sustainability

MDPI

Article

Factors Affecting the Intention of Multi-Family House Residents to Age in Place in a Potential Naturally Occurring Retirement Community of Seoul in South Korea

Jung-A Park [1] and Byungsook Choi [2,*]

[1] Department of Home Economics Education, Wonkwang University, Iksan 54538, Korea; japark@wku.ac.kr
[2] Department of Housing Environmental Design, Jeonbuk National University, Jeonju 54896, Korea
* Correspondence: housecbs@jbnu.ac.kr; Tel.: +82-63-270-3840

Abstract: This study reveals residents' willingness to live in their current homes and communities and analyzes the factors related to their willingness to age in place in South Korea. Using a questionnaire survey method, data of 289 residents aged 55 or older were collected in apartment areas with the potential to become naturally occurring senior communities in Seoul. Data were analyzed using descriptive statistics, correlation tests, *t*-test, ANOVA, factor analysis, and regression analysis by SPSS 26.0, and the findings were followed up. Housing services are very important in aging communities. Physical environment-oriented residential services promote a safe walking environment, facilities to support the elderly, a secure complex environment, a home-safety accident-prevention diagnosis service, home improvement, and home improvement support. Multiple regression analysis showed that residential services or elderly education and activity support services influence aging in place, which is a novel finding revealed in this study.

Keywords: willingness to age in place; apartment NORC areas; factors affecting the sustainable living; quality of life for the elderly; physical environment and residential service support

check for updates

Citation: Park, J.-A.; Choi, B. Factors Affecting the Intention of Multi-Family House Residents to Age in Place in a Potential Naturally Occurring Retirement Community of Seoul in South Korea. *Sustainability* **2021**, *13*, 8922. https://doi.org/10.3390/su13168922

Academic Editors: Darja Kubečková and Michal Kraus

Received: 11 June 2021
Accepted: 30 July 2021
Published: 9 August 2021

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Copyright: © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

1. Introduction

1.1. Research Background

The world media is expected to herald a population cliff era during which the proportion of relatively elderly in the population will increase, further accelerating the move towards a super-aged society. Korea is no exception to this as it is entering post-aged society, and research on the quality of life of the elderly is being conducted in various fields. Senior citizen research in the academic housing area is being conducted on the premise that Aging in Place (AIP) would allow senior citizens to live in a familiar residential environment that would sustain their independent life, rather than moving to a new and unfamiliar environment [1,2].

AIP connects with the concept of WHO active aging. "Active aging is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age". One of determinants of active aging, an age-friendly physical environment as a place of life, is of distinct importance for those growing older. This can be the difference between independence and dependence for them because unsafe environments with multiple physical barriers are less accessible [3].

AIP is a concept that refers not only to houses where the elderly live but also to their community of neighbors. This has been proposed in terms of elder-friendly residential complexes and elder-friendly cities that are comfortable for the elderly in everyday life. The WHO age-friendly cities are developed in "eight interconnected domains that can help to identity and address barriers to the well-being and participation of older people". Housing is one of these domains, and it is connected to AIP. Such housing means that "the housing conditions of older people are often linked to their quality of life and whether they are able

to age independently and actively in their community. Appropriate housing design and its proximity to community and social services allow older residents to live comfortable and safely, while housing affordability gives them peace of mind" [4]. Active aging and housing in age-friendly cities include the concept of AIP. Similar to these concepts, the concept of the naturally occurring retirement community (NORC) emerged in the United States in the 1980s. An NORC has come to mean an elder-centered community arising due to natural aging and an increase in the number of elderly people in the community where they have lived. In these communities, it is necessary to improve or support service programs inbuilt environments for those living in the existing community to meet the standards of the elderly so that they can continue to live well without inconvenience. In the U.S., local governments have prepared NORC standards to support the continuous independent residence of the elderly and to provide supportive criteria accordingly. The support criteria for AIP include not only a physical environment with conditions suitable for elders but also a community-level service that can sustain their lives. As such, AIP creates an NORC, and an NORC requires not only adjustment of the physical environment to accommodate the elderly, but also service support for elders to continue independent living.

The trend in the research on elderly housing has shifted towards looking at changes or lack of changes in housing location [5]; housing preference [6]; and housing satisfaction [7] related to housing adaptation, housing improvements [8], AIP intention [9,10], AIP and wellbeing [11], walkable neighborhoods for AIP [12], perceived neighborhood environments, and the overall quality of life [13]. Additionally, research has also focused on the AIP of residents in an NORC, walkability and falls prevention [14], and NORC service programs and AIP intention [15]. This trend aims to enhance the quality of their life and health and to make age-friendly environments that can continue to be lived in in existing living environments. However, until now, senior housing research in South Korea has mainly focused on senior residential needs, senior residential or senior facility planning, senior residential renovation, and AIP preferences and needs [16,17]. Recently, a study was proposed that mentions the need to support services to improve the physical environment of elderly housing at the level of continuous living [10,14,16,17]. Moreover, in South Korea, little research has addressed the relevance of AIP to support services aimed at improving the physical environment or housing for older adults [18]. Therefore, when considering the direction of Korean society in which the elderly currently experience AIP, it is important to establish housing policies that support the services intended to improve the physical environment or housing leading to AIP.

1.2. Research Purpose

The aim of this study was to determine what factors are related to sustainable residence in multi-family housing complexes in potential NORC areas in South Korea. In other words, this reveals resident willingness to live in their current homes and communities and analyzes what factors are related to their willingness to age in place (Figure 1).

Specific research issues addressed in this paper include:

First, what is resident willingness to age in place, and what are the reasons for it?
Second, what are the housing attributes that relate to resident AIP?
Third, what community facilities needs are relevant to resident AIP?
Fourth, what service needs are relevant to resident AIP?
Fifth, among housing, community facility needs, and service needs factors, what predictors affect resident AIP?

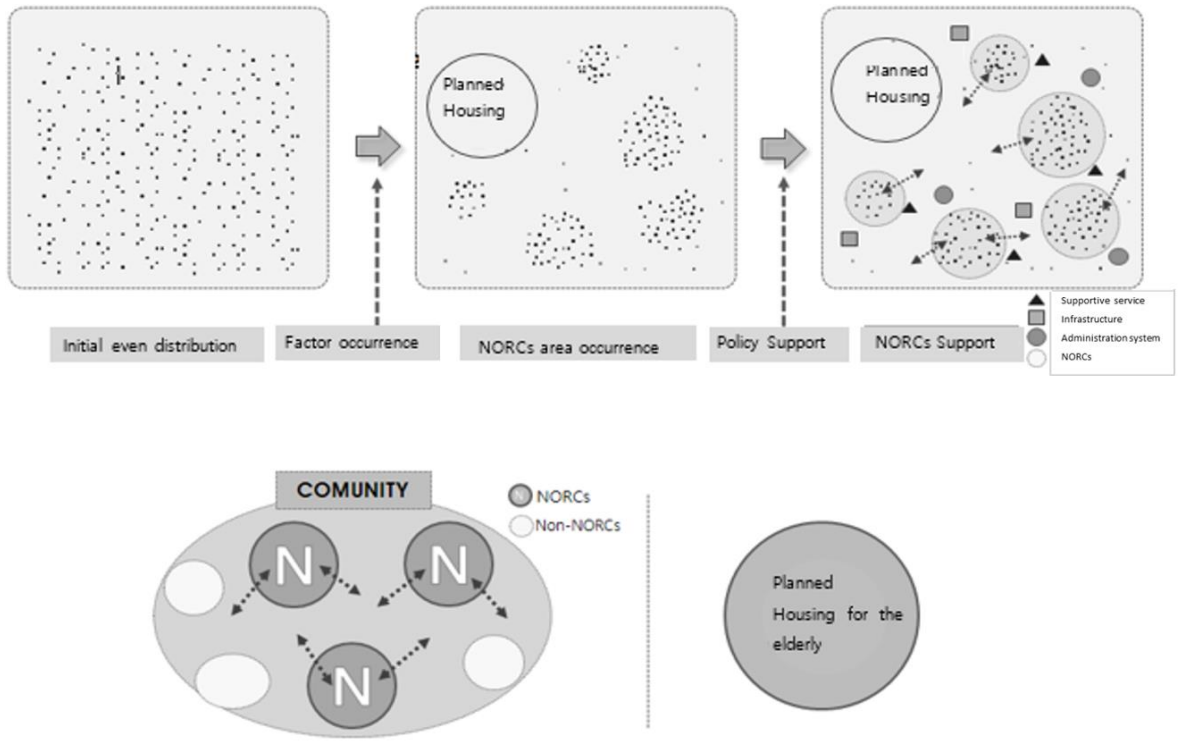


Figure 1. Hypothetical concepts of NORC occurrence and service support.

2. Literature Review on AIP and NORC

2.1. Factors Affecting AIP

The main direction of recent international and domestic trends regarding the emerging housing problem for senior citizens is to allow them to continue to live their existing lives via Aging in Place (AIP) or Aging in Community (AIC). This is a concept that differs from the view of planned elderly housing on the premise of residential mobility. Although there are some differences in the aspects emphasized by each country, AIP basically aims to enable senior citizens to lead healthy and happy lives within the communities where they have lived. In terms of the methodology intended to realize these goals, different countries have different situations. In the United States, the focus is on housing renovation that supports the independent living of senior citizens in their own homes. In the case of Japan, an already post-aged country, recent emphasis has been on community care centered on welfare. In Canada, the emphasis has been on being "active at home and has received considerable financial support", and in Europe "active aging in place" [4], while in Korea, the emphasis has been on the need for "sustaining residence" so that elders can live independently in their homes or neighborhoods as much as possible.

