



An Analysis of Urban Preference in Urban type Elderly Housing in Aging in Place - Around Housing Survey and Future Population Projection and Elderly Survey -

Kang, Moon-Chul* · Kim, Young-Hoon**

* Dept. of Architecture, Daejin Univ. South Korea (kangmunchul@naver.com)

** Corresponding author, Dept. of Architecture, Daejin Univ. South Korea (kymyh@daejin.ac.kr)

ABSTRACT

Purpose: In Korea, Aging in Place is underway as an alternative to elderly housing for the aging population. Currently, research is being actively conducted mainly for the baby boomer generation and older generation. There is not much research on various ages that will be needed continuously in elderly housing and aging in place in the future. Therefore, this study suggests aging in place of urban elderly housing through analysis of urban preference of all ages. **Method:** An analysis of prior studies related to elderly housing, Field interpretation about Aging in Place, An analysis of the city preference through the survey of the elderly, Existing Literature Survey, Housing Survey, Future Population Projection, Survey of the elderly and confirmed the necessity of the Aging in Place of urban elderly housing. **Result:** As there are many generations living in the city and many people prefer it, studies on urban elderly housing should be actively conducted and should be studied as Aging in Place that can be used for all ages. In addition, it is necessary to study the advantages and disadvantages of using Aging in Place in the city through domestic or overseas case analysis.

KEYWORD

도시형
노인주거
Aging in place
도시선호도

Urban type
Elderly Housing
Aging in place
Urban Preference

ACCEPTANCE INFO

Received July 24, 2017
Final revision received Sep 4, 2017
Accepted Sep 9, 2017

© 2017 KIEAE Journal

1. Introduction

1.1. Study Background and Purpose

Today, Korea, among OECD member countries, abnormally and quickly enters its population aging society. Population aging has already become a big social issue in the UK, Japan, and other countries, and various solutions have been suggested.

In Korea, as a solution to populating aging in society, elderly housing has intensively and deeply been researched. In particular, the concept 'aging in place' has been suggested as a methodology of the policy on elderly housing. Aging in place is referred to as a type of housing in which a person wants to live in the residence of their choice, for as long as they are able. However, given its theoretical interest, the concept 'aging in place' in the elderly housing policy has yet to be researched much systematically, for some problems of elderly persons, like their economic problem, should be solved in advance¹⁾. Previous and relevant studies mainly focused on the housing and aging in place of baby boomer generation and the elderly generation. For this reason, there is no active research on

housing of various classes in application of the concept 'aging in place'. Therefore, based on the concept 'aging in place', this study tries to use the statistical data about the surveys on the urban preference of all age groups and on their perception in order to suggest the necessity of aging in place for urban elderly housing and the direction of elderly housing.

1.2. Study Method and Scope

This is the fundamental research on aging-in-place for urban elderly housing with all age groups as study subjects. These researchers conducted previous studies on elderly housing, surveyed the terms used legally, analyzed types of elderly housing depending on location conditions, and investigated the analysis on aging-in-place in each field and previous literature.

In Korea Housing Survey, the number of households and a rate of households were analyzed. In a questionnaire survey on households, the desirable region to live, residence preference regions in large cities, small & medium cities, and farming & fishing & mountain villages depending on local areas and income bracket types on the basis of main lifestyles, and desirable lifestyles in urban life and country life were analyzed. Also, the necessity of aging-in-place for urban elderly housing was analyzed depending on differences in the future regional population information in each city and province, population density in the

pISSN 2288-968X, eISSN 2288-9698
<http://dx.doi.org/10.12813/kieae.2017.17.5.005>

1) References: Cho A-ra, Housing Policy for the Elderly and the Meaning of "Aging in Place" in Japan, Journal of the Korean Geographical Society, Oct. 2013; Lee Seung-hoon, the Subjective Expectation and the Meaning of AIP(Aging in Place) of the Elderly in Rural Areas, Journal of the Korean Association for Public Society, Feb. 2017

cadastral statistic graphs of Ministry of Land, Infrastructure, and Transport, the youth population, median-age population, and aged population, and their population ratio in each city and province, the population of all age groups in each city and province through population increase and decrease, and population density. Through the survey of elderly persons conditions and their perception, such as their employment in each city and province, the restriction of their functions, their desire to join an elderly employment program, their suicidal ideation and suicidal attempt rate, count of their children's visits, their satisfaction with relationship with friends and local communities, a rate of their participation in continuing program, and a level of their desire to have a hobby and a leisure activity, the applicability of aging-in-place for elderly housing in each city and province was analyzed.

1.3. Review of Previous Studies

The concept of aging-in-place was used by the American Institute of Architects as the comprehensive term²⁾ of various and all types of buildings which provide a variety of protection and support for elderly persons, ensures them to have their independence and privacy as most as possible, and are equipped with the functions for smooth cooperation and offering. In Korea, research on elderly housing has been conducted in earnest since 1994.

Park Tae-hwan(1994) investigated the elderly age group's overall degeneration of the body and mental in order to classify planned elderly housing and then classified the reshaped and designed housing with the addition of convenience to the functions of the elderly into the possibility of independent living and into dependent life depending on degenerative stages. Kwon Yong-dae and Yoon Hong-taek (1995) defined the housing facility designed for the elderly as the housing facility designed to satisfy elderly persons' psychological and physical characteristics. Lee Yeon-sook (1995) defined the special housing, excluding elderly housing facility and elderly use facility, as the one that not only has the functions of conventional general housing, but provides the social assistance service, household assistance service, personal life support service, and nursing care service specialized for the elderly. Since then, specification and legally designated terms of elderly collective housing, elderly housing welfare facilities have been researched. Cho A-ra (2013) reviewed Japanese policy on elderly housing as the representative case of country and criticized Japanese housing policy changes made by elderly housing issue and the problems of aging-in-place applied to Japanese housing policy. The researcher pointed out that although the concept of

aging-in-place for elderly housing has been applied since 1980s, the range of a place for aging-in-place in Japan was very wide and thereby there were some problems with the location of elderly housing, national policy support, functionality, and communication with communities.

