The Effect of Household and Housing Types on Changes of Population Cohorts in New Towns

신도시 주거단지의 가구 및 주택형태가 단지 내 인구구조변화에 미치는 영향

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국문초록

1. 내 용

(1) 연구목적

본 연구는 1990년대 초반 수도권의 주택가격 안정시키고 보다 양질의 주택을 공급하기 위해 건설된 수도권 1기 신도시내아파트 단지를 대상으로 거주자들의 가구 및 주택, 이주에 관한 특성을 조사하여 주민 또는 가구의 고령화 가능성이 높은지 진단하고, 그것이 아파트 단지의 주택평형 구성과 어떠한 관련이 있는지를 밝히는데 그 목적이 있다.

(2) 연구방법

분당신도시 내에서도 지난 20년간의 인구구조가 다른 지역에 비해 가장 상이하게 변화한 야탑2동내 일부 단지를 대상으로 가구 및 주택관련정보, 현재 주택전입 시 정보, 향후 분당신도시 거주의향 등에 대해 가구별 설문조사를 바탕으로 교차분석과 정성적 분석을 실시하였다.

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(3) 연구결과

주택을 소유하고 있으면서 거주기간이 길고 주택면적이 클수록 분당신도시 내에 계속해서 거주를 희망하는 가구비율이 높았다. 또한, 주택점유형태, 주택면적 및 거주기간간의 상관관계를 분석한 결과, 주택규모가 클수록 주택을 소유하고 있는 비율이 높았고 임차가 아닌 자가인 경우에 한 주택에서 거주하는 기간이 길었으며 대형평형일수록 거주기간이 긴 경우가 많았다. 상관분석 및 교차분석을 실시한 결과도 주택면적이 큰 것과 자가 비율이 높은 것 그리고 거주기간이 긴 것 간에는 서로 연관성이 있는 것으로 나타났다.

2. 결 과

대형평형 위주의 단조로운 평형으로 구성되어있는 아파트단지 일수록 실제 가구이동 빈도가 낮아(거주기간이 길고) 부동산 경기침체 및 중대형 주택수요 감소, 주택의 노후화 문제로 인해 단지 거주민들의 고령화가 일어날 가능성이 높다는 것을 의미한다.

3. 핵심어

- 인구구조, 인구고령화, 가구이동, 신도시, 거주의향
- Population Cohorts, Population Aging, Household Migration, New Town, Intention of residence

Ⅰ. Introduction

1. Background and Purpose

At the end of the 1980s, the Korean Government had planned to construct five new towns (Bundang, Pyeongchon, Sanbon, Jungdong and Ilsan) around the Seoul Metropolitan Area at a distance of 20 to 25km, one-hour commuting distance from Seoul. These new towns were planned in order to solve the shortage of the housing supply volume and the problem of unstable real estate market. The construction of the new towns was rapidly completed within 5 to 6 years by a special law, 'Residential Land Development Promotion Act'which simplified the construction process.

About twenty years have passed since the completion of these first planned new towns, and they became 'hot spots' in the capital region, Korea. Most of the urban facilities have been equipped according to their original plans, and self-supporting commercials and communities have been organized within these 'mature' new towns. Even though these first planned new towns had their merits such as good residential and educational environment and geo-graphical location in the capital region, their merits have been de-escalated due to the decrepit houses and infrastructures and the Seoul inner city regeneration policies that supplied residential lands.

Population aging and decline have been causing social and spatial problems in Korea. In the case of suburban new towns built in order to solve the housing shortage of the metropolitan area in the period of high economic growth, these suburban new towns have the characteristics that the somewhat same class migrates largely in a short time to new towns by planned housing types[1]. In the circumstance of a low birth rate and population aging, suburban new towns where the same migrate over a similar period on a large scale are more susceptible to aging than the areas where population migration happens gradually over a long period. It has actually arisen in an initial housing complex of Tama new town in Japan.

Against this background, the purpose of this study is to research characteristics about the household, housing, and migration of apartment complexes' residents in these first planned new towns which were constructed in order to stabilize the housing price and to supply better quality of housing in the Metropolitan Area in the late 1980s. This study also examines the possibility of population aging and identifies the types of households and apartment complexes which largely have the possibility of population aging.

2. Scope and Method

In this research, Bundang new town was set for a spatial range, as it is a typical city of first planned new towns in the capital region constructed in order to stabilize real estate prices in the period of high economic growth; This research especially focuses on one neighborhood in Yatap 2-dong which has shown a different pattern of population cohorts from the other regions in Bundang for last 20 years.

Research materials were collected through an interview survey (systematic random sampling methods, based on questionnaires) to grasp characteristics of each household in complexes which is hard to get from census data, and also samples of the survey were compared with some census data of census output areas from the National Statistical Office to judge whether it had representatives.

Ⅱ. Literature Review

In order to analyze how household and housing affect changes of population cohorts in new town apartment complexes, it is needed to identify, first, that what kinds of characteristics households have, what purpose of migration they had for, what type of housing tenure they have and what size of housing they currently live in.

There have been a large number of studies which have analyzed household characteristics, migration purposes, and housing types of residents who migrated to the new towns per period from the beginning of moving into first planned

1) Asami, Y., "A Rediscovery of Suburbs: From the house environmental management", *Tama New Town Study*, 2008, vol.10, p.46~49.

new towns around the Metropolitan Area to the present time.