Many studies have demonstrated that the ability to continue living in the original home of the elderly rather than living in facilities has a positive effect on maintaining or improving health and quality of life [19–24]. Preliminary studies have shown a combination of factors affecting AIP for older people, including personal, social, physical, psychological, policy, and service factors (Table 1).

Personal factors affecting AIP were shown to be gender, age, education, income, occupation, religion, family members, and health. Men are more willing to age in place than women. Single, low education level, high household income, and many social activities affect AIP intention [25]. Those who have a religious faith and many family members have high willingness to AIP [26]. In addition, one's independence-related health status affects AIP [27].

Table 1. Factors affecting AIP for older adults according to the literature review.

Category	Related Elements	Literature Sources
Personal	Gender, marital status, education level, income, social activity level	[25,48]
	Religion, number of family members	[26]
House/Housing	Convenience of housing structure: interior space inside a house	[28–37]
	Home ownership status	[26,28]
	Period of residence in the current home	[26]
	Housing type	[25]
	Housing satisfaction	[25]
	Ecologically friendly features: ventilation and air quality	[8]
Community	Convenient living conditions and accessibility of the neighborhood facilities	[6,17,32,36]
	Pedestrian environment, convenience and safety of transportation and utilization facilities	[6,12,28,29,38–41]
	Regional senior citizens' facilities	[38]
	Location of a house	[28,34–36,38]
	Safe neighbors	[6]
	Well-organized and environmentally friendly buildings	[12,14,41–45]
Service factors	Community care service	[49]
	Various services such as health care and care	[28,46]
	Home improvement, housing repair services	[31,46,47]

Housing characteristics that affect high AIP intention include a long period of residence [26], an owned house [26,28], a detached house [26], and a convenient structure of the housing's interior space [28–32]. The work in [33] expresses this structure as a convenient living arrangement factor. According to the dwelling location and AIP, elderly people who live in small and medium-sized cities or rural areas want AIP more than older people in big cities [28,34].

A study of housing properties [6] that can lead to AIP for the elderly shows elevator [34–36] or single-story houses without stairs [34–37]. In particular, a universal design that accommodates independent living and disabilities [34,35] of older people has been identified as important, especially in bathrooms and kitchen spaces [37]. Older people's preferred dwellings were central areas or small towns [35], with low preferences for urban edges/outside areas [35,36] and rural areas [35].

Recently, the work in [8] indicated that intervention measures (ventilation and air quality) are needed to improve the residential environment of the elderly because the improvement of the residential environment has a significant impact on the psychological well-being of the elderly and the level of satisfaction of life.

Community factors affecting AIP include convenient living conditions, neighborhood conditions [6,17,24], pedestrian environments, convenience and safety of transportation and amenities [6,12,28,29,38–40], and safe neighbors [6]. As the elderly become older, they want to keep major amenities such as shops, maintenance facilities, and public transportation within walking distance or close distance of their homes [36]. In addition, the elderly

expressed a preference for the design of the architectural environment, including well-organized sidewalks, safe pedestrian crossings, seats and public toilets, and environment-friendly buildings [41]. One of the most important challenges in creating an age-friendly area for the elderly is to ensure walkability [12]. Moreover, with the emphasis on the high risk of developing COVID-19 due to the elderly having relatively weak immune systems, a healthy outdoor lifestyle [42] and walking activities [43–45] are an efficient way to avoid cross-infection in indoor facilities [12].

Service factors affecting AIP include community services, health care and care services [28,46], and home renovation and residential repair services [31,46,47].

2.2. The Aging and NORC Phenomenon of Korean Apartments

NORC [50] refers to a place where people who live in ordinary residences become an elderly community through the natural aging of the population, rather than being a residential complex originally planned to house the elderly. Among general residences, this means a place with an environment suitable for the elderly, where the elderly naturally became a community complex of elders. The most important reason for the creation of NORCs is the AIP phenomenon. Most NORC elderly want to continue living in their own homes without leaving places where their families have been raising children for decades and where their neighbors who have not left the area have lived for a long time live. In the United States, this phenomenon has led to an increase in NORC in many regions.

The authors of [51] conducted research on how the NORC program potentially affects supportive relationships between neighbors. The NORC Service Program was established in 1986 at a large mid-income cooperative housing complex in NYC, USA [52]. The NORC program model is based on the idea that many senior citizens' homes were not designed to be senior citizens' homes, but over time have come to contain a significant proportion of senior citizens relative to the number of young residents [51]. This model includes identifying these communities and developing partnerships among stakeholders, including senior citizens, service providers, building owners and managers, and local government officials, to support aging and enhance the quality of life for older people [53]. NORC programs are typically led by private non-profit organizations and have professional staff to oversee the program's daily activities and services [51].

Korea's aging population is progressing faster than any other country in the world, and the composition ratio of the elderly population was 14.9% as of 2019, five times higher than that of 1970 (3.1%). In particular, the proportion of the world's population aged 65 or older is expected to increase from 9.1% in 2019 to 18.6% in 2067, but the proportion of Korea's population who are 65 or older is expected to rise from 14.9% in 2019 to 46.5% in 2067 [54,55]. Since industrialization in the 1970s, Korea has suffered from a severe housing shortage due to the urban concentration of its population. One way to solve the housing shortage was the building of multi-family apartments. Thus, apartment housing culture has been established since the 1990s, and about two thirds of the population has lived in apartments. As time has passed over 30~40 years, these apartment complexes have become naturally occurring retirement communities due to the aging trend of society.

Therefore, it is predicted that NORC complexes will emerge in Korean communities as Korea becomes a post-aged society (the stage beyond an aging society). To accept this phenomenon in a positive way, a work process will be needed to transform communities into areas that can protect settlements of the elderly, mainly in areas or residential complexes where the NORC phenomenon occurs. To this end, it is essential to create a physical and institutional environment, as well as to provide a service program and to support the daily lives of the elderly. This study is about a way to accommodate the Aging in Place and NORC phenomena, and the concept is to provide physical and living support systems so that senior citizens are able to live independently and happily in their current residences with naturally occurring senior communities (Figure 1).

In Korea, that residential services should be provided in aging communities in order for the elderly to continue living in their current housing environment has been

addressed [16,17]. Residential services mean the prevention of accidents (such as falls in homes), counseling, and repair or renovation to allow for barrier-free homes due to physical changes in the elderly. Residential services also refer to the application of universal design in the community's physical environment. Residential services for the elderly include providing comprehensive spaces for the community facilities, walking routes, and exercise space. However, previous research has only mentioned the need for residential services. It is not clear whether residents will continue to age in place if their needs for residential services are supported. In particular, the existing literature reveals the willingness of elders to AIP without limiting their area of residence and the impact on senior citizens and prospective senior citizens. However, this study is distinct from previous studies in that it studies the willingness to age in place along with what needs influence residents to continue living in potential NORC areas.

Furthermore, the continued residence of older adults is determined in complex situations rather than from one aspect, so existing findings dealing with individual, residential, and community needs from a fragmentary perspective may be limited for explaining continued residence. Therefore, research is needed to explain the continued residence of older adults from a contextual and comprehensive perspective rather than a fragmentary one. Therefore, in this work, our aim was to establish and demonstrate a research model that approaches variables affecting sustainability from a more comprehensive perspective. In other words, as shown in Figure 2, we would like to look at living services other than residential and community facilities at the residential and community level.

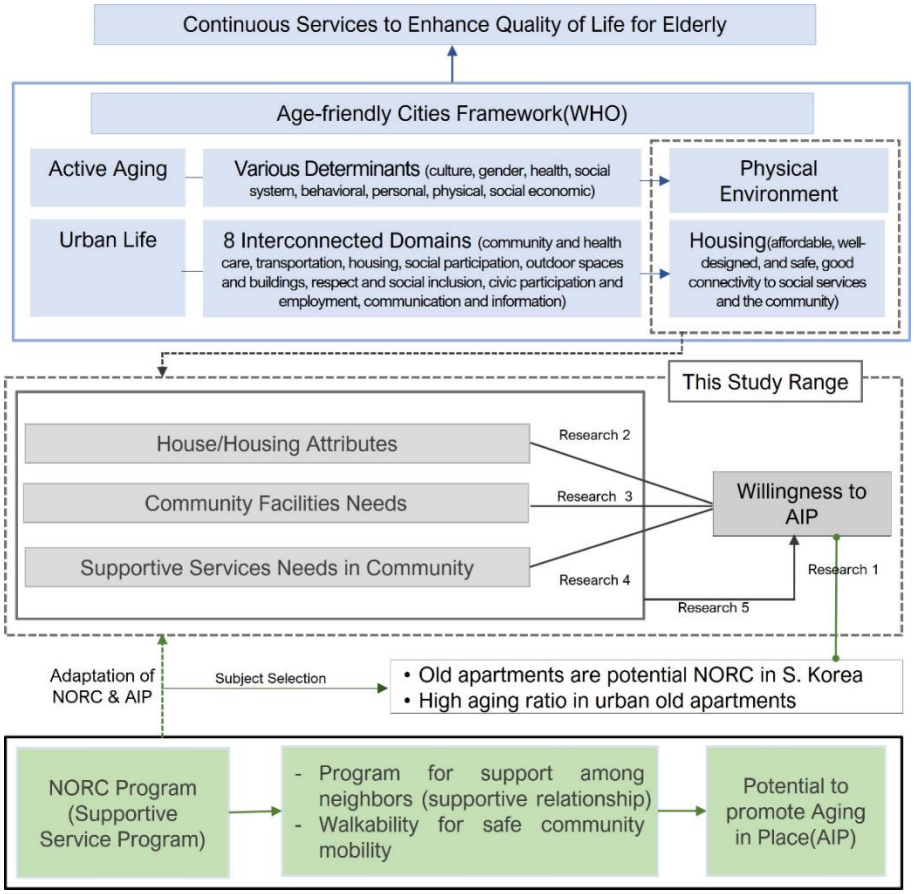


Figure 2. Research framework based on the literature review.

