공공실버주택의 적정 공급에 대한 연구

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A Study on the Proper Supply of Public Silver Houses

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[요   약]

한국은 빠르게 고령사회로 변화하고 있으므로 노인들의 주거안정문제에 대비가 시급한 상황이다. 이렇게 고령화에 따른 문제의 해결을 위해서 한국정부는 공공실버주택의 공급을 추진하고 있다. 공공실버주택의 공급이 성공적으로 정착하기 위해서는 적절한 입지선정과 재무적 타당성 분석이 필수적이다. 본 연구에서는 지리적 정보와 인구통계정보, 사회복지비용에 대한 정보를 활용한 통합데이터베이스 구축의 필요성을 제기하였다. 또한 이들 정보를 활용하여 최적입지 및 타당성분석을 실행할 수 있는 시스템의 개념을 제시하였다.

[Abstract]

The South Korean society is rapidly aging, thereby highlighting the need to urgently prepare for the stabilization of housing for the elderly. In order to address such issues stemming from the elderly population, the South Korean government has been ramping up the supply of public silver houses for the elderly. Furthermore, it is necessary to select the optimal construction sites and conduct financial feasibility study on the selected sites in order to ensure a successful supply of public silver houses. In this study, the author proposed the need for building an integrated database by using geographic and demographic information, as well as the information on social welfare costs. Moreover, a concept for a system capable of performing optimal site analysis and feasibility study using the aforementioned information was suggested.

Ⅰ. Introduction

1.1 Significance and Objective of the Study

In recent years, the South Korean population is rapidly aging. The country is expected to cross the threshold of aged society by 2017 when the share of the elderly population (over 65 years old) will pass 14%. By 2026, the share of the elderly population would exceed 20%, thereby making it an ultra-aged society. The speed of aging is unprecedented in South Korea that it was ranked the fastest aging society in the world. As the speed of aging is so fast, the country's senior citizens were unable to prepare for this, thereby finding themselves entangled in numerous hardships.

Since the country is insufficiently prepared in terms of housing welfare services for the low-income class, as compared to its remarkable economic growth in a relatively short period of time, the housing cost of senior citizens with low income is feared to increase. The South Korean government announced the public silver housing initiative in consideration of such support. The initiative combined the existing public houses for the low-income class and the welfare centers for the senior citizens that will provide them with welfare and medical services. Therefore, the public silver housing initiative is expected to play a significant role in resolving housing issues of the low-income senior citizens if an appropriate amount of public silver houses are provided to them. However, a strategy to provide an optimal amount of houses should be established first to ensure the public silver housing policy to take root firmly. Accordingly, the author intends to suggest some important methods to supply the optimal number of public silver houses.

1.2 The Scope and Methodology

In this study, the current status of the elderly will be reviewed by investigating the transformation of the country's population structure. In particular, the author will review the 2015 census data on the current and future population and household structure, which was released by the National Statistical Office, for an analysis of the regional distribution and type of housing of the elderly population. Furthermore, the status of the single senior households will be analyzed in order to identify their residential conditions. Next, the current housing status of the senior citizens, as well as the concept of the public silver housing initiative that is currently introduced by the government, shall be reviewed.

For supplying an optimal amount of public silver housing, an analysis method regarding regional distribution and other potential methods for reducing the welfare service delivery costs shall be reviewed first. As the senior citizens are scattered over a large area in the local cities and towns, the selection of an optimal housing project site is deemed necessary. The welfare delivery costs can be shaved off by grouping the public silver houses in case specific welfare program is provided to senior citizens, who are scattered over a large area. Finally, the author will propose possible methods for developing a system that can support optimal site selection based on the aforementioned factors

Ⅱ. Need for Silver Housing and Previous Studies

2.1 Transformation of Population Structure during the Influx of the Aging Society

1) Share of the elderly population and change in the social duty

According to the census in 2015 on population and housing, the number of senior citizens was estimated as 6,561,000, thereby accounting for 13.2% of the total population. The number has roughly doubled since the year 2000, thus indicating the rapid increase in the number of the elderly population in the country. According to an estimate of the long-term population, which was conducted by the National Statistical Office, the number of the elderly population is forecasted to reach 12,691,000 by 2030 or approximately 24.3% of the total population. For this reason, it can be assumed that the importance of including the elderly population in the discussion of the country's real estate and housing welfare policy would increase in the future.