Dongkyu Lee (2000)[2] researched factors affecting population migration through a survey of Ansan and Bundang divided into macro and micro aspects; examined differences between Ansan, the industrial suburban new town, and Bundang, the housing suburban new town. He concluded that the people migrated actively were as follows. Their ages were 30 to 40, occupations were tech workers, sales and service, housing sizes were small, housing tenure types were rental, residential duration was shorter, and migration purposes were job opportunity and income increase.

Chunho Lee (2001)[3] researched how the satisfaction of the residential environment in the new town was affected by transportation, urban facilities, and external environment conditions according to residents' characteristics such as residential duration, housing size, housing tenure type, householders' age and education, and housing type through an interview survey of first planned new towns around the Metropolitan Area and analyzed reasons for migration to the new town by each of five new towns.

Way Lee (2007)[4] analyzed the change of population migration in the Metropolitan Area and Gyeonggi-do and migration factors between the capital and non-capital region, and within the capital region; investigated origin, commuting regions, migration reasons, and satisfaction of residential areas through a survey of case study areas such as new towns. And She drew a conclusion that people prefer migration to the first planned new town if their education levels and household incomes are higher, ages are higher, and migration distance is shorter.

Chunghwan Lee (1998)[5] conducted primary investigation of 21 dongs' population changes in Bundang-gu before and after new town development through statistics and literature; performed a survey of households who have jobs in Seoul and who migrated initially to Bundang regarding household size, householder's age, occupation and its location, education, housing income, housing size, a place of moving out, migration reason, and re-migration plan. And he identified that Bundang at the early stage of building performed the function of bed town since it was lack of self-sufficiency.

The investigation of characteristics of migrants' households and housing and the analysis of population cohort changes of the areas are needed to be conducted at the same time in order for better analysis on the relationship

2) Lee, D. K., "A Study on the Migration Characteristics of the Ansan, Bundang New Towns", Ph.D dissertation, Hongik University, 2000, pp.62~75.

3) Lee, C. H., "Analysis of Residential Satisfaction and Personal Characteristics of New Town in Seoul Metropolitan Area", *Journal of Korea Planner's Association*, 2001, vol.36, No.6, pp.191~204.

4) Lee, W., *A Study on In-migration Characteristics in the Second Generation of Newtown, the Capital Area*, Gyeonggi Research Institute, Gyeonggido, 2007, pp.46~63.

5) Lee, C. H., "A Study on the Characteristics of Bundang New Town Residents", Ph.D dissertation, Kyung Hee University, 1998, pp.82~98.

among them. Kiheon Ryu (2011)[6] analyzed changes of population cohorts of Bundang new town in his study; he analyzed it by age divided into development periods in a macro view and identified features; in a micro view as well, he proposed changes of population cohorts and differences between Sunae-dong, located in the heart of Bundang new town, and Yatap-dong, outside Bundang; but he proposed that the concrete basis to support the result was the limitation of the study.

As mentioned above, previous studies have so far analyzed each characteristic after surveying characteristics of new town residents' household and housing, and migration patterns and reasons at a particular point of time conducting surveys; they have conducted analysis about changes of population cohorts, but not about causes. Few studies have been done on the subject of population aging of first planned new towns around the Metropolitan Area because aging in new towns has not really started yet.

This study has tried to make the differentiation from previous studies by comparing information such as household, housing, and migration at the moment of migration to Bundang new town and the present, and intention to live in Bundang in future with patterns of apartment unit sizes in complexes and by analyzing how housing types would affect the population cohort changes.

Ⅲ. Summary of Survey

In this study, after selecting typical apartment complexes in Yatap 2 dong, Bundang new town, the survey was conducted through the interview survey in order to grasp the content which was hard to get from census data, such as satisfaction with current residence of each household and intention to reside continuously in. Target households were chosen to collect data as similarly to the census data from 2010 about housing tenure types and component ratio items by apartment unit sizes. The survey was conducted for one month from November 8th to December 7th of 2012 and a total of 93 households participated in the interview survey but only 89 households among those were valid.

〈Table 1〉 Survey questions

Category	Details
Household information	householder sex, householder age, structure of household, and number of household members
Housing information	complex name, housing tenure type, housing unit size
Information of transfer to Bundang	move-in time, move-out area, move-in reason
Residence satisfaction	intentions and reasons to live in Bundang, satisfaction with structures of apartment unit sizes.

6) Ryu. K. H., "A development process and the present conditions of the Bundang New Town in Korea", *Tama New Town Study*, 2011, vol.13, pp.70~79.

1. Survey Questions

The survey was sorted into two points in time (① at the time of migration to Bundang new town, ② the present) dealt with household information of each point of the time (householder's sex, householder's age, structure of household, and numbers of household members) and housing information (complex name, housing tenure type, housing unit size) and the information of transfer to Bundang (move-in time and reason, move-out area), intentions and reasons to live in current Bundang, and satisfaction with structures of apartment unit sizes of current residence.