3. Method and Overview of Respondents

3.1. Data Sampling

This study aimed to identify the AIP intention of multi-family housing residents in their homes and communities and to analyze the relative factors behind this in Korean potential NORC areas. The criteria of NORC are based on 40~50% of local population aged 55~60 or older, or more than 2500 elderly people [56]. Thus, the NORC area with a high proportion of senior citizens aged 65 or older was selected as a sample for Seoul, which has the largest absolute population in South Korea. Sampling depended on a prior study method [16]. The sampling was conducted in Seoul city. Gu was selected due to apartment and complex residents account for more than 70% of the population with a high percentage of those aged 65 or older (Figure 3). We selected Nowon-gu, with 77.1% of residents aged 65 or older, and Kangnam-Gu, with 66.90% of residents aged 65 or older. Gu was selected according to two conditions of the ratio (70%) of apartment residents and complexes with a high percentage of those aged 65 or older (Figure 3). Of the two selected Gus, Nowon-gu had 77.1% of residents aged 65 or older, and Kangnam-Gu had 66.90% of residents aged 65 or older. In each selected Dong, almost 90% of senior citizens aged 65 or older lived in apartments. The administrative Dong met the standards of the NORC with an absolute population of more than 2500. These Dongs are representative of apartment complexes in Seoul, which were built during the construction of 2 million housing units in the late 1980s during a large-scale supply period of apartments in South Korea. More than 25 years have passed since the construction of these apartments, and in the case of elderly people living in apartments, most of them have lived in the community since they moved in, according to the preliminary interview process.

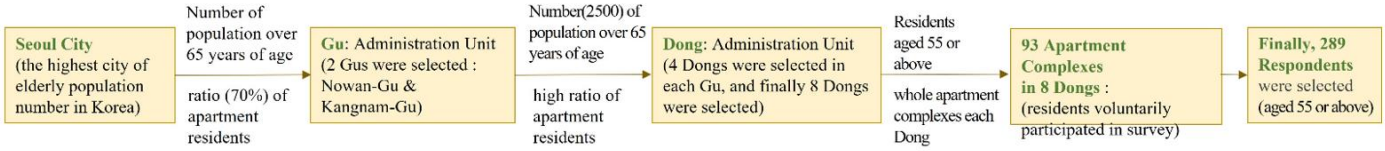


Figure 3. The progressive steps for the selection of apartment complexes and respondents.

Finally, 93 apartment complexes located in eight administrative Dongs were selected as the target of the survey (Figure 3). An overview of the selected apartment complexes is as shown in Table 2. These apartments are older than 25 years on average, and the percentage of those aged 55 or older is 29.18%, which can be seen as a potential NORC area. Therefore, considering the possibility of NORCs in the future, the questionnaire survey was distributed to 330 residents aged 55 or older from these apartment complexes, who voluntarily participated in the survey and we received responses from 289 apartment or multi-family housing residents.

Table 2. Overview of the sampled apartments.

Category	Apartment (9 Complexes)	Condominium Apartment (84 Complexes)	Total (93 Complexes)
Years of building	22.67	26.01	25.14
Ratio of over 55s	48.74%	27.09%	29.18%
Number persons over 55	1750.11	1141.57	1200.22

The survey period was from November 2017 to January 2018, and the survey was conducted by researchers and trained research assistants visiting the apartment complex in person, distributing and retrieving the survey questionnaires, reading them to participants, and filling in responses.

3.2. Measures

This study was based on a quantitative research method via a survey. The AIP intention questions in the questionnaire involved preferences and emotions. The preferences were taken from the study of [28], and the emotions were constructed by referring to the residential attachment tools in previous studies [16,57–59]. The demand for sustainable housing was based on the scope of houses and neighborhoods, and the concept of sustainable living willingness was questioned regarding the preference for sustainable living using two questions about the house and two questions about the neighborhood (Table 4). These questions were measured on 5-point Likert scale. Higher scores mean higher sustainability needs, and the Cronbach's α for the four questions of the AIP scale used in this study was 0.865, which is higher than 0.800.

The questionnaire of community facility needs for AIP measured twenty-eight items with a 5-point Likert scale, as shown in Table 8. These thirty-four questionnaire items, consisted of the following eight categories: meals, purchases, amenities, public needs, medical needs, elderly-related needs, leisure and religion, and health care needs, and were taken from the studies in [60–63]. Cronbach's α for community facility needs were verified in seven categories over 0.800, and one category was nearly 0.800. The reliability of the questionnaire was $\alpha = 0.831$ (meals, with four questions), $\alpha = 0.830$ (purchases, with six questions), $\alpha = 0.758$(amenities, with four questions), $\alpha = 0.849$ (public needs, with four questions), $\alpha = 0.941$ (medical needs, with two questions), $\alpha = 0.850$ (elderly-related needs, with four questions), $\alpha = 0.805$ (leisure and religion, with five questions), and $\alpha = 0.807$ (health care needs, with five questions).

Additionally, the supportive services questionnaire contained twenty-three items in communities for AIP (Table 8), which were selected from an NORC service program for aging [56]. These service needs were measured on a 5-point Likert scale. The reliability of this measure, Cronbach's α for twenty-three questions, was verified as 0.953, which is over 0.800.

We used SPSS 26.0 for the descriptive statistical analysis (research 1), and a *t*-test, correlation and ANOVA (research 2, 3, 4), and factor analysis and multiple regression analysis (research 5) were performed.

3.3. Overview of the Respondents

The survey subjects were from areas with potential for the formation of naturally occurring elderly communities in Seoul. The survey included responses from 289 apartment dwellers aged 55 and older.

As shown in Table 2, 75.8% of women and 77.4% of respondents were unemployed; 41.7% were college graduates or higher; and 74.3% of those surveyed had received higher education. Regarding the family type, 36.3% of couples lived alone; 34.6% of couples lived with other family members. A total of 70.9% of them had their spouses. A total of 23.9% of single people lived alone, and 5.2% of singles lived with other family members. Monthly income was divided into five categories (Table 3). The most common answer (38.6%) was more than 1 million won and less than 3 million won, followed by 34.3% for more than 3 million won and 27.1% for less than 1 million won. A large proportion (79.5%) of the respondents lived in their own homes, and 40.6% of them were in good health.

Table 3. Background of respondents.

Category	Levels	Frequency (%)
Gender (n = 289)	Male	70 (24.2)
	Female	210 (75.8)
Job (n = 266)	Employed	60 (22.6)
	Unemployed	206 (77.4)
Education (n = 288)	Elementary school graduate	42 (14.6)
	Middle school graduate	32 (11.1)
	High school graduate	94 (32.6)
	College graduate or higher	120 (41.7)
Family types (n = 289)	Couple	105 (36.3)
	Single	69 (23.9)
	Couple + blended family	100 (34.6)
	Single + blended family	15 (5.2)
Monthly income (n = 277)	$\leq$1,000,000 KRW	75 (27.1)
	1,000,000 < income $\leq$ 3,000,000 KRW	107 (38.6)
	3,000,000 < income $\leq$ 5,000,000 KRW	59 (21.3)
	5,000,000 < income $\leq$ 7,000,000 KRW	21 (7.6)
	7,000,000 KRW <	15 (5.4)
Ownership (n = 283)	Owned house	225 (79.5)
	Rent house	58 (20.5)
Subjective health condition (n = 266)	Very healthy	31 (11.7)
	Health	108 (40.6)
	Normal	100 (37.6)
	Weak	25 (9.4)
	Very weak	2 (0.8)

4. Results

4.1. Results from Purpose 1: Willingness to Age in Place and Reasons for This

The willingness to choose sustainable living was based on a range of houses and neighborhoods, and questions about AIP as a concept were in the form of preferences for sustainable living and feelings about moving (relocating). As shown in Table 4, the result for continued residence in their current house and neighborhood was average (3.61). The feelings about AIP related to a house (M = 3.96) were higher than the preference for it (M = 3.51), but the preference for AIP related to a neighborhood (M = 3.66) was higher than the feelings for it (M = 3.49). Calculating the average, the AIP related to a house (M = 3.74) was higher than the AIP related to a neighborhood (M = 3.58).

Table 4. Willingness to age in place.