Table 1. A precedent study related to elderly housing

Main agent	Definition
American Institute of Architects (AIA,1995)	Provides a variety of protection and support, Use words that span the entire building, with the ability to coordinate and deliver, maximum possible independence and privacy of the elderly
Park Tae-Hwan (1994)	The Elderly Housing Classification, A review of the phenomenon of change due to global degeneration of older people, A residential reshaped and designed to add convenience to the functions of older people, Dependence on Degenerative Stages Define that the stage is classified as a stage depending on the possibility of independent living and dependence
Kwon Yong – Dea , Yun Hong - Taek (1995)	Designed housing for the elderly, Designed to meet the psychological and physical characteristics of the elderly, Defined as a facility having a residential function as a residence
Lee Yeun-Sook (1995)	Special housing for Not an Elderly residence facility, Elderly Facilities, In addition to general housing functions, it is defined as a special residence where social services such as social assistance service, household assistance service, personal life support service, and nursing care service are provided for the elderly.
Cho A-ra (2013)	Describe the changes in housing policy for the elderly living in Japan, aging-in-place, an elderly housing system Expansion, However, the criticism that does not meet the ideology of aging-in-place on the quality of life, economic efficiency, temporal continuity, spatial meaning

Park Yang-In, A Study on the Development of Urban Elderly Housing, restructure

Globally, as a solution to ageing population, aging-in-place is still researched. Aging-in-place is analyzed intensively with such study subjects as baby boomers, the retired, and the elderly who prepare for the society of aging population. Nevertheless, there is not much research on the expansion and application of the concept 'aging-in-place' to the median-age population who are about to enter the society of aging population.

Therefore, this study tries to integrate statistical data of all age groups beyond elderly persons and baby boomers who were the study subjects in previous studies, to analyze urban preference of all age groups in each city and province, to look into the housing conditions of elderly population in each city and province through elderly survey, and to focus on analyzing the efficiency of aging-in-place for urban elderly housing of elderly population and their future generations.

2. Urban Elderly Housing and aging-in-place

2.1. Definitions and Types of Urban Elderly Housing³⁾

2) Lee Yeon-sook, Elderly Housing Interior Design Guidelines, Gyeongchunsa Publishing, 1998

3) Urban elderly housing is a new term coined in combination of urban type, a type of elderly welfare facilities classified according to locational conditions

Elderly housing is involved in facilities for the elderly and children in accordance with Architects Act, and is classified in elderly housing welfare facility, a type of elderly welfare facilities in accordance with Welfare of the Aged Act. Elderly housing is divided into nursing house, senior congregate housing, and elderly welfare housing.

Table 2. Type classification according to locational characteristic

Division	City type	Suburbs of City type	The country, recreational facilities type
Location Characteristics	Moving into a big city, Extension of existing life zone, Increased accessibility to public, commercial and medical facilities	Intermediate form of City type and The country, recreational facilities type, Locations of region around big city, Can commute to big cities, Residential environment (easy to secure sight, sunshine)	Strong rural character, Good natural environment, Abundant the tourist and recreational facilities, Self sufficiency, Secure landscape rights
Transportation Condition	Good access to public transportation, Connection with traffic facilities	1 to 1.5 hours in the city, Connection with transportation network such as traffic facilities	Convenient and Adjacent to small and medium cities, Can be linked with existing national roads and local roads, Inaccessibility with major cities
Advantages	Easy social networking, Urban facilities available, Favorable conditions for operation, Easy to Family exchange, aging-in-place	Good exchanges with local residents, Secure a large site, Can connect with various city facilities, Stable and appropriate land price, Possible to create a high quality residential environment	Comprehensive elder Community, Obtain essential facilities for living on a large site, Possible activity to Economy through country life, Tourist factors
Disadvantages	The high ground of the city, Traffic jam problem, High-rise buildings, Urban environmental issues	Restricted Development in Development Restricted Area (Greenbelt etc.), Worsening conditions due to urban expansion, Additional facilities required	City infrastructure lack, sense of isolation and a sense of alienation due to social network constraints, Mobility constraint, Increase of development and facility operation cost due to lack of living essential facilities

Park So-Im, study on the direction of plan for large-scale suburban retirement residential area for city retiree, 2015 restructure

As shown in the table 1, according to previous studies, elderly housing is defined as a type of housing for the elderly. For elderly housing, living support and the living characteristics of the elderly are applied in consideration of their reducing living ability and their degenerative physical and mental functions, and housing

system function for their independent living support and additional human resource function are added. In addition, their move of housing space should be easy through the establishment of continuous protection system to prepare for sudden accidents.

Urban elderly housing is not a legal term mentioned earlier, but a new term coined in combination of urban type, one of types classified according to locational characteristics of elderly welfare facility, the elderly, and housing. It is used to prepare for the society of aging population.⁴⁾

As shown in the table 2, urban type is one of the types classified according to locational characteristics. It is based on entrance in a large city, and its advantage is to extend the existing life zone of the generation of urbanization. Compared to suburb type and country & recreational facility type, the urban type has very convenient access to public transportations such as bus, subway and good transportation connection, easy access to various facilities including public, commercial, and medical service facilities, and convenience in family exchange. In addition, the urban type can become a plan for keeping such quality of life as aging-in-place of the generations of persons continuing to live in urban life and can increase the expansion and stability of activity areas through the friendly residential environment of residents. However, as disadvantages of this type, there are the high ground of city, traffic congestion, safety issue of high-rise buildings, and emotional issue caused by the poor natural environment in city.