As the number and share of the elderly population constantly increases, the associated costs for supporting them are forecasted to inflate fast with an additional burden on the society. The ratios of children and teens, and senior citizens per working age population were 37.3% and 15.2% as of 2010, respectively. However, the previous ratios of children and teens, and senior citizens per working age population are forecasted to increase up to 58.6% and 38.6%, respectively, by 2030. The ratio of children and teens per working age population is decreasing due to the low birth rates, but the total cost of supporting the economically inactive population seems to be increasing due to the impact of the aging population. Therefore, appropriate measures should be taken in order to ensure proper support for the elderly population in advance

2) Increase of single-person household among the senior citizens

표 1. 고령인구의 부양비
Table. 1. Support proportion for the Elderly Population

Criteria	1960	1970	1980	1990	2000	2010	2020	2030	2040	2050	2060
Total[1]	82.6	83.8	60.7	44.3	39.5	37.3	40.7	58.6	77	89.8	101
Children and Teens[2]	77.3	78.2	54.6	36.9	29.4	22.2	18.6	20	19.8	18.9	20.5
the Elderly[3]	5.3	5.7	6.1	7.4	10.1	15.2	22.1	38.6	57.2	71	80.6
Elderly−Child Index[4]	6.9	7.2	11.2	20	34.3	68.4	119.1	193	288.6	376.1	394

1) (Population aged 0-14 + population over 65)/population aged 15-64 × 100
2) (Population aged 0-14/population aged 15-64) × 100
3) (Population over 65 / population aged 15-64) × 100
4) (Population over 65/population 0-14) × 100
Source: Projected population trends, National Statistical Office

Another pressing issue that is emerging fast in the growth of the elderly population is the increase of the single-person households among the senior citizens that accounted for the largest share of the entire households as of 2015. According to a projected household trend by the National Statistical Office, the share of the single-person senior households is expected to increase up to 34.3% by 2035. An analysis of the single-person households by age shows that the 20s-to-30s group is 34.2%, while the over-65 group is 27.3% in 2015; however, the single-person households aged over 65 is expected to increase up to 45% by 2035. Appropriate housing and living support should be provided to the single-person senior households, but no such welfare program that specializes on the single-person senior household is available in the country. Therefore, an appropriate housing support policy for the single-person senior households would be required in the future.
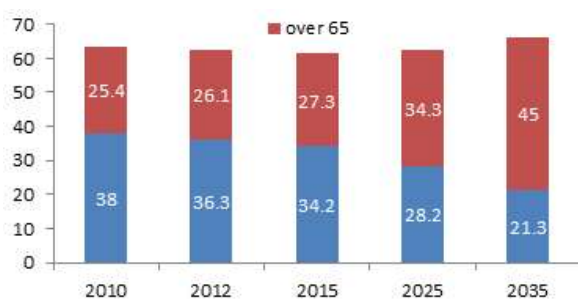
Source : Projected population trends, National Statistical Office
그림 1. 1인 가구 중 연령비중
Figure. 1. Single person household ratio by age (%)

3) Need for providing housing services for the low-income senior citizens

As discussed earlier, the country's population is rapidly aging with increasing associated burdens on the society. Furthermore, the need for providing housing services (e.g., living management) is also increasing as a result of the increase in the single-person senior households. The high-income class is expected to benefit from appropriate services, thanks to the increasing number of luxurious silver houses. However, the low-income senior citizens would face various social problems, including the increase of the aged homeless people and lonely deaths, if only the current level of social welfare services are to be provided. Furthermore, the overhead will inflate with the corresponding social welfare services to the low-income senior citizens, who are scattered over a large area. Therefore, some measures that would improve the efficiency of such welfare services with only a minimum expense should be selected when providing appropriate housing services to the low-income class.