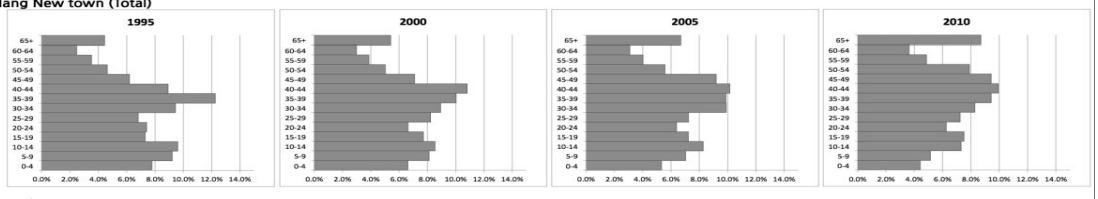
2. Reasons to Select the Target Area

According to census data analysis, unlike the other dongs (regions) in Bundang, a population pyramid of Yatap 2-dong has been turning into a jar-type, not a star because the ratio of household with student children has decreased since 2005. Looking into the Table 2 closely, the average ratio of 10 to 19years old residents of Yatap 2-dong was 1.2% higher than that of Bundang in 1995. But the ratio of Yatap 2-dong became 1.9% lower than that of Budang in 2010. The average

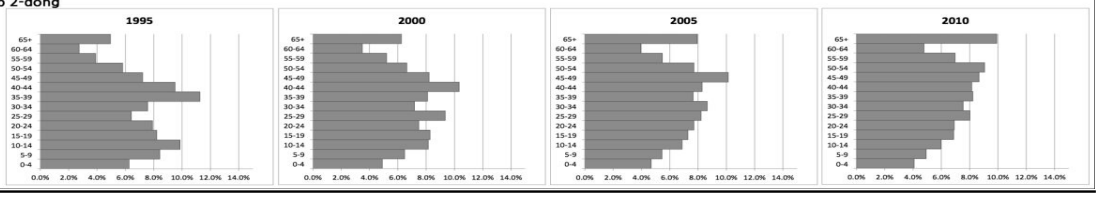
〈Table 2〉 Comparison of population cohorts changes between Bundang NT and Yatap 2-dong

Time	Region	Population by 5 years old														
		Sum	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
1995	Bundang NT	314,539	24,505	28,962	30,216	22,970	23,293	21,442	29,681	38,550	28,083	19,473	14,558	11,061	7,778	13,966
		100.0%	7.8%	9.2%	9.6%	7.3%	7.4%	6.8%	9.4%	12.3%	8.9%	6.2%	4.6%	3.5%	2.5%	4.4%
	Yatap2-dong	20,075	1,257	1,693	1,978	1,649	1,587	1,288	1,520	2,261	1,907	1,448	1,164	783	548	992
		100.0%	6.3%	8.4%	9.9%	8.2%	7.9%	6.4%	7.6%	11.3%	9.5%	7.2%	5.8%	3.9%	2.7%	4.9%
2000	Bundang NT	376,278	24,887	30,545	32,109	29,032	24,928	30,941	33,621	37,739	40,711	26,718	18,904	14,544	11,253	20,345
		100.0%	6.6%	8.1%	8.5%	7.7%	6.6%	8.2%	8.9%	10.0%	10.8%	7.1%	5.0%	3.9%	3.0%	5.4%
	Yatap2-dong	19,516	955	1,265	1,590	1,615	1,459	1,825	1,400	1,579	2,016	1,602	1,295	1,016	679	1,220
		100.0%	4.9%	6.5%	8.1%	8.3%	7.5%	9.4%	7.2%	8.1%	10.3%	8.2%	6.6%	5.2%	3.5%	6.3%
2005	Bundang NT	414,590	22,104	29,169	34,299	29,924	26,505	29,984	41,074	40,974	42,088	38,145	23,075	16,686	12,806	27,756
		100.0%	5.3%	7.0%	8.3%	7.2%	6.4%	7.2%	9.9%	9.9%	10.2%	9.2%	5.6%	4.0%	3.1%	6.7%
	Yatap2-dong	18,672	874	1,018	1,282	1,361	1,439	1,532	1,616	1,429	1,548	1,892	1,439	1,022	737	1,483
		100.0%	4.7%	5.5%	6.9%	7.3%	7.7%	8.2%	8.7%	7.7%	8.3%	10.1%	7.7%	5.5%	3.9%	7.9%
2010	Bundang NT	394,625	17,412	20,263	28,823	29,638	24,714	28,544	32,643	37,203	39,203	37,202	31,125	19,184	14,326	34,345
		100.0%	4.4%	5.1%	7.3%	7.5%	6.3%	7.2%	8.3%	9.4%	9.9%	9.4%	7.9%	4.9%	3.6%	8.7%
	Yatap2-dong	17,825	726	878	1,063	1,223	1,231	1,430	1,343	1,465	1,451	1,543	1,613	1,243	849	1,767
		100.0%	4.1%	4.9%	6.0%	6.9%	6.9%	8.0%	7.5%	8.2%	8.1%	8.7%	9.0%	7.0%	4.8%	9.9%

Bundang New town (Total)



Yatap 2-dong



Note : The population of Bundang new town on the table is a total of population of administrative dongs which even partially includes area of Bundang new town because Bundang new town doesn't consist of exact boundary lines of administrative dongs.

ratio of residents aged 65 or older of Yatap 2-dong was 0.5% higher than that of Bundang in 1995. But the ratio of Yatap 2-dong increased 9.9% and became 1.2% higher than that of Bundang in 2010. In the era of low fertility and population aging, the latter has a higher chance to accelerate further under this type of population cohorts.

