highest cited among the satisfaction indicators. Almost all of the co-op and rental households are satisfied with previous housing space (94.7% and 89.0%, respectively).

③ Quality satisfaction

With regard to the quality norm, the households evaluate the physical condition of their previous dwellings. Overwhelmingly, the co-op and rental households are satisfied with previous housing quality (92.4% and 87.2%, respectively). Only five co-op households and nine rental households are not satisfied with the quality of previous residence.

④ Expenditure satisfaction

Expenditure norm is referred to as housing costs at previous residence. Co-op households are more likely to be satisfied with housing-related expenditures at previous residence than rental households (88.9% and 67.0%,

respectively). Rental households are more likely to be dissatisfied with housing expenditure at previous residence than co-op households (17.4% and 6.4%, respectively), and there is a statistical significance in expenditure satisfaction between the two housing types, $\chi^2 (2, N = 261) = 13.220, p = .001$.

⑤ Neighborhood satisfaction

As an indicator of the housing norms, neighborhood satisfaction consists of four indicators – location, safety and security, neighbors, and proximity to friends and relatives. Neighborhood satisfaction at previous residence is the lowest scored item among the four housing norms although co-op households are more likely to be satisfied with previous neighborhood than rental households. The majority of the co-op and rental households are satisfied with the indicator (73.1% and 57.8%, respectively). The percentage of dissatisfaction with their neighborhood is higher among rental households than among co-op households (23.9% and 10.5%, respectively). There is a significant association between the households of the two housing types and previous neighborhood satisfaction, $\chi^2 (2, N = 258) = 11.085, p = .004$.

(3) Environmental Needs for Independent Living

Environmental needs are used to describe the perceptions of the needs that are necessary to live independently and also to explain the motivations for choosing the current senior housing. As summarized in Table 2, environmental needs consist of 13 items of which each is a categorical variable, and the households evaluated each item by using three different levels of importance, from not important to neither to important. Only the frequencies on important items are used to represent important needs. Regardless of the housing type, the overall items of physical needs are cited more than the ones of social needs.

Between the households of the two housing types (co-op and rental housing), chi-square tests indicate significant differences ($p < .05$) in five variables of social needs – keeping housing costs down, democratic operation, a sense of community, voice in management, and supportive services.

Physical Needs

Physical needs for independent living are comprised of five items – safe neighborhood, communal living, ease of maintenance, accessibility, and affordability. For co-op households, affordability and safe neighborhood are the most cited items of physical needs while affordability and accessibility are for rental households.

② Social Needs

Supportive services, social network, keeping housing cost down, democratic operation, voice in management, a sense of community, participation in community, and homeownership are indicators of social needs. Among eight items, keeping housing cost down is the most important need for both co-op and rental households.

Control over residential environment is more likely to be of concern to co-op households than rental counterparts, and a series of chi-square tests indicate a significant differ-

ence in these four items between the two housing types: keeping housing cost affordable, $\chi^2(2, N = 267) = 6.974$, $p = .031$; democratic operation, $\chi^2(2, N = 247) = 13.383$, $p = .001$; and voice in management, $\chi^2(2, N = 256) = 12.653$, $p = .002$. In addition, a chi-square test show that co-op residents are more likely to consider a sense of community as important than do rental residents, $\chi^2(2, N = 259) = 8.181$, $p = .017$. However, supportive services is a more important social need for rental households than for co-op households, $\chi^2(2, N = 244) = 10.908$, $p = .004$.

Table 2. Percentage Distribution of Environmental Needs Perceived by the Elderly at Previous Residence

Characteristics	Co-op		Rental	
	Number (N=171)	Percentage (100%)	Number (N=109)	Percentage (100%)
Physical Needs				
Affordability	165	96.5	102	93.6
Safe neighborhood	162	94.7	98	89.9
Ease of maintenance	160	93.6	98	89.9
Accessibility	158	92.4	102	93.6
Communal living	127	74.3	82	75.2
Social Needs				
Keeping housing cost down*	164	95.9	96	88.1
Democratic operation***	147	86.0	67	61.5
Social network	145	84.8	88	80.7
Homeownership	143	83.6	88	80.7
A sense of community*	142	83.0	73	67.0
Voice in management**	142	83.0	64	58.7
Participation in community	124	72.5	70	64.2
Supportive services**	98	57.3	83	76.1

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

(4) Residential Satisfaction at Previous Residence

To predict the overall satisfaction with previous residential environment among co-op and rental households, a multiple regression analysis is conducted, and the household and housing characteristics, housing norm status, and environmental needs are included in the equation. The findings from this regression model are summarized in Tables 3 and 4. For the rental group, the regression analysis cannot compute three variables of environmental needs for independent living – ease of maintenance, accessibility, and affordability – because of no variability found in the statistical analysis regressing the variables as a group on the dependent variable. For co-op households, the overall satisfaction with previous residential environment is more likely to be explained by all the specified variables. For rental households, housing norm status is more likely to be an important predictor in the equation of previous residential satisfaction.