2.2 Previous Studies

Studies conducted on the housing supply for the elderly population are divided mainly into two groups, namely, studies on the preferred housing type and current location of residence in order to identify the present residency status of the senior citizen, and another group of studies on detailed housing development methods (e.g., silver houses) for the elderly population.

Among the studies on the current housing status of the elderly population, Koo Hye Gyoung et al. (2016) analyzed the residential and overall living types of the elderly population (over 50 years old) in an attempt to analyze the preferred housing types of the baby boom generation. A factor analysis shows that the baby boom generation is classified into four groups with different lifestyle preferences, namely, health and leisure, upwardly mobile lifestyle, individual lifestyle, and practical living. Each group showed a different economic power in terms of their income level and assets scale, as well as in their preferred residential type. Jeong Ji Eun et al. analyzed the greater Seoul area in order to identify the spatial distribution of the elderly population in the region, and the site-specific characteristics of those regions populated with the elderly population. With regard to the spatial distribution of the elderly population, they showed a dual distribution pattern in Seoul city center and the outskirts of the greater Seoul area. Moreover, those regions populated with the elderly population showed a high percentage of the deceased and divorced households, while the senior citizens residing in such regions tend to live in relatively small houses and enjoy relatively limited access to the welfare facility.

Among the studies on the detailed development method of the silver houses, Park Joon Young (2008) suggested that the elderly

population should be recognized as a legitimate new consumer group with diverse needs and potential spending power in his study on the development of the National Rental House models corresponding to the aging society. He also suggested a development method for the National Rental House for the senior citizens that incorporates the "housing + welfare + medical service" functions at the same time in order to give them sufficient physical and psychological health care. La Ho Il proposed to introduce a concept of the 'silver new stay' in his study on the methods of supplying public silver houses that is introduced by the South Korean government. He argued that the government needs to provide incentives to the private investors, such as financial support and tax breaks, in order to ensure a successful introduction of the silver-type new stay project while proposing that rental subsidies have to be provided to the elderly people. He also proposed to classify the silver-type new stay for the middle class people and the low-income people to enhance the efficiency of the housing policy.

As discussed so far, many studies have been conducted on the current status and policy directions of the housing project for the elderly people; however, no sufficient studies have been done on proper ways to provide the public silver houses. Therefore, the author intends to propose in this study a system that is capable of analyzing the distribution of the elderly population at a national level and facilitating the rations distribution of the public silver houses.

III. Concept of Public Silver Housing and the Need for an Appropriate Supply of such Houses

3.1 Concept and Characteristics of the Public Silver Houses

The public silver house is a type of public rental house that provides housing and welfare services simultaneously by building houses and welfare centers in the same housing complex. When building public silver houses, the welfare centers are built within the existing rental houses in order to allow the senior citizens, who are living alone, to enjoy the welfare services without living in the residential complex. Installed in the welfare center are the health program space, welfare program room, dining hall, and rooftop vegetable garden with the plan to install facilities that are specialized for health maintenance, such as the health management room that is equipped with health diagnosis equipment. A social welfare specialist and nurse will also be stationed in the center in order to ensure professional and convenient provision of welfare services. The welfare center will be run as an open facility by the community members, so that the benefits can be provided to the local residents.

The public silver houses shall be provided first to people of national merit (over 65 years old) that are eligible for living and receiving medical benefits, and then to the beneficiary of other general living and medical payments. The houses shall be funded and constructed jointly by the local self-governing bodies and regional corporations, while the Ministry of Land, Infrastructure, and Transport shall provide construction costs and initial operation cost up to KRW250 million per year for the first five years together with the institutional/administrative support by using the donated funds and fiscal budget, so that the local self-governing bodies would be able to proceed with the project. In addition, LH Corporation will actively engage in the project by supporting the local self-governing bodies with regard to design, construction, and operation of the welfare centers.