Yatap 2-dong was selected as a target area in order to find out the factors which caused this population cohort change that shows differently in the other regions in Bundang and to predict this area's changing direction of population cohorts.

3. Target Apartment Complexes

One neighborhood unit composed with Five apartment complexes, located near Yatap station in Yatap 2-dong in Bundang, was selected as a target for above reasons. Five apartment complexes account for about 56% of the whole households in Yatap 2-dong and the rates of household types and housing tenure status are almost similar to the rate of the whole Yatap 2-dong.

Households consisting of four members had the highest percentage, about 44% and the average number of household members was 3.7. The average age of current householders was 53 and 50s accounted for 46.1%, 40s for 25.8%, and 60s for 18.0% respectively.

The target complexes were comprised of five complexes which people moved into in stage 2 of Bundang new town from June 16, 1990 to June 30, 1995. Three of those complexes, Gyeonghyang, Gisan, and Jindeok, 1166 households in all, had simple types of apartment unit sizes whose exclusive area is either 122㎡ or 154㎡ (158㎡ in part). The rest two complexes, Gyeongnam and Byeoksan, 1530 households in all, consisted of various unit sizes from 79㎡ to 192㎡.

Looking into the types of housing tenure of apartment complexes by the variety of housing area, the percentage

〈Table 3〉 Summary of target apartment complexes

Type of complex in terms of housing area	Name of apartment complex	Household	First occupancies	Housing unit size (㎡)	Number of stories (Min.-Max.)
Simpe	Gyeonghyang	294	Jun. 1993	122/158	15-22F
	Gisan	288	Jun. 1993	122/158	16-22F
	Jindeok	584	Jun. 1993	122/154/158	12-22F
Various	Gyeongnam	884	Feb. 1994	79/90/106/125/140/162	15-23F
	Byeoksan	646	Feb. 1994	79/90/106/125/140/162	12-23F
Total		2,696	-	-	-

〈Table 4〉 Housing tenure by complex type (based on a variety of housing area)

Housing tenure type / Type of complex in terms of housing area	Home owner	Rental household	No response	Sum
Various	18(47.4%)	20(52.6%)	0(0.0%)	38(100.0%)
Simple	35(68.6%)	11(21.6%)	5(9.8%)	51(100.0%)
Total	53(59.6%)	31(34.8%)	5(5.6%)	89(100.0%)

of home owners in two complexes consisting of various unit sizes was relatively lower than the percentage of the rest three complexes with simple ones.

An average of 10.4 years has elapsed since residents moved into current housing in Bundang new town. According to the pattern of real estate price increases in the metropolitan area from 1992, the beginning of moving into target apartment complexes, to the present, the periods are classified as four stages: period of construction, from 1992 to 1997, the first half of maturity, from 1998 to 2002, the second half of maturity, from 2003 to 2007, and period of decline, from 2008 to 2012. The percentage of households answered the survey is shown in the table 5. On the other hand, the rate of transfer from Seoul or Gyeonggi was higher regardless of any periods and, especially, neighboring of Gangnam 3 districts in Seoul and Seongnam-si in Gyeonggi-do, which Bundang new town is in, had a higher percentage than the others do.

Ⅳ. Analysis

1. Analysis of Intention and Reason to Reside in Bundang

As a result of asking 89 households who participated in the interview survey of intention to reside in Bundang in future, about two-third of them wanted to reside continuously in Bundang (①) and the rest one-third wanted to leave Bundang (②, ③). In the perspective of housing tenure types, 79.2% of home owners answered to live continuously while 48.4% of rental households did so. In type of complex in terms of housing area's, simple types of apartment complexes (76.5%) consisting of similar unit sizes had a higher rate of responses that they would live continuously than complexes of various unit sizes (57.9%); especially, apartment complexes of which exclusive area is over 102㎡ and under 135㎡ had a higher rate of intention to reside in future (87.2%). As illustrated at table 4, it is because simple type complexes have a higher rate of homeowners and consist of larger unit

〈Table 5〉 Move-in time and previous residence of target households

Previous residence area / Initial migration period/ Residential duration current housing	Seoul metropolitan area					Non-Seoul metropolitan area	Sum
	Seoul	Gangnam 3 districts	Gyeonggi	Sungnam	Incheon		
Period of construction (1992-1997)/16 to 20years	7 (43.8%)	3 (18.8%)	7 (50.0%)	3 (18.8%)	0 (0.0%)	1 (6.3%)	15 (100.0%)
The first half of maturity (1998-2002)/11 to 15years	11 (36.7%)	1 (3.3%)	13 (43.3%)	8 (26.7%)	1 (3.3%)	5 (16.7%)	30 (100.0%)
The second half of maturity (2003-2007)/6 to 10years	6 (27.3%)	1 (4.5%)	14 (63.6%)	5 (22.7%)	1 (0.0%)	2 (9.1%)	23 (100.0%)
Period of decline (2008-2012)/1 to 5years	10 (47.6%)	1 (4.8%)	11 (52.4%)	9 (42.9%)	0 (0.0%)	0 (0.0%)	21 (100.0%)
Total(average residential duration is 10.4years)	34 (38.2%)	6 (6.7%)	45 (51.7%)	25 (28.1%)	2 (1.1%)	8 (9.0%)	89 (100.0%)

sizes. Meanwhile, there was no special point about move-in reasons by residential duration or household types.