The first analysis of the relationships between the specified household and housing variables and the overall satisfaction with previous residential environment indicates that the equation is statistically significant for co-op households, but not for rental households. Retirement status of a householder and previous housing structure type

are important predictors for co-op households. Although the ten specified variables controlled as a group are not significantly associated with the predictor, income adequacy has an important effect on it for rental households.

The second step of the regression analysis indicates that the five housing norms account for a significant proportion of the variation in the index of overall satisfaction with previous residential environment after holding the effects of previous household and housing characteristics constant. The proportion of the variance in this index is more substantial among co-op households than among rental households; the explanatory power of the addition in the equation to predict this index is 37.2% for the co-op group, and 30.9% for the rental group. For the co-op group, retirement status of a householder, previous housing tenure type and previous housing structure type, and satisfactions with previous housing-related expenditure and neighborhood are significantly related to the index. For the rental group, satisfactions with previous structure, quality, and neighborhood have a significant effect on this index.

The last set of the regression equations to predict the overall satisfaction with previous residential environment utilizes two operational variables out of social needs: 1) control over residential environment consisting of keeping housing cost down and democratic operation; and 2) community involvement that is comprised of voice in management, participation in community, and supportive services. The statistical analysis shows that a set of environmental needs for independent living is significantly related to the index for the co-op group, but not for the rental group. The regression model explains 62% of the variance in previous residential satisfaction for the co-op group while it accounts for only 38% for the rental group. For the co-op group, retirement status of householder, previous housing tenure type, previous housing structure type, satisfactions with housing-related expenditure and neighborhood, and needs for safe neighborhood, accessibility, and social network are significant predictors after partialling out the effects of all other predictors. This regression model implies that the co-op households who retire, previously own a home, live in a single-family home, are satisfied with the previous housing-related expenditure and neighborhood, and view safe neighborhood and social network as important are likely to be satisfied with previous residential environment while those who don't retire, live in non-single family home, and don't see accessibility as an important environmental need are likely to be dissatisfied with it. For a rental group, three predictors are deleted the regression equation predicting overall satisfaction with previous residential environment due to the constant values of three variables. Even though the regression equation is statistically significant, one independent variable in the last set has an important effect on the dependent variable. Rental households who are satisfied with previous neighborhood are likely to be satisfied with previous residential environment.

(5) Residential Mobility

Table 3. Summary of Hierarchical Regression Analysis for Variables Predicting Overall Residential Satisfaction of Co-op Residents at Previous Residence

Variables	Step 1 Household & Housing Characteristics			Step 2 Housing Norm Status			Step 3 Environmental Needs		
	B	SE	Beta	B	SE	Beta	B	SE	Beta
(Constant)	-1.514	7.502		-3.486	5.815		-6.094	5.309	
Age	.008	.008	.119	.001	.006	.020	-.004	.006	-.056
Gender	.124	.119	.131	.104	.091	.109	.086	.083	.091
Marital status	.155	.132	.146	.120	.101	.114	.038	.096	.036
Education	.018	.103	.020	-.018	.080	-.020	.016	.079	.017
Income adequacy	.101	.189	.056	-.061	.146	-.034	.036	.138	.020
Retirement status	.315	.142	.252*	.290	.115	-.232*	.222	.108	-.178*
Tenure	.010	.188	.006	.698	.175	.439***	.834	.183	.524***
Structure type	-.504	.165	-.507**	-.309	.128	-.311*	-.252	.119	-.253*
Year built	.002	.004	.067	.002	.003	.083	.002	.003	.087
Duration	-.001	.004	-.025	-.000	.003	-.010	-.001	.003	-.033
Structure satisfaction				.081	.177	.045	.132	.193	.074
Space satisfaction				-.149	.316	-.049	-.112	.300	-.037
Quality satisfaction				-.019	.139	-.012	.079	.125	.048
Expenditure satisfaction				.329	.102	.340**	.341	.099	.352***
Neighborhood satisfaction				.479	.078	.617***	.501	.075	.646***
Safe neighborhood							.615	.187	.318**
Communal living							-.083	.079	-.111
Ease of maintenance							.187	.153	.141
Accessibility							-.311	.133	-.272*
Affordability							-.026	.191	-.014
Supportive service							-.041	.056	-.065
Social network							.296	.109	.387**
Control over residential environment							-.005	.067	-.007
Community involvement							.020	.059	.035
Homeownership							-.016	.091	-.018
	$R^2 = .228, R^2_{adj} = .119$			$\Delta R^2 = .358, \Delta R^2_{adj} = .372$			$\Delta R^2 = .151, \Delta R^2_{adj} = .130$		
	$F(10, 75) = 2.209, p = .026$			$\Delta F(5, 70) = 12.106, \Delta p = .000$			$\Delta F(10, 60) = 3.432, \Delta p = .001$		