2.2. Definitions and Concept of Aging-in-place⁵⁾

Aging-in-place was emerged in the background of solving the problem of nursing facility residence and economic problem. The concept of aging-in-place suggested as the solution to the typical two problems is applied to various areas, including housing, interior design, and urban plan.

As shown in the table 3, although there are various definitions of aging-in-place in multiple areas, they are very similar. The concept of aging-in-place can be summarized to help the elderly live the rest of their life in physical, mental, and psychological stability while maintaining their community, independence, and sociality in a familiar place without any move to a new facility, building or place. In other words, the most significant meaning of aging-in-place is to ensure the elderly maintaining their

4) Park Yang-in, A study on Urban Elderly Housing Land Development, Kunkook Univ.

5) Aging-in-place has been used since the Vienna International Plan in 1982. The concept of aging-in-place is a type of housing in which a person wants to live in the residence of their choice, for as long as they are able. In the concept, a person is able to continue to keep their existing benefits, knowledge, and advantages of housing. It features psychological stability and comfort through familiarity, and easy access and use to neighboring facilities through geographical information. Also, it helps to improve social communication, one's overcoming of isolation, and life quality and value through continuous relationship with neighbors.

and housing. It is used to prepare for the society of aging population.

community, independence, and sociality in a familiar place and keeping their mental, physical, and psychological stability.

Table 3. Sectoral Analysis of Concepts about aging-in-place

Subject	Definition
Cutchin(2003)	Olderly people can live a safe and independent life in their home and community.
Frank(2001)	Stay in a familiar place (community) until the end of your life.
Davey et al.(2004), wiles et al.(2011)	Living in the community with independence rather than facilities
pynoos(1993), Matsuoka(2007) Lim Yeon-Ok(2016)	Staying in homes and communities that are familiar to them by providing appropriate support and services to seniors despite their disability or limitations
Park Yang-In,	A Study on the Development of Urban Elderly Housing, 2008 restructure

In this aspect, the concept of aging-in-place can be analyzed as a large tool to continue to increase the quality of life of all age groups including the old age group. Accordingly, aging-in-place for urban elderly housing should additionally be researched in order for urban generations as well as the elderly to continue to live in urban housing.

3. Analysis on Urban Preference in Main Statistical Indicators of Aging-in-place for Elderly Housing

3.1. Analysis on urban preference found in 2016 Korea Housing Survey

2016 Korea Housing Survey conducted by Ministry of Land, Infrastructure, and Transport was aimed at finding overall matters of the housing life of the public, and accumulating and applying the data for research and policy. The survey data were selected as the proper data for preference analysis on urban elderly housing aging-in-place. The analysis focused on the lifestyles and housing types to live, and classified them by region and income bracket.⁶⁾

Regarding the number of households in each region, there were 19,111,030 households in the nation; 9,214,553 in the capital area; 3,837,530 in metropolitan cities; 6,058,947 in provincial regions (Do). Regarding households in each income bracket, there were a total of 19,066,954 households; 7,909,421 in low income bracket;

7,381,605 in middle-income bracket; 3,775,928 in high-income bracket. The reason why there was a difference in the numbers of households between region and income bracket was that 44,076 households with no answer of incomes were excluded. The highest ratio by region was found in the capital area, followed by provincial regions (Do) and metropolitan cities in order; The highest ration by income bracket was found in middle-income bracket, followed by low-income bracket and high-income bracket in order.

Table 4. The number of Households and Ratio (Unit : Households %)

Region			Income bracket		
Division	Household number	Ratio	Division	Household number	Ratio
The whole country	19,111,030	100.0	totality	19,066,954	100.0
Capital area	9,214,553	48.2	Low-income bracket	7,909,421	41.5
Metropolitan city	3,837,530	20.1	Middle-income bracket	7,381,605	38.7
Do	6,058,947	31.7	High-income bracket	3,775,928	19.8

Ministry of Land, Infrastructure, and Transport, Housing Survey 2016 restructure

The areas that they want to live in are classified in big city, small and medium-sized city, and farming, fishing & mountain village. The questionnaire also included the answer 'I have no idea' to take into account respondents' undetermined intention. Regarding the total ratio, large city accounted for 42.6%; small and medium-sized city 38.5%; and farming, fishing & mountain village 15.8%. As such, respondents preferred large city or small and medium-sized city, and there was no large difference in preference between large city and small and medium-sized city.

According to the analysis by region, in the capital area, large city accounted for 47.1%; small and medium-sized city 38.2%; and farming, fishing & mountain village 10.3%. As such, large city and small and medium-sized city were highly preferred, and there was no large difference in preference between them. In metropolitan cities, large city accounted for 78.8%; small and medium-sized city 12.9%; and farming, fishing & mountain village 6.3%. As such, large city was very highly preferred. In provincial regions (Do), large city accounted for 12.9%; small and medium-sized city 55.1%; and farming, fishing & mountain village 30.2%. As such, small and medium-sized city was very highly preferred, and the ratio of farming, fishing & mountain village was higher than that of large city.

According to the analysis by income bracket, in low-income bracket, large city accounted for 35.4%; small and medium-sized city 38.1%; and farming, fishing & mountain village 28.9%. As

6) In the nation, Seoul, Incheon, and Gyeonggi are involved in the capital area; Busan, Daegu, Gwangju, Daejeon, and Ulsan are involved in metropolitan regions; Gangwon, Chungbuk, Chungnam (including Sejong), Jeonbuk, Jeonnam, Gyeongbuk, Gyeongnam, and Jeju are involved in provincial regions (Do). Income bracket is based on the monthly average after-tax income which includes earned & business income, various pensions, public transfer income, and other incomes. Low-income bracket has parts 1 to 4 (less than KRW 2 million); medium-income bracket has parts 5 to 8 (KRW 2.01 to 4 million); high-income bracket has parts 9 to 10 (more than KRW 4.01 million).