Willingness to Age in Place	Questionnaire Measuring Items	*n*	Mean (Std)
Preference	I want to live in this house until I die.	279	3.51 (1.388)
	I want to live in or near this neighborhood until I die.	280	3.66 (1.243)
Feeling	I'll miss home very much when I leave my current home.	284	3.96 (1.104)
	It will be very difficult for me to leave my neighborhood or nearby area.	284	3.49 (1.245)
	Total	270	3.61 (1.046)

Then, the survey subjects were asked about the reasons for their intention to continue their residence as shown in Table 5. The reasons were classified into the following: relationship with family, friends and neighbors, neighborhood environment, and home or house environment. After finding out why he wanted to continue living in his current neighborhood, one man mentioned that they had good amenities (M = 3.65), a natural environment (M = 3.62), a house he liked (M = 3.43), friends in the neighborhood (M = 3.41),

and many neighbors (M = 3.23). For the house and neighborhood, the elderly mentioned that family members were nearby (M = 3.14 points). This finding was combined with the family type (39.8%) of respondents, so these findings showed that these elders live together with family. These reasons were highly focused on neighborhood environmental factors such as amenities and the natural environment. For AIP, friends were more highly valued than family in the neighborhood. Additionally, personal or social relationships are important for the elderly.

Table 5. Reasons to keep living in or near one's current house or neighborhood.

Contents	Mean (Std)
Relationship	
It's because my family is close to me.	3.14 (1.410)
I have a friend in this neighborhood.	3.41 (1.356)
It is because there are many neighbors, such as senior citizen centers and social gatherings.	3.23 (1.382)
Neighborhood environment	
There is someone that can help professionally in this neighborhood.	3.11 (1.383)
There is a religious facility I go to in this neighborhood.	2.85 (1.417)
The surrounding amenities are good.	3.65 (1.189)
The surrounding natural environment is good.	3.62 (1.223)
Home/House environment	
I just like this house.	3.43 (1.227)
I like this house more than anywhere else.	3.73 (1.147)
This house is very meaningful to me.	3.87(1.160)
It is because I'm happy to be in this house.	3.93(0.990)

Moreover, respondents thought that the house was their home, and they liked it (M = 3.43). They liked the house more than anywhere else (M = 3.87). In other words, they greatly enjoy their home, and the house was very meaningful for them (M = 3.87). Most importantly, that they liked their home was the most important reason for their being happy in the house (M = 3.93). These findings of the relationship of AIP to the house showed emotional bonding to their house to be the key reason.

4.2. Results from Purpose 2: Relationship between Housing Attributes and Willingness to Age in Place

The factors related to AIP in relation to residential attributes were home ownership, the length of residence in the neighborhood where they currently live, and the length of residence in the house. Homeownership was found to be more likely in sustainable living (M = 3.70) than home rental (M = 3.37) (Table 6). In addition, an analysis of the correlation between the period of residence and the willingness to age in place showed that the period of residence in the current house (r = 0.368) and the period of residence in the current neighborhood (r = 0.327) were also weakly correlated (Table 7). For reference, the average length of residence in the current neighborhood was 20.4 years, and the average length of residence in the current house was 13.5 years. The dwelling period in the neighborhood was over 20 years and was longer in the neighborhood than in the house.

Table 6. Relation between house ownership and willingness to age in place.

House Ownership	Owned (n = 215)	Rent (n = 55)	t-Value
Mean (Std)	3.70(0.42)	3.37(0.52)	t = 2.085 *

* $p < 0.05$.

Table 7. Correlation between housing/resident attributes and willingness to age in place.

Housing /Resident Attributes	Willingness to Age in Place
Living period in current house	Pearson's r = 0.368 **
Living period in current neighborhood	Pearson's r = 0.327 **
Age of residents	Pearson's r = 0.270 **

** $p < 0.01$.

The relation between the characteristics of residents and willingness to age in place showed that gender, occupation or lack of, education level, family type, monthly income, and subjective health condition were not significant. Only the age of residents was weakly correlated with AIP intention (r = 0.270), as shown in Table 7.

4.3. Results from Purpose 3: Relationship between Community Facilities and Willingness to Age in Place

The need for community facilities in order to age in place was analyzed (Figure 4) (Table 8). The needs with an average value over 4.0 were pharmacies (M = 4.20) and hospital/oriental medical clinics (M = 4.23), which were higher than other community facilities. The next facility needs of respondents with an average value over 3.5 were a bank (M = 3.94), walking trails (M = 3.93), administrative offices (M = 3.89), a police station (M = 3.84), a supermarket (M = 3.81), a senior welfare center (M = 3.79), a public park (M = 3.78), a nursing home (M = 3.72), a large supermarket (M = 3.68), a post office (M = 3.68), a rest area (M = 3.66), and an ATM (M = 3.56).

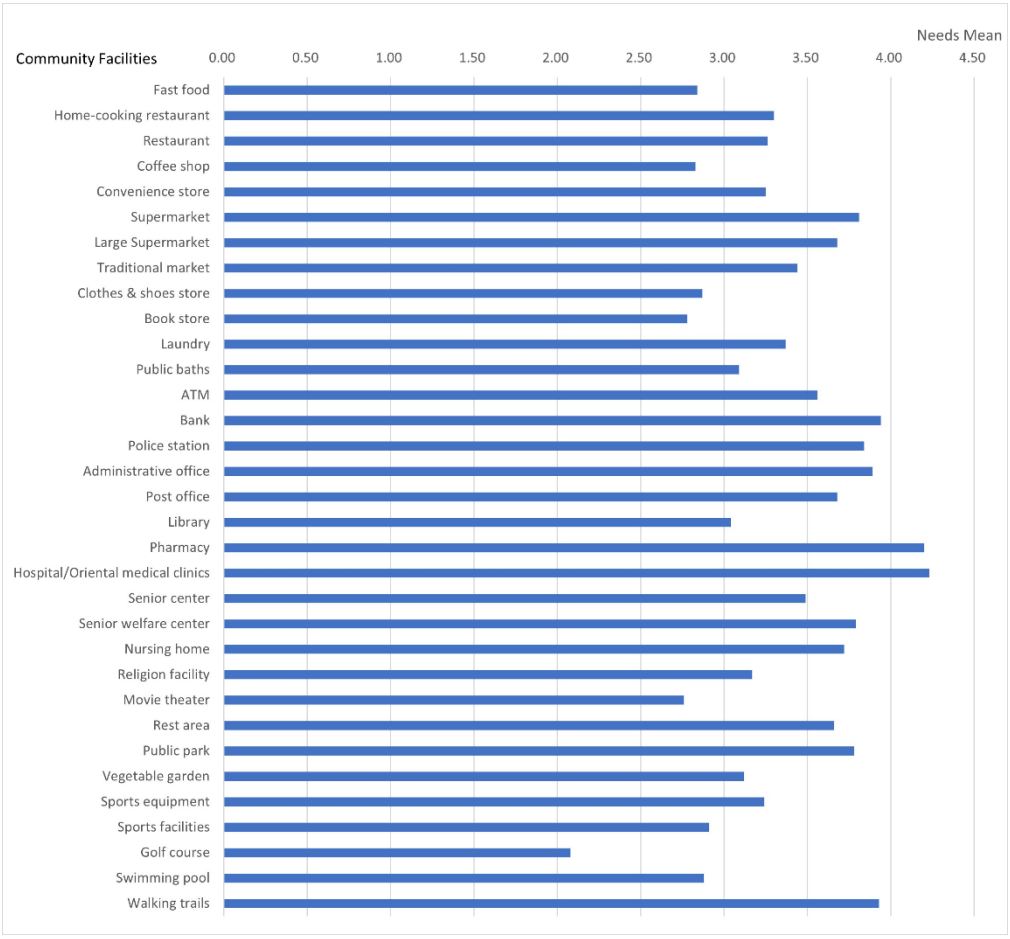


Figure 4. The needs of community facilities.

Table 8. Need for community facilities and the correlation with willingness to age in place.

Factors	Communities	Needs Mean (Std)	Pearson's r
Meal	Fast food	2.84 (1.397)	0.116
	Home-cooking restaurant	3.30 (1.340)	0.193 **
	Restaurant	3.26 (1.331)	0.138 *
	Coffee shop	2.83 (1.380)	−0.014
Purchasing	Convenience store	3.25 (1.379)	0.092
	Supermarket	3.81 (1.283)	0.173 **
	Large supermarket	3.68 (1.356)	0.169 **
	Traditional market	3.44 (1.402)	0.119
	Clothes and shoes store	2.87 (1.297)	0.121 *
	Book store	2.78 (1.400)	−0.021
Amenity	Laundry	3.37 (1.387)	0.073
	Public baths	3.09 (1.365)	0.122 *
	ATM	3.56 (1.369)	0.039
	Bank	3.94 (1.224)	0.155 *
Public	Police station	3.84 (1.297)	0.185 **
	Administrative office	3.89 (1.219)	0.171 **
	Post office	3.68 (1.297)	0.135 *
	Library	3.04 (1.487)	−0.007
Medical	Pharmacy	4.20 (1.173)	0.186 **
	Hospital/Oriental medical clinics	4.23 (1.144)	0.205 **
Elderly-related	Senior center	3.49 (1.434)	0.220 **
	Senior welfare center	3.79 (1.329)	0.351 **
	Nursing home	3.72 (1.283)	0.353 **
Leisure & religion	Religion facility	3.17 (1.427)	0.134 *
	Movie theater	2.76 (1.423)	−0.078
	Rest area	3.66 (1.330)	0.150 *
	Public park	3.78 (1.359)	0.108
	Vegetable garden	3.12 (1.416)	0.045
Health	Sports equipment	3.24 (1.413)	0.056
	Sports facilities	2.91 (1.434)	0.019
	Golf course	2.08 (1.323)	−0.073
	Swimming pool	2.88 (1.399)	0.052
	Walking trails	3.93 (1.287)	0.090

** $p < 0.01$ * $p < 0.05$.

Community facilities with an average of > 3.5 were analyzed regarding the correlation with willingness to age in place. The significant results (Pearson's r $\geq$ 0.200) were hospital/oriental medical clinics (r = 0.205), a senior center (r = 0.220), a senior welfare center (r = 0.351), and a nursing home (r = 0.353). The facilities related to elderly-related and medical categories were weakly correlated with willingness to age in place. Thus, these are important facilities related to sustainable living in aging communities.