As a result of asking the reason (multiple choice) to the 61 holders who wanted to live continuously in Bundang, the biggest answer (21.4%) was that they wanted to maintain well-developed relationship with neighbors; the second one (19.4%) was that it was easy for their family to commute. This means that Bundang has developed from just bed-town at the initial construction stage into a residential area with self-sufficiency at some degree.

By housing tenure type, responses from rental households were as follows; ease to commute (20.8%), educational environment for children (16.7%), surrounding amenities (16.7%), and also well-developed relationship with neighbors (16.7%).

By housing unit size, a high percentage of households of national housing scale with exclusive area of under 85㎡ said that they wanted to

〈Table 6〉 Intention of residence in Bundang NT in future by household characteristics

Intention of residence in Bundang new town		① Want to live continuously	② Want to leave	③ Want to leave immediately but impossible to leave because of a few conditions	Sum	Chi-sq./ Asymp.Sig. (2-sided)
Type of complex in terms of housing area	Various	22 (57.9%)	10 (26.3%)	6 (15.8%)	38 (100.0%)	3.535/ 0.171
	Simple	39 (76.5%)	7 (13.7%)	5 (9.8%)	51 (100.0%)	
	Total(Valid samples: 89 households)	61 (68.5%)	17 (19.1%)	11 (12.4%)	89 (100.0%)	
Move-in time to current housing/ residential duration	period of decline (2008-2012)/ 1 to 5 years	14 (66.7%)	4 (19.0%)	3(14.3%)	21 (100.0%)	3.085/ 0.798
	the second half of maturity (2003-2007)/6 to 10 years	16 (69.6%)	3 (13.0%)	4(17.4%)	23 (100.0%)	
	the first half of maturity (1998-2002)/11 to 15 years	19 (63.3%)	8 (26.7%)	3(10.0%)	30 (100.0%)	
	period of construction (1992-1997)/16 to 20 years	12 (80.0%)	2 (13.3%)	1(6.7%)	15 (100.0%)	
	Total (Valid samples: 89 households)	61 (68.5%)	17 (19.1%)	11(12.4%)	89 (100.0%)	
Household type	One-generation household	10 (71.4%)	4 (28.6%)	0(0.0%)	14 (100.0%)	5.277/ 0.260
	Two-generation household	48 (68.6%)	11 (15.7%)	11(15.7%)	70 (100.0%)	
	Three-generation household	3 (60.0%)	2 (40.0%)	0(0.0%)	5 (100.0%)	
	Total (Valid samples: 89 households)	61 (68.5%)	17 (19.1%)	11(12.4%)	89 (100.0%)	
Housing tenure	Home owner	42 (79.2%)	6 (11.3%)	5(9.4%)	53 (100.0%)	9.124/ 0.010
	Rental household	15 (48.4%)	11 (35.5%)	5(16.1%)	31 (100.0%)	
	Total (Valid samples: 84 households)	57 (67.9%)	17 (20.2%)	10(11.9%)	84 (100.0%)	
Type of housing unit size	Exclusive area of under 60㎡	5 (62.5%)	3 (37.5%)	0(0.0%)	8 (100.0%)	16.456/ 0.036
	Exclusive area of over 60㎡ under 85㎡	8 (50.0%)	5 (31.3%)	3(18.8%)	16 (100.0%)	
	Exclusive area of over 85㎡ under 102㎡	12 (50.0%)	7 (29.2%)	5(20.8%)	24 (100.0%)	
	Exclusive area of over 102㎡ under 135㎡	34 (87.2%)	2 (5.1%)	3(7.7%)	39 (100.0%)	
	Total(Valid samples: 87 households)	59 (67.8%)	17 (19.5%)	11(12.6%)	87 (100.0%)	

reside continuously in Bundang because of family's commuting and surrounding amenities.

The two biggest reasons of 17 households who answered that they wanted to leave Bundang were deterioration of housing (17.4%) and long-term depression of real estate price (17.4%). However, there was no special point about characteristics by each household such as migration time, household type, housing tenure,

〈Table 7〉 Reasons to live continuously in Bundang NT by household characteristics