Table 5. Living area and main lifestyle to live through furniture survey

(Unit : %)

Want to living Areas in the future						
Division	Big City	Small and Medium-sized Cities	Farming, Fishing, Mountain Village	Do not know	Sum	
All	42.6	38.5	15.8	3.1	100.0	
Region	Capital area	47.1	38.2	10.3	4.4	100.0
	metropolitan city	78.8	12.9	6.3	2.0	100.0
	Do	12.9	55.1	30.2	1.8	100.0
income bracket	low-income bracket	35.4	38.1	22.5	4.0	100.0
	Middle-income bracket	46.6	39.8	11.3	2.3	100.0
	High-income bracket	50.1	36.6	10.6	2.7	100.0
Hope to main lifestyle to the Future						
Division	Urban life	country life	Do not know	Sum		
All	71.5	25.3	3.2	100.0		
Region	Capital area	76.5	18.8	4.7		
	metropolitan city	84.4	13.9	1.7		
	Do	55.8	42.3	1.9		
income bracket	low-income bracket	63.1	32.5	4.4		
	Middle-income bracket	77.8	19.9	2.3		
	High-income bracket	76.8	20.6	2.6		

Ministry of Land, Infrastructure, and Transport, Housing Survey 2016 restructure

such, the ratio of small and medium-sized city was high, and there was no large difference in preference between the ratio of large city and the ratio of farming, fishing & mountain village. In middle-income bracket, large city accounted for 46.6%; small and medium-sized city 39.8%; and farming, fishing & mountain village 11.3%. As such, large city and small and medium-sized city were highly preferred, and especially small and medium-sized city were found to be preferred. In high-income bracket, large city accounted for 50.1%; small and medium-sized city 36.6%; and farming, fishing & mountain village 10.6%. As such large city and small and medium-sized city were highly preferred, and large city was most preferred.

According to the general analysis on the regions that people want to live in, the most preferred region was small and medium-sized city, followed by large city and farming, fishing & mountain village in order. In the capital area, small and medium-sized city was most preferred; in metropolitan cities, large city was most preferred; and in provincial regions (Do), small and medium-sized city was most preferred. In each region, large city and small and medium-sized city were preferred, and the sum of the preference ratios of large city and small and medium-sized city was near or exceeded 70%. It indicates that people have high intention of living in urban regions.

The lifestyles that people want to have are classified into urban life and country life. The questionnaire also included the answer 'I have no idea' to take into account respondents' undetermined intention. Regarding the total ratio, urban life accounted for 71.5%

and country life 25.3%. As such, people preferred urban life as their lifestyle.

According to the analysis on preference of lifestyles by region, in the capital area, urban life accounted for 76.5% and country life 18.8%. As such, urban life was preferred. In metropolitan regions, urban life accounted for 84.4% and country life 13.9%. As such, urban life was preferred. In provincial regions (Do), urban life accounted for 55.8% and country life 42.3%, but the preference ratio of urban life was relatively lower than that in the capital area and in metropolitan regions.

According to the analysis on preference of lifestyles by income bracket, in low-income bracket, urban life accounted for 63.1% and country life 32.5%. As such, people in low-income bracket preferred urban life, but relatively less preferred urban life than those in middle-income bracket and high-income bracket. In middle-income bracket, urban life accounted for 77.8% and country life 19.9%. As such urban life was preferred. In high-income bracket, urban life accounted for 76.8% and country life 20.6%, and therefore urban life was preferred.

Given the general analysis on desirable lifestyles, people preferred urban life regardless of region and income bracket. With regard to the regions and lifestyles that people want to live in and have, the more incomes people have and the more they live in the capital area and metropolitan regions, the more they prefer urban life and urban housing. It is inferred that the regions and income groups which have a higher possibility of urban life and benefits pursue continuous benefits and move to urban housing. Although

those in lower income bracket and in provincial regions (Do) preferred urban life and urban housing, their housing preference to farming, fishing & mountain village was higher than that of those in high-income bracket and in the capital area and metropolitan regions. It shows the fact that they like and want to continue to live in their current housing region.

3.2. Analysis of urban preference found in Future Population Projection⁷⁾

Future Population Projection distributed in 2017 shows 2015 population status and population density from 2001 to 2015 by region. This estimation forecast the future population of each city and province (Do) by 2015 in the way of taking into account uncertainty of future population growth and describing four population growth scenarios: medium estimation (fertility, mortality, and migration), high estimation, low estimation, and no-migration estimation. As a press release of Statistics Korea, it was selected as data for population distribution and classification.