However, home-cooking restaurants (r = 0.193) were newly shown to have a correlation with willingness to age in place. Elderly people may find it difficult to cook every meal everyday, so meals are related to socializing in Korean aging communities. Other facilities such as a pharmacy (r = 0.186), a police station (r = 0.185), and an administrative office (r = 0.171) were considered basic facilities to support the elderly's living, and these have a weak correlation with willingness to age in place.

4.4. Results from Purpose 4: Relationship between Services and Willingness to Age in Place

Analyzing the support service needs in the community for AIP, items with an average mean of >3.50 included most of the surveyed service needs items: 17 of 23 items (Figure 5). This result (Table 9) showed that elders needed many services to AIP. Among the support

services needed for AIP, many areas for participation in various community events or activities (M = 3.49); community day care services (M = 3.42); volunteer participation (M = 3.39); financial consulting/management (M = 3.04); legal consulting (M = 2.97); and shopping for clothes, shoes, and daily necessities (M = 3.15) were of low importance. However, of the service needs with an average mean of <3.50, consulting in professional areas and volunteer participation were not correlated with AIP.

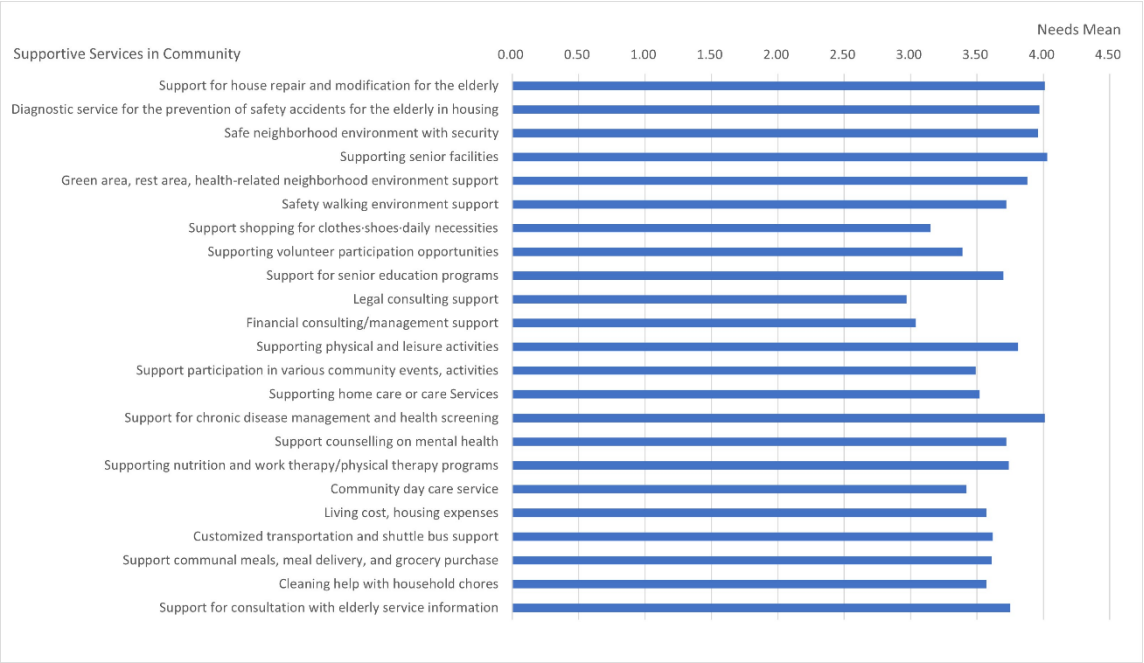


Figure 5. Supportive services in the community.

Table 9. Need for services and the correlation with willingness to age in place.

Needs for Services	Mean (Std)	Pearson's r
Support for consultation with service information for the elderly	3.75 (1.205)	0.186 **
Cleaning help with household chores	3.57 (1.262)	0.185 **
Support for communal meals, meal delivery, and grocery purchase	3.61 (1.167)	0.177 **
Support for shopping for clothes, shoes, and daily necessities	3.15 (1.321)	0.160 **
Customized transportation and shuttle bus support	3.62 (1.223)	0.218 **
Living cost, housing expenses	3.57 (1.316)	0.184 **
Community day care service	3.42 (1.311)	0.126 *
Supporting nutrition and work therapy/physical therapy programs	3.74 (1.202)	0.262 **
Support for counselling on mental health	3.72 (1.212)	0.197 *
Support for chronic disease management and health screening	4.01 (1.063)	0.285 **
Supporting home care or care services	3.52 (1.382)	0.166 **
Support for participation in various community events and activities	3.49 (1.237)	0.165 **
Supporting physical and leisure activities	3.81 (1.154)	0.200 **
Financial consulting/management support	3.04 (1.345)	−0.028
Legal consulting support	2.97 (1.343)	0.025
Support for senior education programs	3.70 (1.218)	0.244 **
Supporting volunteer participation opportunities	3.39 (1.268)	0.260
Safe walking environment support	3.72 (1.188)	0.215 **
Green areas, rest areas, health-related neighborhood environment support	3.88 (1.166)	0.186 **
Supporting senior facilities	4.03 (1.014)	0.269 **
Safe neighborhood environment with security	3.96 (1.066)	0.283 **
Diagnostic service for the prevention of safety accidents for the elderly in housing	3.97 (1.052)	0.260 **
Support for house repair and modification for the elderly	4.01 (1.088)	0.216 **

** $p < 0.01$ * $p < 0.05$.

Service needs with means of 3.50 or higher were consultations (M = 3.75), cleaning help (M = 3.57), meals (M = 3.61), transportation (M = 3.62), living costs or housing expenses (M = 3.57), nutrition and work therapy (M = 3.74), health screening (M = 4.01), home care or care services (M = 3.52), physical and leisure activities (M = 3.81), education programs (M = 3,70), walking environment (M = 3.72), senior facilities (M = 4.03), green areas, rest areas, a health-related neighborhood (M = 3.88), a safe neighborhood (M = 3.96), housing safety accident prevention diagnosis (M = 3.97), and home repair (M = 4.01), which were found to be significantly correlated with sustainable residence. However, the Person's correlation r value ($r < 0.30$) was low, and their relationship to AIP was thus weak. Among these results, the relationship between residential services (such as housing safety, accident prevention diagnosis, and home repair) and AIP was newly found. This relationship had not been demonstrated in prior studies.

Focusing on items with Pearson's r = 0.200 or higher and a need mean of 3.50 or higher, chronic disease management and health screening support were the most correlated to AIP (r = 0.286), and the need mean value of this item was 4.01. In addition, there was a social welfare service for the elderly to carry out their daily lives in the community. This involved the movement and transportation of the elderly, health maintenance of the elderly, physical leisure activities, and education program support, i.e., customized transportation and shuttle bus support (r = 0.218, M = 3.62), nutrition and occupational therapy/physical therapy program support (r = 0.262, M = 3.74), physical and leisure support (r = 0.200, M = 3.81), and education program support for the elderly (r = 0.244, M = 3.70). Among the services related to daily living support, housing expenses support among the living expenses was also found to have low correlation (r = 0.184).

The analysis of this study showed that support for residential services centered on the physical environment, other than welfare services for the elderly, was related to sustainable residence. There was a possibility that willingness to AIP and elderly residential services were related, but no empirical relationship was identified. In this study, we tried to prove this and also tried to prove that residential services for the elderly had a slightly higher correlation coefficient of continuous residence. The correlation of these was a little higher than that of the existing welfare services for the elderly, which showed that residential services were very important for the elderly. Specifically, physical environment-oriented residential services support a safe walking environment (r = 0. 215, M = 3.72 points), elderly facility support (r = 0.269, need mean value = 4.03), a secure complex environment (r = 0. 283, M = 3.96), home-safety accident-prevention diagnosis services (r = 0.260, M = 3.97), and house repair and modification support. Other items related to residential services in the physical environment were green or rest areas. The health-related neighborhood environment (r = 0.186) and housing expenses support (r = 0.184) were also low among the services related to daily living support. The green or rest areas refer to healthy spaces in the community such parks, gardens, and woods. The housing expenses support refers to housing vouchers or housing benefits provided to the elderly group from government support related to water, electricity, heating and cooling, maintenance, and rental costs.

4.5. Results from Purpose 5: Factors Affecting Willingness to Age in Place

The final purpose of this study was to identify variables that affect the willingness to AIP, and then to respond to resident needs in aging communities. However, there were too many community facility and service need items that were significantly correlated with AIP, so these were subjected to factor analysis, and the number was reduced (Tables 10 and 11). Next, regression analysis was performed using the factors from the factor analysis results as independent variables, and the willingness to AIP as the dependent variable.

Table 10. Factor analysis on the need for community facilities related to age in place.