3.2 Need of Public silver housing

As suggested earlier, it is urgently required to develop an efficient welfare system considering the aging trend of South Korea, and increasing number of single-person senior households. In particular, the effective delivery of such welfare programs to the elderly population is essential. As many welfare programs that are focused on the senior citizens can only be offered through on-site visit in many cases, associated costs would increase as well. As many senior citizens are concentrated in a relatively small area in the urban regions, such delivery would be realized efficiently. However, many elderly people are scattered over a large area in regional cities, so it would take time and associated costs for the welfare providers to visit them. The number of the elderly population per 1 km2 is approximately 2,000 in Seoul City, and roughly 650 in Busan. However, in the other provincial regions, excluding Gyeonggi province, the number of the elderly population never exceeds 100. Therefore, it is challenging to deliver welfare programs to the elderly people in the rural areas.

In this respect, the supply of the public silver house would provide a useful clue to solving such problems. It is believed that the high quality welfare programs can be provided in a focused manner by moving the senior citizens with physical activity limitation into the public silver houses. However, the most appropriate site should be selected and the welfare programs per corresponding region should be developed first in order to maximize the effectiveness of the public silver housing project.

IV. Construction of a System for the Optimal Supply of Public Silver Houses

4.1 The Need for a Construction System

In order to maximize the effectiveness of the public silver housing project, they should be built on the appropriate number of optimal sites. However, multiple aspects, including the development site accessibility plan, such as the area and road network, as well as the number and distribution of the elderly population and the overall reduction of the social welfare costs, should be analyzed comprehensively in order to realize such goals. For such comprehensive analysis, the necessary information should be turned into a database that would be analyzed on the basis of a statistical method. In addition, a financial feasibility study should be performed over the reduced amount of social welfare costs for the provision of public silver houses in a given region. In this study, the information and analysis method, which are required to construct a system that would facilitate an optimal supply of public silver houses, shall be proposed.

4.2 System Construction Method

The information required for the development of an optimal supply system is classified mainly into geographical information, demographic information, and social welfare information. The geographical information includes accessibility, such as the size of target area, which would benefit when the public silver houses are supplied, and the road network. For analysis, the information provided by the Ministry of Land, Infrastructure and Transport shall be entered.

For the demographic information, the number and regional distribution of the elderly population are entered in the database. A functionality for conducting a financial feasibility test by developing a program capable of comparing positive results from spending on social welfare and supply of the public silver houses is also incorporated into the system. For analysis, the system calculates the cost of the provision of a public silver house and social welfare.

The variables collected and processed are then entered into the decision-making system to eventually calculate the optimal construction sites via numerous analyses, including the Hoff model that is used to analyze the commercial district. The selected site is stored in the integrated database to facilitate the development of a system that enables feedback when developing an additional public silver housing project.
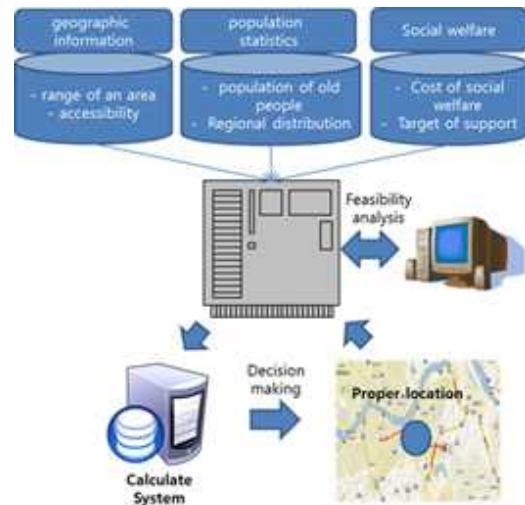

그림 2. 공공실버주택 적정공급시스템 개요
Figure. 2. The Concept of Proper Supply system for public silver housing

V. Conclusion and Implications

The most rapid aging population in the world is in South Korea. In particular, the share of the single-person senior household is remarkably increasing and the poverty rate among the elderly people is very high, thereby provoking the fear associated with the burden of providing support to the senior citizens. In order to solve these problems, the role of the public silver housing project currently introduced by the South Korean government is being highlighted. The public silver house is a type of public house that provides housing and social welfare benefits to the low-income senior citizens. In particular, substantial costs are being incurred in the process of delivering the welfare services in the local cities and towns, where low-income senior citizens are scattered over a large area. If they can be concentrated in a public silver house complex, it would substantially shave off the associated delivery costs.