(1) Population status and population density by region

Table 6. 2015 Population Status and Population density by region (Unit : 10,000person, person/km²)

Population status by region									
City	Seoul	Busan	Daegu	InCheon	GwangJu	DeaJeon	Ulsan	SeJong	
	994	345	247	288	151	154	116	19	
	Sum				Average total				
2,314				289.25					
Do	GyeonGgi	GangWon	ChungBuk	ChungNam	JeonBuk	JeonNam	GyeonGBuk	GyeonGNam	Jeju
	1,242	152	159	210	184	180	268	333	60
	Sum				Average total				
2,788				309.78					
Population density by region									
City	Seoul	Busan	Daegu	InCheon	GwangJu	DeaJeon	Ulsan	SeJong	
	16,364	4,480	2,791	2,756	2,999	2,852	1,100	439	
	Sum				Average total				
33,781				4,222.63					
Do	GyeonGgi	GangWon	ChungBuk	ChungNam	JeonBuk	JeonNam	GyeonGBuk	GyeonGNam	Jeju
	1,226	90	215	257	227	146	141	316	328
	Sum				Average total				
2,946				327.33					

Statistics Korea, Future Population Projection 2017 and Ministry of Land, Intellectual statistics graph restructure

With regard to population status by city and Do, Seoul (city) and Gyeonggi (Do) had the highest number, and there was the difference of around 2.5 million persons. By city, the highest number of population was found to be in Seoul, followed by Busan, Incheon, Daegu, Daejeon, Gwangju, Ulsan, and Sejong in order. By Do, the highest number of population was found to be

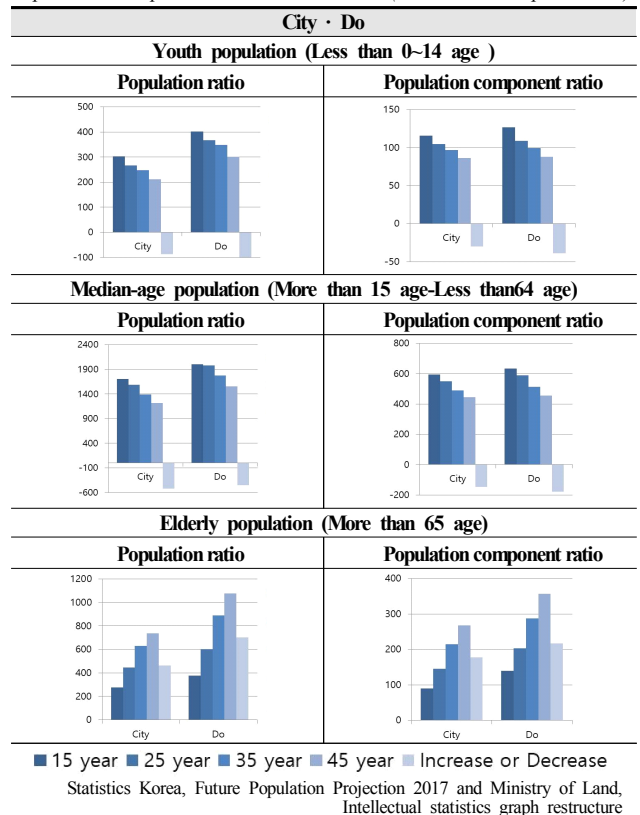
7) City is classified into Seoul, Busan, Daegu, Incheon, Gwangju, Daejeon, Ulsan, and Sejong; Do is classified into Gyeonggi, Gangwon, Chungbuk, Chungnam, Jeonbuk, Jeonnam, Gyeongbuk, Gyeongnam, and Jeju.

Gyeonggi, followed by Gyeongnam, Gyeongbuk, Chungnam, Jeonbuk, Jeonnam, Chungbuk, Gangwon, and Jeju, in order. The total population of cities numbered 23.14 million, and there was about 2.89 million on average. The total population of Dos numbered 27.88 million, and there was about 3.1 million on average. Therefore, cities and Dos had similar average population, or around 200,000 persons.

With regard to population density by city and Do, Seoul (city) and Gyeonggi (Do) had the highest density, and there was the difference of 15,138 persons per km². By city, the highest population density was found to be in Seoul, followed by Busan, Gwangju, Daejeon, Daegu, Incheon, Ulsan, and Sejong in order. By Do, the highest population density was found to be in Gyeonggi, followed by Jeju, Gyeongnam, Chungnam, Jeonbuk, Chungbuk, Jeonnam, Gyeongbuk, and Gangwon in order. The total population density of cities was 33,781 persons per km², and the average was about 4,223 persons per km². The total population density of Gos was 2,946 persons per km², and the average was about 327 persons per km². Therefore, there was the noticeable difference of about 3,896 persons per km² between the population density of cities and that of Dos.

(2) Youth, median-age, and elderly populations by city and Do, and population ratio

Table 7. City · Do Youth, Middle, Elderly aged Population and Population component ratio (Unit : 10,000 person, %)



■ 15 year ■ 25 year ■ 35 year ■ 45 year ■ Increase or Decrease
Statistics Korea, Future Population Projection 2017 and Ministry of Land, Intellectual statistics graph restructure

In 2017 Future Population Projection, the population of each age group was surveyed. The population ratio and population component ratio of the youth (0-14 years), the median-age (15-64 years), and the elderly (more than 65 years) were analyzed.

The population ratio and population component ratio of the youth had a similar pattern, and tended to decrease slowly. The reductions in the population and ratio of the youth showed a fall in population increase or decrease. The population ratio and population component ratio of the median age had also a similar pattern, and its population ratio in 2025 reduced for a while and rapidly decreased from year 2035. The graphs shown above show a particular pattern of the median-age migration of baby boomers. Unlike the median-age population and the youth population, the elderly population had its increased population ratio and population component ratio. After 2025, the population ratio and population component ratio of the elderly are estimated to increase more. This particular pattern is caused by the elderly migration of baby boomers. With the reductions in the population ratio and population component ratio of the elderly, the population increase or decrease also increased.

As shown in Future Population Projection, although the population in Dos outnumbers the population of cities currently, there is no big difference in an average value; there is a remarkable difference in population density between cities and Dos. The youth population and the median-age population had very similar reduced population ratio and population component ratios. It was found that the rapid rise rate of the elderly population would be larger with the generation migration of baby boomers.