Reasons to live continuously (Multiple choice)		Proud to live in Bundang	Maintain a well-developed relationship with neighbors	Good accessibility to Seoul	Surrounding amenity (hospital, library, mall, etc)	Easy to commute	Good educational environment for children (school districts and institutes)	Surrounding leisure sports facilities (Central park, Tan-river, etc.)	High living standard of residents in complexes	resonable housing price	Etc.	Sum
Type of complex in terms of housing area	Various	0 (0.0%)	7 (21.2%)	3 (9.1%)	7 (21.2%)	9 (27.3%)	2 (6.1%)	1 (3.0%)	0 (0.0%)	0 (0.0%)	4 (12.1%)	33 (100%)
	Simple	5 (7.7%)	14 (21.5%)	9 (13.8%)	9 (13.8%)	10 (15.4%)	5 (7.7%)	6 (9.2%)	1 (1.5%)	3 (4.6%)	3 (4.6%)	65 (100%)
	Total (valid samples: 61 households)	5 (5.1%)	21 (21.4%)	12 (12.2%)	16 (16.3%)	19 (19.4%)	7 (7.1%)	7 (7.1%)	1 (1.0%)	3 (3.1%)	7 (7.1%)	98 (100%)
Move-in time to current housing (residential duration)	period of decline (2008-2012)/ 1 to 5 years	0 (0.0%)	5 (25.0%)	2 (10.0%)	2 (10.0%)	7 (35.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (20.0%)	20 (100%)
	the second half of maturity (2003-2007)/ 6 to 10 years	2 (8.3%)	4 (16.7%)	4 (16.7%)	3 (12.5%)	3 (12.5%)	3 (12.5%)	1 (4.2%)	0 (0.0%)	2 (8.3%)	2 (8.3%)	24 (100%)
	the first half of maturity (1998-2002)/ 11 to 15 years	1 (3.0%)	8 (24.2%)	3 (9.1%)	7 (21.2%)	5 (15.2%)	3 (9.1%)	3 (9.1%)	1 (3.0%)	1 (3.0%)	1 (3.0%)	33 (100%)
	period of construction (1992-1997)/ 16 to 20 years	2 (9.5%)	4 (19.0%)	3 (14.3%)	4 (19.0%)	4 (19.0%)	1 (4.8%)	3 (14.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	21 (100%)
	Total (valid samples: 61 households)	5 (5.2%)	21 (21.6%)	12 (12.4%)	16 (16.5%)	19 (19.6%)	7 (7.2%)	6 (6.2%)	1 (1.0%)	3 (3.1%)	7 (7.2%)	97 (100%)
Household type	One-generation household	0 (0.0%)	4 (28.6%)	1 (7.1%)	3 (21.4%)	1 (7.1%)	1 (7.1%)	3 (21.4%)	0 (0.0%)	0 (0.0%)	1 (7.1%)	14 (100%)
	Two-generation household	4 (5.0%)	16 (20.0%)	10 (12.5%)	12 (15.0%)	18 (22.5%)	6 (7.5%)	4 (5.0%)	1 (1.3%)	3 (3.8%)	6 (7.5%)	80 (100%)
	Three-generation household	1 (25.0%)	1 (25.0%)	1 (25.0%)	1 (25.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (100%)
	Total (valid samples: 61 households)	5 (5.2%)	21 (21.6%)	12 (12.4%)	16 (16.5%)	19 (19.6%)	7 (7.2%)	7 (7.2%)	1 (1.0%)	3 (3.1%)	7 (7.2%)	97 (100%)
Housing tenure	Home owner	3 (4.4%)	16 (23.5%)	9 (13.2%)	11 (16.2%)	13 (19.1%)	3 (4.4%)	7 (10.3%)	0 (0.0%)	2 (2.9%)	4 (5.9%)	68 (100%)
	Rental household	1 (4.2%)	4 (16.7%)	3 (12.5%)	4 (16.7%)	5 (20.8%)	4 (16.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (12.5%)	24 (100%)
	Total (valid samples: 57households)	4 (4.3%)	20 (21.7%)	12 (13.0%)	15 (16.3%)	18 (19.6%)	7 (7.6%)	7 (7.6%)	0 (0.0%)	2 (2.2%)	7 (7.6%)	92 (100%)
Type of housing unit size	National housing scale (exclusive area of under 85㎡)	0 (0.0%)	3 (14.3%)	3 (14.3%)	4 (19.0%)	6 (28.6%)	1 (4.8%)	1 (4.8%)	0 (0.0%)	0 (0.0%)	3 (14.3%)	21 (100%)
	National housing scale (exclusive area of over 85㎡)	5 (6.7%)	18 (24.0%)	9 (12.0%)	11 (14.7%)	12 (16.0%)	6 (8.0%)	6 (8.0%)	1 (1.3%)	3 (4.0%)	4 (5.3%)	75 (100%)
	Total (valid samples: 59 households)	5 (5.2%)	21 (21.9%)	12 (12.5%)	15 (15.6%)	18 (18.8%)	7 (7.3%)	7 (7.3%)	1 (1.0%)	3 (3.1%)	7 (7.3%)	96 (100%)
Type of housing unit size	Exclusive area of under 60㎡	0 (0.0%)	2 (28.6%)	0 (0.0%)	1 (14.3%)	2 (28.6%)	1 (14.3%)	1 (14.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	7 (100%)
	Exclusive area of over 60㎡ under 85㎡	0 (0.0%)	1 (7.1%)	3 (21.4%)	3 (21.4%)	4 (28.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (21.4%)	14 (100%)
	Exclusive area of over 85㎡ under 102㎡	2 (11.1%)	4 (22.2%)	0 (0.0%)	3 (16.7%)	5 (27.8%)	1 (5.6%)	0 (0.0%)	0 (0.0%)	2 (11.1%)	1 (5.6%)	18 (100%)
	Exclusive area of over 102㎡ under 135㎡	3 (5.3%)	14 (24.6%)	9 (15.8%)	8 (14.0%)	7 (12.3%)	5 (8.8%)	6 (10.5%)	1 (1.8%)	1 (1.8%)	3 (5.3%)	57 (100%)
	Total (valid samples: 59 households)	5 (5.2%)	21 (21.9%)	12 (12.5%)	15 (15.6%)	18 (18.8%)	7 (7.3%)	7 (7.3%)	1 (1.0%)	3 (3.1%)	7 (7.3%)	96 (100%)

housing area, and etc due to limitation of sample size.