Factors	Factor 1	Factor 2	Factor 3
Community Facilities Needs	**Medical**	**Public and Elderly Related**	**Restaurant and Purchases**
Home-cooking restaurant	0.155	0.216	***0.639***
Restaurant	0.144	0.121	***0.834***
Supermarket	0.595	0.186	***0.514***
Large supermarket	0.342	0.094	***0.725***
Clothes and shoes store	0.034	0.577	***0.602***
Senior center	0.353	***0.781***	0.139
Senior welfare center	0.495	***0.633***	0.104
Nursing home	0.411	***0.627***	0.066
Police office	0.569	***0.593***	0.245
Community center	0.620	***0.565***	0.238
Post office	0.487	***0.543***	0.416
Pharmacy	***0.859***	0.314	0.176
Hospital/Oriental medical clinics	***0.860***	0.297	0.195
Bank	***0.790***	0.212	0.300
Religion facilities	0.224	0.438	0.443
Baths	0.093	0.726	0.374
Rest area	0.351	0.512	0.464

Factor extraction method: principal components analysis. Rotation method: Varimax.

Table 11. Factor analysis on the need for services related to aging in place.

Factor Items of Services Need	Factor1 Health and Daily Living Support Services	Factor2 Housing Services	Factor3 Activities and Education Support Services
Support for consultation with service information for the elderly	***0.549***	0.195	0.347
Cleaning help with household chores	***0.790***	0.186	0.188
Communal meals, meal delivery, and grocery purchase support	***0.807***	0.303	0.113
Customized transportation and shuttle bus support	***0.761***	0.234	0.202
Living cost, housing cost	***0.611***	0.430	0.012
Community day care services	***0.690***	0.168	0.419
Supporting nutrition and work therapy/physical therapy programs	***0.641***	0.356	0.399
Support for counselling on mental health	***0.561***	0.323	0.408
Support for chronic disease management and medical examination	***0.545***	0.483	0.365
Supporting home care or care services	***0.698***	0.070	0.407
Support for participation in various community events and activities	0.291	0.172	***0.806***
Supporting physical and leisure activities	0.201	0.283	***0.788***
Support for senior education programs	0.335	0.209	***0.685***
Support for shopping for clothes, shoes, and daily necessities	0.381	0.279	***0.507***
Safe walking environment support	0.202	***0.603***	0.545
Green area, rest, health-related neighborhood environment support	0.090	***0.624***	0.533
Supporting senior facilities	0.320	***0.742***	0.330
Safe neighborhood environment for security	0.227	***0.791***	0.348
Diagnostic service for the prevention of safety accidents for the elderly in housing	0.296	***0.847***	0.177
Support for home repair and modification for the elderly	0.301	***0.785***	0.190

First, for community facilities and services with many variables, the variables were reduced by factor analysis before conducting multiple regression. As a result of analyzing 17 items relating to "aging in place" among necessary community facilities, three factors were extracted and named medical facilities, public and senior facilities, and restaurant and purchasing facilities (Table 10). In addition, 20 items among services relating to "aging in place" were extracted and named health and daily living support services, housing services, activities, and education support services (Table 11).

The results are as follows:

Multiple regression analyses were conducted focusing on factors that were statistically significant for three aspects of sustainability: residential conditions, necessary community facilities, and necessary services.

As a result of the multiple regression analysis, there were four significant models (Table 12), of which we chose the one with the greatest explanatory power. The explanatory power of the model 4 was R^2 = 0.208 and adjusted R^2 = 0.194, as shown in Table 12. This adjusted R^2 value is not very high. This means that the fitness of model 4 is about 20%. Looking at the model, the dependent variable AIP and the independent variables that had a significant effect were the period of living in the house and duration of living in the neighborhood among the housing factors (ownership, duration of living in the house, and duration of living in the neighborhood). Independent variables in community facilities were not shown to affect the dependent variable of willingness to age in place. Independent variables among services for NORC included housing services and activities, education support services. Participatory activity support services among community services affected the dependent variable of willingness to age in place.

Table 12. Model summary of multiple regression analysis by the stepwise method.

Model Summary					Statistics				
Model	**R**	**R^2**	**Adjusted R^2**	**Std. Error of the Estimate**	**R^2 Change**	**F Value**	**df1**	**df2**	**Sig. F**
1	0.356 [a]	0.127	0.123	0.96498	0.127	34.631	1	238	0.0000
2	0.404 [b]	0.163	0.156	0.94696	0.036	23.055	2	237	0.0000
3	0.433 [c]	0.188	0.178	0.93467	0.025	18.201	3	236	0.0000
4	0.456 [d]	0.208	0.194	0.92503	0.020	15.422	4	235	0.0000

[a]. Predictors: (Constant), Living period in house. [b]. Predictors: (Constant), Living period in house, housing service. [c]. Predictors: (Constant), Living period in house, housing service, living period in neighborhood. [d]. Predictors: (Constant), Living period in house, housing service, living period of neighborhood, support services for education and participation activities.

Looking at the independent variables influencing willingness to age in place in model 4 (Table 13), the standardization coefficient β of the duration of living in the current house (β = 0.261) was the highest among four variables, and the next were residential services (β = 0.186), period of living in the neighborhood (β = 0.181), education and participation support (β = 0.142), which appeared to be influential, in that order. The Durbin–Watson value was not nearly 0 or 4, but nearly 2, so the multicollinearity verified independence among four independent variables.

Table 13. Multiple regression analysis of variables affecting willingness to age in place (model 4).

Model 4 [a]	Unstandardized Coefficients		Standardized Coefficients	*t*-Value
	B	Std. Error	β	
(constant)	2.887	0.130		22.201 ***
Living period in house	0.031	0.008	0.261	3.892 ***
Housing service	0.188	0.059	0.186	3.192 **
Living period in neighborhood	0.016	0.006	0.181	2.705 **
Support service for education and participation activities	0.145	0.059	0.142	2.438 *
$R = 0.456$, $R^2 = 0.208$, Adjusted $R^2 = 0.194$. F-value = 15.422 ***, Durbin–Watson = 1.526.				

[a]. Dependent variable: AIP. *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$.

The living period in the house was the highest explanatory determinant affecting aging in place. The second determinants of AIP were two variables with almost same β-value. One was housing services related to safety and health in the home and neighborhood, and the other was the living period in the neighborhood. The third determinant of AIP was support services for education and participation activities. Through this result of model 4, these factors positively allow the elderly to continue to live in their current residential environment and to enhance their quality of life.

5. Discussion and Conclusions

5.1. Discussion

This study aimed to reveal the willingness to age in place of residents aged 55 and older living in NORC areas and to identify the factors affecting their sustainable residence. In a quantitative study, 289 residents aged 55 or older were surveyed with a questionnaire in multi-family housing areas with the potential for becoming naturally occurring senior communities in Seoul. Data were analyzed using descriptive statistics, Pearson's correlation, *t*-test, ANOVA, factor analysis, and multiple regression with SPSS 26.0.

Based on the results, discussions concerning Korean NORC's AIP are presented by comparing literature reviews, as follows.

Korean residents of apartments, a popular and preferred housing type in Korea, show a high AIP score (3.61/5.00). The strong preference for elderly AIP is found in existing studies [6,35–37], and this study is consistent with their results. The reasons for intending to AIP found in this study are also presented as feelings of attachment due to the neighborhood's physical environment and relationships with people.

This is the same result referring to relationships with people and attachments to homes as found in a previous study [2,52]. The neighborhood environment was mentioned as supporting elderly life independence due to safety and familiarity [2], but this study attributes the presence of good amenity facilities to intention to AIP. In other words, while older people perceive the goal of intending AIP through the environment leading to independent living, the NORC residents of this study perceived the provision of convenient support facilities as a reason for AIP, which is a different result from that of a previous study [2–4].

Factors affecting the sustainable living of AIP in NORC areas were identified by their residential attributes, community facility needs, and residential service needs. Residential characteristics have been shown to correlate with whether a house is owned, the length of residence in the neighborhood where a person currently lived, and the length of residence in a house (or home if not house). The result shows AIP trends as the age increases, indicating AIP intention for residents in NORC areas. The finding that age attributes are related to AIP reaffirms the results of previous studies [28,30]. This result shows that the assumption in this study that older people tend to continue to live where they have previously lived was appropriate. Additionally, this is in line with studies showing that older people in NORC are more willing to continue living in place [50,53,56].

It was also shown, similar to previous research, that living in an owned home was related continued residence [26,28]. The result of a previous study [26] showed that the length of residence in the home is also related to AIP. In this study, they showed that the dwelling period in the neighborhood as well as housing is related to AIP. Expanding the residence period from housing to the neighborhood and indicating that the residential period is related to AIP shows that the scope of the AIP covers the neighborhood, not only the house, so it is meaningful. This can explain the result from a study [64] in which neighborhood attachment was shown to be related to the period of local residence and has been expanded to AIP.

Facilities that showed a correlation with community facility needs were identified as elderly-related facilities. This result shows that the connection between community facilities and intention to AIP is the same as that of previous studies [6,17,32,36]. However, previous studies emphasized the accessibility of community facilities for the convenient living of the elderly, and this study identified the necessity of facilities. The kinds of community facilities were identified regarding whether they were necessary for AIP, and their relevance to intention to AIP was analyzed to identify what community facilities were needed for AIP. The community facilities identified through this are presented with facilities that need to be improved to be NORC complexes, which differ from previous studies in their interpretations. NORC is not a planned housing facility, so this suggests the need for community facilities to include places where home-cooked meals can be provided to the resident as they age, because meals are a basic need for people to live. For example, community facilities providing meals which support not only group meals but also home-cooked meals.