3.3. Analysis on urban preference found in Survey of the Elderly

The Survey of the Elderly conducted in 2014 ⁸⁾ is the data used to predict the change in elderly characteristics and to provide a fundamental material for developing the policy on the society of aging population to come. With the survey data, it is possible to find the living conditions, characteristics, and changes of the elderly. The data were selected to find social and economic changes and value changes.

The employment of the elderly by city and Do was reviewed in order to analyze the social activity intention of the elderly, their activity troubles, and their economy. By city, Ulsan had the highest rate, or 31.5%; by Do, Chungbuk had the highest rate, or 40.8%. In terms of the total rate, Do had a higher rate than city. In case of city, all cities but Gwangju and Ulsan showed relatively even distribution; in case of Co, all Dos but Chungbuk and Gyeonggi

showed relatively even distribution. With regard to their functional limitation on the basis of their employment, by city, Ulsan had the highest rate, or 97.0%; by Do, Jeonnam had the highest rate, or 91.1%. In case of city, all cities but Daegu and Ulsan had even distribution; in case of Do, other Dos than Chungbuk, Chungnam, and Jeonnam had mostly even distribution.

The elderly's desire to participate in employment programs was reviewed in order to analyze the elderly's social participation intention, the confirmation of their independence, and whether to acquire their economic ability. By city, Busan had the highest rate or 26.3%; by Do, Jeju had the highest rate, or 21.6%. City had a higher total rate than Do. All cities but Gwangju showed relatively even distribution, and other Dos than Chungbuk, Chungnam, and Jeju showed relatively even distribution.

Suicidal ideation and suicidal attempt rate were reviewed in order to analyze the current sociality of the elderly and their mental health. Regarding suicidal ideation, by city, Busan had the highest rate, or 15.5%; by Do, Gyeonggi had the highest rate, or 15.9%. City had a higher total rate than Do. In case of city, most cities other than Gwangju and Daejeon showed even distribution; in case of Do, other Dos than Gangwon, Chungnam, and Jeonnam showed even distribution. With regard to suicidal attempt rate, by city, Seoul had the highest rate, or 13.8%; by Do, Chungbuk had the highest rate, or 18.1%. In terms of a total rate, all cities showed relatively even distribution, and all Dos but Chungnam showed even distribution.

The count of visits of children who do not live together was reviewed in order to analyze the elderly's relationship with family members and their access convenience. By city, Ulsan had the highest rate, or 50.5%; by Do, Jeju had the highest rate, or 57.3%. City and Do had a similar total rate. All cities but Incheon and Gwangju, and all Dos but Gangwon, Jeonbuk, and Jeonnam showed relatively even distribution.

The satisfaction with relationship with friends and local communities was reviewed in order to analyze the elderly's quality of life in their current residence, whether to increase their quality of life, and their communication and relationship with the society. By city, Gwangju had the highest rate, or 93.1%; by Do, Chungnam had the highest rate, or 95.0%. Do had a little higher total rate than city. All cities but Busan showed even distribution.

The rate of the elderly's participation in continuing programs was reviewed in order to analyze their life vitality, whether to obtain life simulation, and their communication and relationship with the society. By city, Daegu had the highest rate, or 17.2%; by Do, Chungbuk had the highest rate, or 21.1%. City had a higher total rate than Do. All Dos but Jeonnam, Chungnam, and Jeju showed relatively even distribution.

The desire for hobby and leisure activity was reviewed in order

8) 2014 Elderly Surveyed was the third survey having been conducted after 2008 and 2011 surveys since the legalization of the survey in 2007. The 4th Elderly Survey report is scheduled to be published at the end of 2017.

Table 8 . Survey of living conditions of elderly people by City and Do

(Unit : %)

Whether employment status and Functional status limited Check																	
City	Seoul	Busan	Daegu	InChe on	Gwan glu	DeaJe on	UlSan	Do	Gyeon Ggi	Gang Won	Chung Buk	Chung Nam	Jeon Buk	Jeon Nam	Gyeong Buk	Gyeong Nam	Jelu
		21.5/ 84.0	20.7/ 83.0	21.4/ 77.4	21.0/ 81.9	14.3/ 87.8	24.2/ 81.1		31.5/ 97.0		27.1/ 84.8	32.1/ 80.5	40.8/ 61.6	37.1/ 70.5	30.9/ 82.6	38.9/ 91.1	40.5/ 83.3
Elderly employment programs participation																	
City	Seoul	Busan	Daegu	InChe on	Gwan glu	DeaJe on	UlSan	Do	Gyeon Ggi	Gang Won	Chung Buk	Chung Nam	Jeon Buk	Jeon Nam	Gyeong Buk	Gyeong Nam	Jelu
		24.7	26.3	14.8	17.5	12.8	17.9		22.2	17.1	13.9	8.0	9.8	19.3	16.5	14.4	19.2
Suicidal thoughts and attempt rate																	
City	Seoul	Busan	Daegu	InChe on	Gwan glu	DeaJe on	UlSan	Do	Gyeon Ggi	Gang Won	Chung Buk	Chung Nam	Jeon Buk	Jeon Nam	Gyeong Buk	Gyeong Nam	Jelu
		13.5/ 18.3	15.5/ 16.2	9.0/ 8.6	12.7/ 3.4	6.1/ 16.6	5.5/ 7.2		10.4/ 9.1	15.9/ 9.3	6.0/ 18.8	7.3/ 18.1	4.1/ 3.8	9.4/ 16.2	6.2/ 8.2	8.8/ 12.8	8.2/ 7.7
Visited frequency of non-live together children (More than once a week/Less than once a month~Non visited)																	
City	Seoul	Busan	Daegu	InChe on	Gwan glu	DeaJe on	UlSan	Do	Gyeon Ggi	Gang Won	Chung Buk	Chung Nam	Jeon Buk	Jeon Nam	Gyeong Buk	Gyeong Nam	Jelu
		41.7/ 58.3	43.2/ 56.8	46.4/ 53.6	32.3/ 67.7	21.7/ 78.3	40.8/ 59.2		50.5/ 49.5	37.6/ 62.4	24.4/ 75.6	44.9/ 55.1	32.5/ 67.5	29.2/ 80.8	24.7/ 75.3	41.4/ 58.6	40.7/ 59.3
Satisfaction with Friends and Community Relations (very good ~ so so)																	
City	Seoul	Busan	Daegu	InChe on	Gwan glu	DeaJe on	UlSan	Do	Gyeon Ggi	Gang Won	Chung Buk	Chung Nam	Jeon Buk	Jeon Nam	Gyeong Buk	Gyeong Nam	Jelu
		85.6	77.3	90.7	88.3	93.1	95.7		83.4	84.6	90.6	93.3	95.0	92.9	92.1	92.5	89.1
Participation Rate of Lifelong Education Program																	
City	Seoul	Busan	Daegu	InChe on	Gwan glu	DeaJe on	UlSan	Do	Gyeon Ggi	Gang Won	Chung Buk	Chung Nam	Jeon Buk	Jeon Nam	Gyeong Buk	Gyeong Nam	Jelu
		15.2	11.6	17.2	16.3	12.2	13.9		14.8	13.0	12.0	21.1	10.1	16.5	9.3	13.4	12.2
Hope and leisure activity degree of elder age (want to very much ~ have an idea)																	
City	Seoul	Busan	Daegu	InChe on	Gwan glu	DeaJe on	UlSan	Do	Gyeon Ggi	Gang Won	Chung Buk	Chung Nam	Jeon Buk	Jeon Nam	Gyeong Buk	Gyeong Nam	Jelu
		78.7	76.6	90.2	84.1	84.7	90.1		76.1	77.4	75.8	98.9	91.1	77.4	81.9	82.3	86.8