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

Table 4. Summary of Hierarchical Regression Analysis for Variables Predicting Overall Residential Satisfaction of Rental Residents at Previous Residence

Variables	Step 1 Household & Housing Characteristics			Step 2 Housing Norm Status			Step 3 Environmental Needs		
	B	SE	Beta	B	SE	Beta	B	SE	Beta
(Constant)	12.076	10.879		-.346	9.174		-1.522	10.026	
Age	.014	.016	.142	.010	.015	.096	.013	.016	.136
Gender	.036	.214	.026	-.051	.177	-.037	-.110	.220	-.080
Marital status	.156	.214	.119	.190	.195	-.146	.302	.240	.232
Education	.158	.199	.117	.056	.171	.041	.140	.207	.104
Income adequacy	.369	.137	.406*	.288	.164	.317	.291	.187	.321
Retirement status	.171	.234	.116	.109	.193	.074	.183	.233	.123
Tenure	-.353	.228	-.267	-.063	.216	-.048	-.023	.242	-.017
Structure type	-.015	.271	-.011	.032	.234	.025	.123	.269	.094
Year built	-.006	.005	-.199	-.000	.005	-.008	.000	.005	.012
Duration	-.011	.009	-.257	-.005	.008	-.123	-.002	.009	-.050
Structure satisfaction				.345	.135	.319*	.293	.167	.271
Space satisfaction				.230	.149	.204	.156	.170	.139
Quality satisfaction				-.391	.174	-.354*	-.322	.204	-.292
Expenditure satisfaction				.296	.167	.354	.313	.186	.375
Neighborhood satisfaction				.292	.089	.417**	.326	.109	.464**
Safe neighborhood							-.147	.219	-.094
Communal living							-.180	.132	-.235
Supportive service							.025	.196	.026
Social network							.152	.235	.159
Control over residential environment							-.012	.189	-.014
Community involvement							-.131	.169	-.154
Homeownership							.116	.275	.068
	$R^2 = .329, R^2_{adj} = .147$			$\Delta R^2 = .301, \Delta R^2_{adj} = .309$			$\Delta R^2 = .041, \Delta R^2_{adj} = -.075$		
	$F(10, 37) = 1.812, p = .093$			$\Delta F(5, 32) = 5.191, \Delta p = .001$			$\Delta F(7, 25) = .448, \Delta p = .862$		

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

Note: Statistics for the independent variables of ease of maintenance, accessibility and affordability cannot be computed because the predictors in the model with the dependent variable are constants and deleted from the analysis.

A multiple regression analysis is performed to predict the residential mobility of the elderly households to the current housing from the ten exogenous variables, five housing norm status, ten environmental needs, and overall residential satisfaction with previous residential environment (Table 5). The first step of the relationship between the exogenous variables and the residential mobility to current housing is significant. Gender of householder, income adequacy, and previous housing structure type are statistically significant. The explanatory power of these predictors in the regression model to predict the dependent variable is 21%.

The second set of the regression equations explains a significant proportion of the residential mobility after controlling for the effects of the exogenous variables. The six specified variables controlled as a group are not significantly associated with the dependent variable, but gender of householder, income adequacy, previous housing structure type, and space and neighborhood satisfaction appeared to have important effects on the index.

The third analysis of the regression models to predict the residential mobility of the elderly households indicates that a set of the environmental needs have significant impact on the index after partialling out the effects of all other predictors. Significant relationships are found from gender of householder, income adequacy, previous housing

structure type, space satisfaction, and needs for communal living and supportive services.

The last set of the regression analyses reveal that overall satisfaction with previous residential environment has no significant contribution to explain the predictor of residential mobility after controlling for the effects of the exogenous variables, housing norm status, and environmental needs. The regression model as a whole is statistically significant at $p = .000$, and accounts for about 32% of the variance of the residential mobility index. Gender of householder, income adequacy, previous housing structure type, space satisfaction, and needs for communal living and supportive services apparently have important impacts on the dependent variable. The regression analysis implies that elderly households who are headed by men, have adequate income to meet their needs, live in a single-family home, are satisfied with space at previous residence, have a need for communal living as important are likely to move to co-op housing while elderly households who are headed by female, have inadequate income, live in non-single family homes, and need supportive services are likely to move to rental housing. Therefore, the statistical result indicates that residential mobility of the elderly households is a need-based choice in response to resources available in order to strengthen independence that

Table 5. Summary of Hierarchical Regression Analysis for Variables Predicting Residential Mobility from Previous Residence