In terms of supportive service factors, walking environments, green areas, rest and health-related neighborhood environments, elderly facility support, security prevention safety, safety accident prevention diagnostic services, and customized housing repair and modification support are correlated with sustainable residence and AIP. In the relationship between community services and AIP, the need for physical and environmental services is the same concept as the services presented by the WHO as necessary to assist active aging [3,4]. Community services that maintain walkability [12,29,38–41], community accessibility, and health safety [6,14] are related to the quality of life of the elderly due to continuous residence. As a result of research in the NORC area, this study identified the need for environmental support services to be institutionalized in the neighborhood so that the elderly can also live independently in an NORC community. In addition, we also identified the need for environmental support services to be carried out by expanding not only the community environment but also housing to prevent accidents or undertake repairs. The implementation of these services is costly for residents, and respondents also demand support services for living costs and housing expenses. However, since the South Korean situation has economic limitations for housing support, it is necessary to expand to housing first to make a consensus through public discussion. As NORC in the U.S. supports housing services through NORC programs, we believe that it is necessary to review this in preparation for aging in South Korea.

The factors related to willingness to age in place were extracted, and three aspects of them (housing attributes, community facility needs, and supportive service needs) were identified via multiple regression analysis. In brief, AIP was affected by the duration of residence in a house or neighborhood, residential services, and education and participation services for the elderly. The residential services related to willingness to AIP include support for a diagnostic service for accident avoidance of the elderly, residential home repair and modification support, secure neighborhood environment, safe walking support, facilities for the support of the elderly, green and rest areas, and healthy neighborhood environment support for the houses and the neighborhood community. In addition, education and participation services for the elderly in communities include participation in various community events and activities; physical and leisure activities; senior education programs; and shopping for clothes, shoes, and daily necessities. While the duration of

living in a residence/house and neighborhood had been demonstrated to affect AIP in a previous study [12], among the needs for supportive services, the impact of residential services or elderly education and activity support services on willingness to age in place was a novel finding in this empirical study of South Korea. This means that NORC is supported by program services that allow the elderly of the NORC continue to live in their area, so supportive services related to housing or community are important in AIP.

5.2. Conclusions

The conclusions of this study can be presented as follows. First, AIP can be enhanced through the support of facilities or supportive services in the residential environment in which the elderly currently live, which contributes to the improvement of quality of life. The elderly continue to live in the existing environment with which they are familiar, and therefore service support for the elderly in a residential environment is very important for their AIP. Second, it has been confirmed that AIP, viewed from an NORC, is a concept in which the physical environment and services support living independently, such as the WHO's concept active aging. Third, like NORC residents in the U.S., potential NORC residents in Korea wanted more AIP support through service support from the residential environment as they become older.

In addition, this study, which identified the factors that strengthen AIP to enhance the lives of the elderly in South Korea, is very meaningful. It suggests the need for a program to diagnose the physical aspects of residential space, especially to prevent safety accidents in housing, and to provide customized support to the elderly to allow them to continue living in their current houses (homes) or neighborhoods. This should be carried out so that elders can walk safely in the community and live a safe and independent life.

The NORC phenomenon is predicted as Korean society is rapidly aging and baby boomers are starting to retire. However, considering that more than half of Korean houses are apartments, this study selected apartment complexes as an NORC area, but detached housing complexes also have a high elderly population. Therefore, the interpretation of the results is limited to apartment complexes, which are an overall phenomenon in South Korea. In future studies, research should continue to identify and compare intention to AIP centered on detached housing complexes.

In order to more clearly demonstrate the sustainability of housing services for the elderly in an NORC area, further research should be conducted on how housing-related services affect AIP in Korea.

Research should also continue to provide institutional support for the elderly's walkability and safety to be secured first in the NORC region. In addition, further research will be conducted to improve the environment according to institutional grounds and prove the degree of improvement in the quality of life of the elderly, which will lead to practical research in the NORC area of Korea.

Author Contributions: Conceptualization, J.-A.P. and B.C.; methods, J.-A.P. and B.C.; software, B.C.; validation, J.-A.P. and B.C.; formal analysis, B.C.; investigation, J.-A.P.; data curation, B.C.; writing—original draft preparation, J.-A.P. and B.C.; writing—review and editing, J.-A.P. and B.C.; supervision, B.C.; project administration, J.-A.P.; funding acquisition, J.-A.P. and B.C. All authors have read and agreed to the published version of the manuscript.

Funding: This work was supported by a National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (No. NRF-2018R1A2B6005965) and (Ministry of Education) (No. NRF-2015R1D1A1A01060900).

Institutional Review Board Statement: IRB No. WKIRB-201710-SB-074.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available because the raw data do not conserve consumer privacy.

Acknowledgments: The data used in this research were collected in 2017. The data were re-analyzed from the perspective of residential services. The original collection of the data was supported by the Korea Research Foundation in 2015 and funded by the government (Ministry of Education) (No. NRF-2015R1D1A1A01060900).

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Lawton, M.P. Competence, environmental press, and the adaptation of older people. In *Aging and the Environment: Theoretical Approaches*; Windley, P.G., Byerts, T.O., Eds.; Springer: New York, NY, USA, 1982; pp. 33–59.
2. Wiles, J.L.; Leibing, A.; Guberman, N.; Reeve, J.; Allen, R.E.S. The meaning of "Aging in Place" to Older People. *Gerontologist* **2011**, *52*, 357–366. [CrossRef]
3. World Health Organization (WHO). Active Ageing: A Policy Framework, Noncommunicable Disease Prevention and Health Promotion. Geneva, Switzerland, 2014. Available online: https://extranet.who.int/agefriendlyworld/wp-content/uploads/2014/06/WHO-Active-Ageing-Framework.pdf (accessed on 14 July 2021).
4. World Health Organization (WHO). Decade of Healthy Ageing 2020–2030, Ageing and Life Course. Geneva, Switzerland, 2019. Available online: https://cdn.who.int/media/docs/default-source/documents/decade-of-health-ageing/decade-healthy-ageing-update-march-2019.pdf?sfvrsn=5a6d0e5c_2 (accessed on 14 July 2021).
5. Jonson-Carroll, K. Factots that influence pre-retiree's propensity to move at retirement. *J. Hous. Elder.* **1995**, *11*, 85–105. [CrossRef]
6. Mulliner, E.; Riley, M.; Maliene, V. Older people's preferences for housing and environment characteristics. *Sustainability* **2020**, *12*, 5723. [CrossRef]
7. Rioux, L.; Werner, C. Residential satisfaction among aging people living in place. *J. Environ. Psychol.* **2011**, *31*, 158–169. [CrossRef]
8. Feng, I.; Chen, J.; Zhu, B.; Xiong, L. Assessment of and improvement strategies for the housing of healthy elderly: Improving quality of life. *Sustainability* **2018**, *10*, 722. [CrossRef]
9. Ahn, M.; Kang, J.; Kwon, H. The concept of aging in place as intention. *Gerontologist* **2020**, *60*, 50–59. [CrossRef]
10. Choi, Y. Understanding aging in place: Home and community features, perceived age-friendiness of community, and intention toward aging in place. *Gerontologist* **2021**, gnab070. [CrossRef]
11. Ahn, M.; Kwon, H.; Kang, J. Supporting Aging-in-Place Well: Findings From a Cluster Analysis of the Reasons for Aging-in-Place and Perceptions of Well-Being. *J. Appl. Gerontol.* **2020**, *39*, 3–15. [CrossRef]
12. Tao, Y.; Zhang, W.; Gou, Z.; Jiang, B.; Qi, Y. Planning walkable neighborhoods for "aging in place": Lessons from five aging-friendly districts in Singapore. *Sustainability* **2021**, *13*, 1742. [CrossRef]
13. Zhang, F.; Li, D.; Chan, A. Diverse contributions of multiple mediators to the impact of perceived neighborhood environment on the overall quality of life of community-dwelling seniors: A cross-sectional study in nanjing. *Habitat Int.* **2020**, *104*, 102253. [CrossRef]
14. Chippendale, T. Outdoor falls prevention strategy use and neighborhood walk ability among naturally occurring retirement community resident. *Health Educ. Behav.* **2020**, *47*, 1–8.
15. Greenfield, E. Support from neighbors and aging in place: Can NORC programs make a difference? *Gerontologist* **2016**, *56*, 651–659. [CrossRef]
16. Choi, B.; Park, J. Characteristics of the physical housing environments of the potential naturally occurring retirement communities: Focused on condominium apartment house in nowon-gu and gangnam-gu, seoul. *J. Korean Hous. Assoc.* **2017**, *28*, 33–40. [CrossRef]
17. Kwon, O.; Lee, Y.; Ha, H.; Kim, J.; Yeom, H. Reasons for seniors' aging in place within their community. *Fam. Environ. Res.* **2014**, *52*, 285–299. [CrossRef]
18. Hwang, E.; Brossoie, N.; Jeong, J.; Kim, I. The impacts of the neighborhood built environment on social capital for middle-aged and elderly korean. *Sustainability* **2021**, *13*, 756. [CrossRef]
19. Lawton, M. Housing and Living Environment for Older People. In *Handbook of Aging and the Social Science*, 2nd ed.; van Nostrand Reinhold: New York, NY, USA, 1985.
20. Pastalan, L.A. Designing a Human Environment for the Frail Elderly. *J. Archit. Educ.* **1990**, *31*, 11–13. [CrossRef]
21. Manion, P.; Rantz, M. Relocation stress syndrome: A comprehensive plan for long-term care admissions: The relocation stress syndrome diagnosis helps nurses identify patients at risk. *Geriatr. Nurs.* **1995**, *16*, 108–112. [CrossRef]
22. Ottoni, C.A.; Sims-Gould, J.; Winters, M.; Heijnen, M.; McKay, H.A. "Benches become like porches": Built and social environment influences on older adults' experiences of mobility and well-being. *Soc. Sci. Med.* **2016**, *169*, 33–41. [CrossRef]
23. Lebing, A.; Guberman, N.; Wiles, J. Liminal homes: Older people, loss of capacities, and the present future of living spaces. *J. Aging Stud.* **2016**, *37*, 10–19. [CrossRef]
24. Fernández-Portero, C.; Alarcón, D.; Padura, Á.B. Dwelling conditions and life satisfaction of older people through residential satisfaction. *J. Environ. Psychol.* **2017**, *49*, 1–7. [CrossRef]
25. Hong, S. Housing management behavior of the elderly: Focus on the causal effects of housing satisfaction and housing selections. *J. Korean Fam. Resour. Manag.* **2001**, *15*, 1–21.
26. Kwak, I. A study on the factors affecting decisions by the super-aged on their preference of living with their children and continuously living in their current houses. *J. Korean Hous. Assoc.* **2011**, *2*, 83–95. [CrossRef]