Ministry of Health & Welfare, Korea Institute for Health and Social Affairs, Survey of the elderly. 2014. restructure

to analyze the elderly's life vitality, whether to obtain life simulation, and their communication and relationship with the society. By city, Daegu had the highest rate, or 90.2%; by Do, Chungbuk had the highest rate, or 98.9%. City and Do had a similar total rate. Compared to other items, this item had very rapidly changed distribution.

According to the Survey of the Elderly, there were clear differences in the employment and functional limitations, suicidal ideation, leisure activity, and satisfaction with local communities between city and Do. However, in terms of total values, there was no big difference between city and Do. the elderly's satisfaction with their current region, their leisure activity, their desire to participate in continuing programs, their desire to join employment programs, and other attempts of the elderly indicate that it is necessary to increase a variety of community and social activities in their current residential region.

3.4. Results

Based on the results of 2016 Korea Housing Survey, 2017 Future Population Projection, and 2014 Survey of the Elderly, it was possible to predict the necessity of aging-in-place for urban elderly housing. The results of the urban preference are presented as follows:

First, according to the comparison of the number of households

between the capital area, metropolitan regions, and provincial regions (Dos) in 2016 Korea Housing Survey, Gyeonggido was involved in the capital area. In consideration of the result of 2016 Korea Housing Survey and the population status and population density by city and Do in 2017 Future Population Projection, it is inferred that urban elderly housing based aging-in-place is more effective.

Secondly, according to 2017 Future Population Projection, the population ratio and population component ratio of the youth, the median-age, and the elderly by city and Do were almost similar. According to 2016 Korea Housing Survey, regarding the regions and lifestyles that people want to live in and have, small and medium-sized city and urban life were preferred regardless of regions and income bracket types. That people prefer urban life means that urban elderly housing based aging-in-place is preferred by all generations and that its application plan is better.

Thirdly, according to 2017 Future Population Projection, there was no big difference in population status and population density between city and Do. Nevertheless, city had very high population density. According to 2014 Survey of the Elderly, there was no big difference in the data of their living conditions between city and Do. It means that the advantages of aging-in-place for social, economic, and cultural aspects can be more applicable to urban elderly housing.

Fourthly, according to 2016 Korea Housing Survey, regarding

the regions and lifestyles that people want to live in and have, large city and small and medium-sized city, and urban life were preferred regardless of regions and income bracket types. In consideration of the result of 2016 Korea Housing Survey and the regional population status and population density in 2017 Future Population Projection, it is possible to predict that the desire for aging-in-place is very high in city and that all age groups including the current elderly age group prefer urban elderly housing.

4. Conclusion

This study analyzed relevant literature, 2016 Korea Housing Survey, 2017 Future Population Projection, and 2014 Survey of the Elderly in order to find the necessity of aging-in-place for urban elderly housing. With aging population of the current baby boomers, aging-in-place has continued to be researched as a plan for the entrance into the society of super-aging population. However, up to now, the research has focused on baby boomers and the aged population, and there is almost no research on the post-baby-boomer generations to be involved in the aged population. In addition, the research on elderly housing focused on welfare housing for the elderly, such as welfare facilities and home care facilities and focused on spatial move rather than on the continuous life in the currently living space through the separation of locational conditions.

As shown in the results of Korea Housing Survey and Future Population Project, urban elderly housing is capable of accepting a large population. As described in the current regional population information, there is almost no difference in population between city and Do. Regarding population density, city has a very high population density. With regard to the regions and lifestyles that people want to live in and have, large city and small and medium-sized city, and urban life are preferred. Given the results, the suitability of urban type and the necessity of aging-in-place for elderly housing were confirmed. It is clear that a rise in the rate of the aged population leads to aging of the current urban residents and thereby results in more demands for urban elderly housing. Therefore, the results of the research on aging-in-place for urban elderly housing can be used as the basic theoretical analysis data in order for all age groups including the current aged persons to continue to live in city, and are expected to be used as a fundamental material to solve the current housing problem in city.