11 households answered that they wanted to leave immediately but could not. Their reasons were as follows; the most frequently selected response was that it was impossible to migrate economically since housing prices went down (35.0%); the next frequent response was to complete children's education (25.0%). This data did not have a special point either about characteristics by household such as migration time, household type, housing tenure, housing unit size, and etc due to limitation of sample size.

2. Analysis of Factors Affecting Changes of Population Cohorts

Generally, low frequency of migration within (move-in and out) apartment complexes may accelerate residents' aging in the circumstance that problems of low fertility and population aging are getting worse. The main cause of low frequency of migration is a downturn in housing prices and house trading volumes due to depression of the real estate market; in this era it can happen severely to medium-large sized and aged apartment of which preference is relatively low and the merit of price and practicability are lessened.

The results of the relevant survey shows that the smaller housing unit size they had, the higher rate of a lease on key money basis or monthly basis they had, while the larger the housing size they had, the more the home owners they were regarding the relation between housing unit sizes and housing tenure type.

Examining the relation between housing tenure type and residential duration of current housing, the average residential duration of home owners was 12.3 years. It was longer

〈Table 8〉 Housing tenure type by housing unit size

Housing unit size \ Housing tenure type	Home owner	Rental household	Sum	Chi-sq./Asymp.Sig. (2-sided)
Exclusive area of under 60㎡	2(25.0%)	6(75.0%)	8(100.0%)	10.526/ 0.015
Exclusive area of over 60㎡ under 85㎡	8(50.0%)	8(50.0%)	16(100.0%)	
Exclusive area of over 85㎡ under 102㎡	12(57.1%)	9(42.9%)	21(100.0%)	
Exclusive area of over 102㎡ under 135㎡	30(78.9%)	8(21.1%)	38(100.0%)	
Total(valid samples of 83 households)	53(63.9%)	30(36.1%)	83(100.0%)	

〈Table 9〉 Residential duration of current housing by housing tenure

Housing tenure \ Residential duration	1 to 5 years	6 to 10 years	11 to 15 years	16 to 20 years	Sum	Average residential duration	Chi-sq./ Asymp.Sig. (2-sided)
Home owner	6(11.3%)	14(26.4%)	18(34.0%)	15(28.3%)	53(100.0%)	12.3 years	15.637/ 0.001
Rental household	12(38.7%)	8(25.8%)	11(35.5%)	0(0.0%)	31(100.0%)	7.8 years	
Total(valid samples of 84 households)	18(21.4%)	22(26.2%)	29(34.5%)	15(17.9%)	84(100.0%)	10.6 years	

〈Table 10〉 Type of housing unit size by residential duration

Type of housing unit size / migration period/ residential duration	Exclusive area of Under 60㎡	Exclusive area of Under 85㎡	Exclusive area of Under 102㎡	Exclusive area of under 135㎡	No response	Sum	Chi-sq./ Asymp. Sig. (2-sided)
period of decline (2008-2012)/ 1 to 5 years	4 (19.0%)	8 (38.1%)	4 (19.0%)	4 (19.0%)	1 (4.8%)	21 (100%)	16.523/ 0.057
the second half of maturity (2003-2007)/6 to 10 years	2 (8.7%)	3 (13.0%)	7 (30.4%)	11 (47.8%)	0 (0.0%)	23 (100%)	
the first half of maturity (1998-2002)/11 to 15years	2 (6.7%)	3 (10.0%)	10 (33.3%)	14 (46.7%)	1 (3.3%)	30 (100%)	
period of construction (1992-1997)/16 to 20years	0 (0.0%)	2 (13.3%)	3 (20.0%)	10 (66.7%)	0(0.0%)	15 (100%)	
Total(valid samples of 89 households)	8 (9.0%)	16 (18.0%)	24 (27.0%)	39 (43.8%)	2(2.2%)	89 (100%)	
Average residential duration	6.3 years	8.3 years	10.9 years	11.9 years	9.5 years	10.4 years	

〈Table 11〉 Pearson Correlations

Pearson Correlations	Current residential duration	Current housing size	Current housing tenure (1: home owner/2: rental household)
Current residential duration	1	0.328**	-0.402**
Current housing size	0.328**	1	-0.379**
Current housing tenure (1: home owner/ 2: rental household)	-0.402**	-0.379**	1

**. Correlation is significant at the 0.01 level (2-tailed).

than the average residential duration of rental householders, 7.8 years.

On the other hand, larger housing unit size had longer residential duration. For example, the average residential duration in the largest housing size type, exclusive area of over 102㎡ under 135㎡, in target complexes was 11.9 years which was longer than the average of the whole target households, 10.4 years; this was about twice as long as the average of the smallest type, exclusive area of under 60㎡, 6.3 years. In addition, households who have migrated to Bundang since 2008 had a higher rate of living in national housing scale, exclusive area of under 85㎡. However, the result of cross analysis showed that there was no statistical correlation between residential duration and housing unit size.

To sum up, the apartment with larger unit size had higher rate of home owners (Table 8); the residential duration was longer if residents owned the houses (Table 9). Those results of the survey indicate that the aging process may be accelerated by external causes such as depression of the real estate market, low fertility, and deterioration of complexes in the case of the complexes consisting of large sized apartments. because residents of large sized apartments migrated less frequently than those of small sized apartments did.