27. Gonyea, J.G. Housing, health and quality of life. In *The Handbook of Aging in Social Work*; Berkman, B., Ed.; Springer: New York, NY, USA, 2006; pp. 559–567.
28. Kim, S.; Moon, K.; Oh, C. Searching for policy orientation by the analysis of factors affecting aging in place in the aging community. *J. Reg. Stud.* **2015**, *23*, 137–164.
29. Lehning, A. City governments and aging in place: Community design, transportation and housing innovation adoption. *Gerontologist* **2001**, *52*, 345–356. [CrossRef]
30. Kim, S.; Jang, S.; Oh, C.; Choi, S. Developing indicators for building elder-friendly communities in Korea. *J. Korean Gerontol. Soc.* **2014**, *34*, 55–79.
31. Kim, Y. A study on residential remodeling and needs of elderly households to activate "aging in place". *J. Hum. Ecol.* **2006**, *23*, 13–35.
32. Fernasdez, G. Component of the residential environment and socio-demographic characteristics of elderly. *J. Hous. Elder.* **2004**, *13*, 25–49.
33. Hansen, E.B.; Gottschalk, G. What makes older people consider moving house and what makes them move? *Hous. Theory Soc.* **2006**, *23*, 34–54. [CrossRef]
34. Andersson, E.; Abramsson, M.; Malmberg, B. Patterns of changing residential preferences during late adulthood. *Ageing Soc.* **2019**, *39*, 1752–1781. [CrossRef]
35. Abramsson, M.; Andersson, E. Changing Preferences with Ageing—Housing Choices and Housing Plans of Older People. *Hous. Theory Soc.* **2016**, *33*, 217–224.
36. Jong, P.; Rouwendal, J.; Hattum, P.; Brouwer, A. Housing Preferences of an Ageing Population: Investigation in the Diversity Among Dutch Older Adults. *SSRN Electron. J.* **2012**. [CrossRef]
37. Fox, S.; Kenny, L.; Day, M.R.; O'Connell, C.; Finnerty, J.; Timmons, S. Exploring the housing needs of older people in standard and sheltered social housing. *Gerontol. Geriatr. Med.* **2017**, *3*, 1–14. [CrossRef]
38. Seo, Y. A Study of the Senior Serviced Housing for Aging in Place in the Context of Urban. Regeneration. Ph.D. Thesis, Seoul University, Seoul, Korea, 2018.
39. Weis, R.; Julianna, M.; Fahs, M. Promoting active urban aging: A measurement approach to neighborhood walk ability for older adult. *Cities Environ.* **2010**, *3*, 12.
40. Lee, H. Reliability analysis on the assessment indicators for senior walking environment. *J. KIEAE* **2012**, *12*, 69–75.
41. Newton, R.; Ormerod, M.; Burton, E.; Mitchell, L.; Ward-Thompson, C. Increasing independence for older people through good street design. *J. Integr. Care* **2010**, *18*, 24–29. [CrossRef]
42. Meng, H.; Xu, Y.; Dai, J.; Zhang, Y.; Liu, B.; Yang, H. Analyze the Psychological Impact of COVID-19 among the Elderly Population in China and Make Corresponding Suggestions. *Psychiatry Res.* **2020**, *289*, 112983. [CrossRef]
43. Yen, I.H.; Michael, Y.L.; Perdue, L. Neighborhood Environment in Studies of Health of Older Adults: A Systematic Review. *Am. J. Prev. Med.* **2009**, *37*, 455–463. [CrossRef] [PubMed]
44. Stuck, A.E.; Walthert, J.M.; Nikolaus, T.; Büla, J.; Hohmann, C.; Beck, J.C. Risk Factors for Functional Status Decline in Community-Living Elderly People: A Systematic Literature Review. *Soc. Sci. Med.* **1999**, *48*, 445–469. [CrossRef]
45. Holle, V.; Cauwenberg, J.; Bourdeaudhuij, I.; Deforche, B.; Weghe, N.; Dyck, D. Interactions Between Neighborhood Social Environment and Walkability to Explain Belgian Older Adults' Physical Activity and Sedentary Time. *Int. J. Environ. Res. Public Health* **2016**, *13*, 569. [CrossRef] [PubMed]
46. McDonough, K.; Davit, J. It takes a village: Community practice, social work and aging-in-place. *J. Gerontol. Soc. Work.* **2001**, *54*, 528–541. [CrossRef] [PubMed]
47. Fonad, E. Moving to and living in a retirement home: Focusing on elderly people's sense of safety and security. *J. Hous. Elder.* **2006**, *20*, 5–60. [CrossRef]
48. Duncombe, W.; Robbins, M.; Wolf, D.A. Place characteristics and residential location choice among the retirement-age population. *J. Gerontol. Ser. B* **2003**, *58*, S244–S252. [CrossRef]
49. Kaye, H.; Mitchel, P.; Charlene, H. Do noninstitutional long-term care service reduce medical spending? *Health Aff.* **2009**, *28*, 262–272. [CrossRef]
50. Vera, P. Naturally Occurring Retirement Community (NORC) Services Program, Livable New York Resource Manual. 2012. Available online: https://www.academia.edu/24212816/Livable_New_York_Resource_Manual (accessed on 6 June 2021).
51. Greenfield, E.A.; Scharlach, A.E.; Lehning, A.J.; Davitt, J.K.; Graham, C.L. A tale of two community initiatives for promoting aging in place: Similarities and differences in the national implementation of NORC programs and villages. *Gerontologist* **2013**, *53*, 928–938. [CrossRef]
52. Bedney, B.J.; Goldberg, R.B.; Josephson, K. Aging in place in naturally occurring retirement communities: Transforming aging through supportive service programs. *J. Hous. Elder.* **2010**, *24*, 304–321. [CrossRef]
53. Vladeck, F. *A Good Place to Grow Old: New York's Model for NORC Supportive Service Programs*; United Hospital Fund: New York, NY, USA, 2004.
54. Statistics Korea. *2017–2067 Special Estimate of Future Population*; Statistics Korea: Daejeon, Korea, 2019.
55. United Nations. *World Population Prospects: The 2019 Revision*; Department of Economic and Social Affairs Population Division: New York, NY, USA, 2019.
56. Hunt, M.; Gunter-Hunt, G. Naturally Occurring Retirement Communities. *J. Hous. Elder.* **1985**, *3*, 3–21. [CrossRef]

57. Choi, B.; Park, J.; Lee, H. The Development of a measurement method for place attachment and its verification with a housing satisfaction measure: A survey of university students about their homes. *J. Asian Archit. Build. Eng.* **2016**, *15*, 193–200. [CrossRef]
58. Fornara, F.; Bonaiuto, M.; Bonnes, M. Cross-Validation of Abbreviated Perceived Residential Environment Quality (PREQ) and Neighborhood Attachment (NA) Indicators. *Environ. Behav.* **2010**, *42*, 171–196. [CrossRef]
59. Shenk, D.; Kuwahara, K.; Zablotsky, D. Older Women's Attachments to Their Home and Possessions. *J. Aging Stud.* **2004**, *18*, 157–169. [CrossRef]
60. Kang, S.H. A study on the leisure activity and using behavior of neighborhood facilities for the aged. *J. Korean Hous. Assoc.* **1997**, *8*, 177–185.
61. Kim, Y.J.; Lee, S.Y. Study on the consciousness of community facilities for the elderly. *J. Archit. Inst. Korea* **2008**, *24*, 87–98.
62. Lawton, M.P. *Planning and Managing Housing for the Elderly*; John Wiley and Sons: Norman, OK, USA, 1975.
63. Seo, Y.S. Location of elderly housing and neighborhood. *Architecture* **2003**, *47*, 42–48.
64. Lewicka, M. Ways to make people active: The role of place attachment, cultural capital, and neighborhood ties. *J. Environ. Psychol.* **2005**, *25*, 381–395. [CrossRef]