Variables	Step 1 Household & Housing Characteristics			Step 2 Housing Norm Status			Step 3 Environmental Needs			Step 4 Residential Satisfaction		
	B	SE	Beta	B	SE	Beta	B	SE	Beta	B	SE	Beta
(Constant)	-7.722	5.104		-9.135	5.174		-6.112	5.103		-6.184	5.122	
Age	.001	.006	.014	.000	.006	.005	-.002	.006	-.023	-.002	.006	-.021
Gender	-.256	.084	-.267**	-.238	.084	-.248**	-.254	.081	-.265**	-.246	.083	-.257**
Marital status	.142	.092	.127	.113	.091	.101	.137	.092	.123	.131	.093	.117
Education	-.014	.081	-.015	-.031	.080	-.032	-.102	.082	-.104	-.099	.082	-.101
Income adequacy	.216	.082	.214**	.246	.091	.244**	.290	.088	.288**	.296	.089	.294**
Retirement status	.009	.105	.007	.013	.104	.011	-.019	.103	-.015	-.029	.106	-.024
Tenure	-.128	.119	-.102	-.008	.136	-.007	.026	.134	.020	.038	.136	.030
Structure type	-.278	.120	-.287*	-.268	.122	-.277*	-.238	.120	-.246*	-.245	.121	-.253*
Year built	.004	.003	.179	.005	.003	.189	.004	.003	.142	.004	.003	.144
Duration	-.002	.003	-.056	-.002	.003	-.058	-.003	.003	-.097	-.003	.003	-.098
Structure satisfaction				.048	.099	.041	.153	.103	.131	.166	.106	.142
Space satisfaction				.234	.111	.175*	.251	.107	.188*	.261	.109	.195*
Quality satisfaction				-.022	.107	-.019	-.027	.104	-.023	-.038	.106	-.032
Expenditure satisfaction				-.074	.086	-.092	-.119	.084	-.148	-.102	.091	-.126
Neighborhood satisfaction				.130	.056	.205*	.108	.055	.171	.124	.063	.196
Safe neighborhood							.037	.125	.024	.040	.125	.026
Communal living							.162	.071	.237*	.158	.071	.230*
Ease of maintenance							-.167	.196	-.098	-.151	.199	-.089
Accessibility							-.173	.166	-.118	-.182	.167	-.125
Affordability							.021	.231	.008	.005	.234	.002
Supportive service							-.132	.060	-.194*	-.133	.060	-.195*
Social network							.161	.095	.209	.172	.097	.223
Control over residential environment							.067	.072	.098	.064	.073	.094
Community involvement							-.047	.067	-.074	-.046	.068	-.074
Homeownership							-.169	.093	-.164	-.169	.093	-.164
Overall satisfaction with previous residential environment										-.051	.097	-.057
	$R^2 = .271, R^2_{adj.} = .211$			$\Delta R^2 = .062, \Delta R^2_{adj.} = .036$			$\Delta R^2 = .118, \Delta R^2_{adj.} = .076$			$\Delta R^2 = .001, \Delta R^2_{adj.} = -.005$		
	$F(10, 123) = 4.565$			$\Delta F(5, 118) = 2.179$			$\Delta F(10, 108) = 2.307$			$\Delta F(1, 107) = .274$		
	$p = .000$			$\Delta p = .061$			$\Delta p = .017$			$\Delta p = .602$		

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

decreases in the process of aging.

5. CONCLUSIONS

The research shows that the majority of both co-op and rental elderly households are satisfied with their overall residential environment at their previous residence. For rental elderly households, the overall residential satisfaction at previous residence is significantly affected simply by a set of housing norm status. The statistical analysis of the relationships between the selected predictors and overall residential satisfaction of the rental households indicates that the neighborhood satisfaction is the strongest factor. In contrast, the overall residential satisfaction of the co-op households at previous residence is significantly influenced by household and housing characteristics, housing norm status, and environmental needs. Particularly, retirement status, previous housing tenure, previous housing structure type, satisfactions with expenditure and neighborhood, and needs for safe neighborhood, accessibility, and social networks are the significant predictors in explaining the residential satisfaction at previous residence.

Therefore, co-op households who retire, previously own a home and live in a single-family home are satisfied with the previous housing-related expenditure and neighborhood, and view safe neighborhood and social network as important needs are likely to be satisfied with previous residential environment. On the contrary, rental households who are satisfied with previous neighborhood are likely to be satisfied with previous residential environment. Elderly households perceive that neighborhood is as equally important as physical dwelling, and satisfaction with neighborhood positively affects their satisfaction with previous residential environment.

The residential mobility of the elderly households is a need-based choice, want-driven behavior and demand-oriented decision as a result of interplay between environments and resources of the elderly households during the aging process. The residential mobility of the elderly is significantly influenced by previous household and housing characteristics, housing norm status and environmental needs.

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