Through the analysis of correlations among three factors, there was a positive correlation between residential duration and housing unit size of current housing. And there was a negative correlation between unit size and tenure type of current housing, and also a negative correlation between tenure type and residential duration of current housing. The analysis means that there

are correlations among three factors: larger housing size, higher rate of home owner, and longer residential duration.

Lastly, the survey tried to find the cause of lower rate of households with student children in Yatap 2-dong compared to the other regions (Sunae 1-dong which has same move-in time as Yatap 2-dong was the comparison group in this research.). As a result, 28.7% answered that the influx of the population from other regions, especially with student children, was difficult because migration had been inactive. The other answers were as follows; different educational conditions such as school districts and institutes (26.4%) and inadequate residence of households with student children for economic reason.

V. Conclusion

In this study, the survey was conducted at specific apartment complexes in Yatap 2-dong, in which population cohorts has recently been weakened. Bundang new town was one of the first planned new towns in the Seoul Metropolitan Area and constructed for housing price stability of the Metropolitan Area in the early 1990s. This research provided the information of the migration to Bundang in the early 1990s, current households and housing, and the intention to reside continuously in Bundang in future. Based on the survey results of households, this research analyzed how these household characteristics would affect population aging of apartment complexes in future.

About two-third among a total of 89 valid household wanted to reside continuously in Bundang due to the community in apartment complexes and easy commuting of household members, while the rest one-third wanted to leave Bundang new town mostly because of real estate recession

〈Table 12〉 Reasons of aging of population cohort in Yatap 2-dong

Causes of difference in population cohorts between Yatap 2-dong and Sunae 1-dong (multiple choice)		A little inconvenient for transportation to Seoul	Difference in educational conditions (school districts, institutes, etc.)	Inactive population migration (long residential duration)	Economically inadequate for households with students	Difference in station commercial area	Etc.	Sum
Type of complex in terms of housing area	Various	5 (16.1%)	10 (32.3%)	8 (25.8%)	5 (16.1%)	2 (6.5%)	1 (3.2%)	31 (100%)
	Simple	2 (3.6%)	13 (23.2%)	17 (30.4%)	17 (30.4%)	5 (8.9%)	2 (3.6%)	56 (100%)
	Total(valid samples of 81 households)	7 (8.0%)	23 (26.4%)	25 (28.7%)	22 (25.3%)	7 (8.0%)	3 (3.4%)	87 (100%)
Type of housing unit size	Exclusive area of under 60㎡	1 (16.7%)	2 (33.3%)	2 (33.3%)	1 (16.7%)	0 (0.0%)	0 (0.0%)	6 (100%)
	Exclusive area of over 60㎡ under 85㎡	1 (6.3%)	4 (25.0%)	5 (31.3%)	3 (18.8%)	2 (12.5%)	1 (6.3%)	16 (100%)
	Exclusive area of over 85㎡ under 102㎡	0 (0.0%)	3 (15.8%)	7 (36.8%)	5 (26.3%)	3 (15.8%)	1 (5.3%)	19 (100%)
	Exclusive area of over 102㎡ under 135㎡	4 (9.1%)	13 (29.5%)	11 (25.0%)	13 (29.5%)	2 (4.5%)	1 (2.3%)	44 (100%)
	Total(valid samples of 80 households)	6 (7.1%)	22 (25.9%)	25 (29.4%)	22 (25.9%)	7 (8.2%)	3 (3.5%)	85 (100%)

and deterioration of apartment buildings. The rate of the people who wanted to reside continuously was higher when, especially, residents owned the houses, the residential duration was longer, and housing sizes were larger.

On the other hand, this research analyzed the correlations among the types of housing tenure, housing sizes, and residential duration based on the answers from the survey participants about households, housing, and migration characteristics; when the housing size was larger, the rate of home owners was higher; when resident was house owner, the residential duration was longer; and when housing size was larger, the residential duration was longer.

Both of the above results apply to the characteristics of simple types of apartment complexes which composed of mainly large units in terms of housing area. The complexes with these characteristics have lower frequency of actual household migration(or population mobility) and will have it in future.

In the era of low fertility and aging, population migration is one of the important factors that can vitalize the urban areas. The case of the apartment housing complex built initially in Tama New Town in Japan showed that the low rate of migration is more likely to accelerate the aging problem in the suburban new town planned in high economic growth.

It can be inferred from the result of this study that simple complexes consisting of large unit sizes have high possibility to decrease household mobility within complexes comparing to other complexes with different characteristics. The external causes of the possibility are decreasing house trading volume overall due to the recession and decreasing medium-large sized housing demands came from a low birth rate and household separation. The internal cause is deterioration of apartments that the first planned new town in the Metropolitan Area face in common. Therefore, simple complexes consisting of large unit sizes need to be monitored continuously.

It is desired to supply diverse unit sizes, not a traditional complex style based on large unit sizes but mix of large and small-medium sizes by collecting residents' opinion, when planning for rebuilding and remodeling.

This studythe interview survey regarding household, housing, and migration that was hard to be identified by census data. Limitations of this study, however, are as follows; samples were not enough to be representative because the survey was not specific enough and the residents' participation level was not high; the survey was conducted in only some complexes in first planned new towns in the Metropolitan Area. We hope that further studies in future would be conducted to broaden the scope of analysis targets into all of first planned new towns in the Seoul Metropolitan Area and to analyze residents' tendency and its effect on aging so that this research would contribute to regeneration of first planned new towns in the Seoul Metropolitan Area.

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