Therefore, the optimal supply of the public silver houses is expected to greatly contribute in stabilizing the elderly people's housing and promoting happiness in their aged life. There are some prerequisites to achieving such goals. A feasibility study should be conducted by analyzing the optimal site selection of the public silver housing project and estimating the savings in the social welfare costs. Toward this goal, a system capable of collecting and analyzing the necessary information should be developed. In this study, concepts that are required for the development of such system were proposed. Additional studies, including simulated analyses via respective data set, should be done in the future.

Acknowledgements

Reference

[1] H. Koo, H. Cho, "An Empirical Study on Housing Preferences by Awareness of Housing and Life Type of Korean Baby-Boomer" *Journal of Consumer Studies*, Vol. 27, No. 2, pp. 57–84, April 2016

[2] H. RA, Study on plans to activate public silver housing, Master thesis, Konkuk University, Seoul, Korea, 2016

[3] J. Jeong, M. Jun, "Spatial Concentrations of the Elderly and Its Characteristics in the Seoul Metropolitan Area", *Journal of the Korea Regional Science Association*, Vol. 29, No. 1, pp. 3-18, March 2013

[4] J. Hong, "A Study on Advent Aging Society and Marketing Strategy of Silver Aged Housing", *Journal of the Korea Culture Industry*, Vol. 12, No. 4, pp. 137–156, December 2012

[5] J. Park, "A Proposal for Model Development of National Rental Elderly Housing in the Aged Society", *Review of Architecture and Building Science*, Vol. 50, No. 11, pp. 43–47, December 2006

[6] Y. W, Nam, "The decision making of location for public rental house using data base", *Advanced Science and Technology Letters*, vol. 60, pp. 87-90, May 2014

[7] J. Ahn, D, Oh, "A Study on the Residential Environmental Characteristics in Japanese Elderly Housing - Focused on the Cases in Tokyo", *Journal of the Korean Urban Management Association*, Vol.24, No. 2, pp. 85–99, June 2011

[8] Y. Kim, J, Baek, "A Strategies to Improve Housing Welfare Services for the Elderly with Low Income : Focused on Supplying Elderly Welfare Housing", *Journal of the Korean Urban Management Association*, Vol. 23, No. 4, pp. 387–418, December 2010

[9] H. Oh, Y, Hong, H. Kim, "A Study on the Spatial Composition Characteristics of Elderly Housing Facilities in Korea", *Journal of Korean Management Association*, Vol.22, No.6, pp.133–142, December 2004

[10] D. Seo, Y, Kim, C. Ha, "Analysis on Dwelling Characteristics and Demand of the Elderly Housing in Local City", J*ournal of The Residential Environment Institute of Korea*, Vol. 14, No. 3, pp.163–175, September 2016

[11] J. Ko, M. Choi, "Patterns of Housing Choice of Korean Elderly Households - Focused on the Residential Mobility and Elderly Housing", *Journal of the Urban Design Institute of Korea Urban Design*, Vol. 15, No. 1, pp. 19–32, February 2014

[12] J. Lee, J. Kwon, "Error Correction Scheme in Location based AR System Using smart phone", *Journal of Digital Contents Society*, Vol. 15, No.2, pp.179-187, April 2015

[13] S. Kim, Y. Kim, D. Seo, H. Kim,, "A Study on Factors Analysis Affecting tenants of Elderly residential facilities", *Journal of The Residential Environment Institute of Korea*, Vol. 12, No. 2, pp. 85-98, June 2014

[14] L. V, Ma, S. H, Park, J. H, Jang and J.H. Parki, "Fussy Desion Making-based Recommendation Channel System using the Social Network Database", *Journal of Digital Contents Society*, Vol. 17, No. 5, pp. 307-316, October 2016

[16 National Statistical Office, "Projected population trends", December 2011

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