According to Elderly Survey, a rate of urban elderly housing tends to rise steadily, and social and economic changes and value changes have developed comprehensively. With the increased average life expectancy, the aged population will have more activities in the economic, cultural, social, and political areas. In

this circumstance, urban elderly housing needs to make it possible for the elderly to continue to live in city and to obtain more values than economy through constant relationship with urban society. It is necessary to change a housing type in the way of overcoming the elderly's sense of isolation through communication and relationship with the society and of energizing and stimulating their life. In line with continuously fast changes, it is necessary to keep collecting and analyzing the research data about the needs of the elderly and other generations and about the changes in their conditions. As a result, it is required to research aging-in-place for urban elderly housing to be applied to all age groups including the aged persons.

Although Korea Housing Survey and Future Population Projection were conducted with all generations, there were not sufficient analyses by generation and age group. It will be necessary to conduct an analysis by generation in detail, as shown in Elderly Survey, to apply the needs of various generations additionally, and to analyze the domestic and foreign cases of aging-in-place to find problems, solutions, advantages, and disadvantages of aging-in-place application in city.

Reference

- [1] 국토교통부, “주거실태조사 연구보고서”, 2016 // (Ministry of Land, Infrastructure, and Transport, Housing Survey ,2016)
- [2] 통계청, “장래인구추계 시도판: 2015-2045”, 2017. 06 // (Statistics Korea, Future Population Projection, 2017. 06)
- [3] 보건복지부, 한국보건사회연구원, “노인실태조사”, 2014 // (Ministry of Health & Welfare, Korea Institute for Health and Social Affairs, Elderly survey. 2014. 12)
- [4] 송준호, “커뮤니티연계를 고려한 도시형 노인복지주택의 계획방향에 관한 연구”, 박사학위논문, 서울대학교 건축학과 대학원, 2013.2 // (Song Jun-Ho, A study on Urban Elderly Housing for Community Integration, Ph.D. Dissertation, Seoul University, 2013.2)
- [5] 박명자, “노인주거 시설 및 정책에 관한 연구”, 박사학위논문, 인하대학교, 2010.2 // (Park Myung-Ja, A study on The Elderly Housing Facilities and Policies, Ph.D. Dissertation, Inha University, 2010.2)
- [6] 박양인, “도시형 노인주거지 개발에 관한 연구”, 석사학위논문, 건국대학교 건축공학과 대학원, 2008 // (Park Yang-In, A Study on the Development of Urban Elderly Housing, Konkuk University, 2008)
- [7] 이연숙, 이성미, 김민수, 이유진, 이선민, “노인주택의 개념과 유형화 연구”, 한국생태환경건축학회논문집, 제 7권 제 1호, 2007 // (Lee Yeun-Sook, Lee, Sungmi, Kim, Minsoo, Lee, Yoojin, Lee, Sunmin, A Classification of Elderly Housing Types Toward a Holistic Understanding, Korea Institute of Ecological Architecture and Environment, Vol 7, No1, 2007)
- [8] 김수영, 문경주, 오찬옥, “고령화 지역의 aging-in-place에 영향을 주는 조건분석을 통한 정책방향 탐색”, 한국지역사회학회, 제 23권 제 2호, 2015. 6 // (Kim Soo-Young, Moon, Kyung-Joo, Oh, Chan-Ohk, Searching for Policy Orientation By the Analysis of factors affecting aging-in-place in the Aging Community ,Korean Association Of Regional Studies, Vol23, No2, 2015. 6)
- [9] 강문철, 김영훈, “선호도 분석을 통한 도시형 노인주거 고찰”, 대한건축학회 추계기술발표대회 논문집, 제36권 제2호, 2016.10 // (Kang Moon-Chul, Kim Young-Hoon, Urban Elderly Housing Considerations through The Evaluation and Analysis, The Architectural Institute of Korea, Vol 36, No 2, 2016.10)
- [10] 강문철, 김영훈, “도시형 노인주거의 aging-in-place를 위한 기초분석”, 한국생태환경건축학회 추계기술발표대회 논문집, 2016.10 // (Kang Moon-Chul, Kim Young-Hoon, A Study of aging-in-place for Urban Elderly housing, Korea Institute of Ecological Architecture and

- Environment, 2016.10)
- [11] 박소임, “도시은퇴자를 위한 도시근교 대규모 주거지 계획방향 연구”, 연세대학교, 2015 // (Park So-Im, study on the direction of plan for large-scale suburban retirement residential area for city retiree, YonSei University, 2015)
 - [12] 이승훈, “aging-in-place에 대한 주관적 기대와 의미 : 농촌 지역의 노인들을 중심으로”, 한국공공사회학회, 제 7권, 제 1회, 2017.2 // (Lee Seung-Hun, The Subjective Expectation and the Meaning of aging-in-place of the Elderly in Rural Areas, The Korean Association for Public Society, Vol 7, No 1, 2017.2)
 - [13] 조아라, “일본의 고령자 거주문제와 주거정책:aging-in-place를 중심으로”, 대한지리학회지, 제 48회, 제 5호, 2013.10 // (Cho Ara, Housing Policy for the Elderly and the Meaning of “aging-in-place” in Japan, The Korean Geographical Society, Vol 48, No5, 2013.10)
 - [14] 이연숙, “노인주택 실내디자인 지침”, 경춘사, 1998 // (Lee Yeun-Sook, Guidelines for Interior Design of Senior Housing, GyeongChunSa, 1998)