Understanding Residential Needs of Single or 2-Resident Households with a Focus on Communal Amenities of Multi-Family Housing Complexes

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Abstract

Due to rapid socio-demographic changes in Korean society, the number of single or 2-resident households, i.e. small households, are increasing at a faster rate than expected. This research aimed to achieve a clear understanding of the residential needs of small households, which are distinctively different from those of regular households created by blood relations. A survey was carried out to identify the general residential needs of small households, and their communal amenity needs. It was found that small households had clearly different residential needs compared to regular households; the needs were generally uniform among regular households, while small households showed significant differences according to socio-demographics, residential conditions, lifestyle and continuation period of households. Given this, small households were categorized into four subgroups and characterized by type, according to the specific residential needs and communal amenity needs of each subgroup. As a result, this research was able to empirically embrace previous researches, which were sporadically carried out on some subgroups of small households, and to formulate residential conditions that the residents of small households want, based on the understanding of their residential needs rather than simple socio-demographic characteristics.

Keywords: small households; residential needs; communal amenity; multi-family housing

1. Introduction

When speaking of changes in the population and family structures of Korean society, we can never broach the subject without mentioning the rapid growth of single or 2-resident households. According to the Population and Housing Census of the National Statistical Office in 2010, the ratio of single or 2-resident households was 48.1%, almost half of all households. As the number of small households is increasing at a fast pace, changes in the existing policy for housing supply are inevitable.

As a response to such changes, the government has made various efforts to increase the supply of housing for small households by introducing new types of small multi-family housing. However, as such policies were designed to increase the supply of small residences in a short period of time, they failed to reflect the conditions of the housing market and the residential needs of single or 2-resident households. To make up for these shortcomings, it is necessary to conduct research to find out the unique residential needs and lifestyles of small household residents and identify ideal housing conditions for them.

2. Theoretical Background

Due to a rapidly decreasing population in this aging society with low birthrates, there has been growing interest in the changes of demographic structures, which initiated the researches on single-resident households. Lee et al. (2011) analyzed the growth patterns of single-resident households according to socio-demographic characteristics, and found that single-resident households in Korea showed differentiated growth patterns depending on their gender, age, marital status, and educational background. Hong et al. (2011) defined single and 2-resident households in Seoul as "small households". They claimed that 2-resident households had characteristics similar to those of 4 or more-resident households. There have been researches on social, cultural, and economic characteristics, and regional distribution of the young, unmarried, and elderly residents, which are particular subgroups among whole single-resident households (Kim & Kwon, 2012).

In recent years, researches have been conducted on the lifestyle (Kang et al. 2011) of specific subgroups
Among a total of 328 respondents looking for a new place to move into, on the condition that residential expenses and the unit area of households are the same as the current residence. First, respondents were instructed to mark their own preference on a 7-point scale (1 = don’t care at all, 7 = care very much) for 30 questions about general residential needs, and then they were instructed to choose the top 3 priorities among them. Secondly, respondents were given 24 kinds of the most representative communal facilities and were asked to mark their preference using a 7-point scale, and then were instructed to choose the top 3 priorities in the categories of "indoor facilities" or "outdoor facilities". Thirdly, for the availability of communal facilities, 6 questions were related to the utilization scope of communal facilities accessible by foot or by car; another 13 questions were on the social influence through utilizing communal facilities rated by using a 7-point scale. The questions regarding the following were also included, which added up to a total of 93 questions: residential conditions, lifestyle, households’ continuation period, and general demographics.

5. Comparison of General Residential Needs of Regular Households and Small Households

To date, much of the previous researches have been conducted under the premise that differences in residential needs between residents of regular blood-related households (hereinafter, "regular households") and residents of single or 2-resident households (hereinafter, "small households") exist, but this has never been proven. This research first focused on finding out how they differ in general residential needs, before looking into the details of the residential needs of small households.

5.1 Results

Frequency Analysis: Among a total of 328 respondents, 53 (16.2%) belonged to regular households, while 275 (83.8%) belonged to single or 2-resident small households. The majority of regular households were three-resident households, which consist of a child and two parents with occupations as office workers, living in Seoul. The majority of small households were married couples who were office workers living in Seoul. For the housing conditions,
the majority of regular households lived in multi-family housing complexes with a unit area of 50-60m², which have the largest number of supportive facilities among the communal amenities.

· Comparison: After comparing the mean values of all responses on questions regarding the general residential needs, it was found that a significant difference existed only in communality. For the preferred types of communal amenities, there were significant differences in productive facilities including communal office spaces, garden farms, care facilities for children, adolescents and the elderly, and outdoor facilities rather than indoor facilities (Table 1., T-test). However, there was no significant difference regarding the availability of communal amenities. In terms of general socio-demographics, a majority of regular households lived in a house with a unit area of 30-50m², whereas small households lived in houses with widely different unit areas. Significant differences were also shown in vehicle ownership and continuation periods of household with the current resident, in the current residence, and in the current community (Table 2., χ²-test).

To figure out internal deviations inside of the respective small and regular households, general socio-demographics, residential conditions, lifestyle, and continuation periods of the current households were set as independent variables. Then, every significant difference in general residential needs and communal facility needs were collected (Table 3., χ²-test). Regular households indicated generally uniform characteristics, due to a very few significant differences among them. In contrast, small households showed many significant differences in general residential needs and communal amenity needs depending on diverse variables, including marital status, age, residence scale, residential type, and vehicle ownership.

5.2 Discussion

A significant difference was found only in communality, a variable related to general residential needs, between small households and regular households, which was mainly consistent with the findings of previous researches. Comfortability, convenience, and safety & security were chosen as the essential functions of housing, regardless of the scale of a household. However, as small households have relatively simpler lifestyles, they showed lower needs in communality and for communal amenities where residents can get along with each other (socialization), which can help residents to become engaged in productive activities (production), and which provide caring service for the residents (welfare). However, it was obvious that they had greater needs for resting facility, compared to the regular households. It is noteworthy that there were no significant differences between the regular households and small households in their perception about the communal influences of communal amenities, given that an easy access and the frequent use of communal amenities were considered to improve social interaction among residents.

| Table 1. Different Residential Needs Between Small and Regular Household Residents |
|---------------------------------|-----------|-----------|-----------------|-----------|
| Needs                          | Household | N         | M       | t        | p         |
| **General residential needs**  |           |           |         |         |           |
| Comfortability                  | Small     | 275       | 5.36   | -1.26   | .19**     |
|                                 | Regular   | 53        | 5.39   |          |           |
| Convenience                     | Small     | 275       | 5.05   | -1.06   | .01*      |
|                                 | Regular   | 53        | 5.21   |          |           |
| Safety & security               | Small     | 275       | 5.26   | .37     | .01*      |
|                                 | Regular   | 53        | 5.20   |          |           |
| Communalitv                    | Small     | 275       | 4.01   | -2.85   | .01*      |
|                                 | Regular   | 53        | 5.43   |          |           |
| **Variety of amenities**       |           |           |         |         |           |
| Resting                        | Small     | 275       | 4.40   | -3.38   | .00*      |
|                                 | Regular   | 53        | 4.85   |          |           |
| Exercising                      | Small     | 275       | 4.47   | -1.46   | .15**     |
|                                 | Regular   | 53        | 4.74   |          |           |
| Cultural                        | Small     | 275       | 4.21   | -1.74   | .08**     |
|                                 | Regular   | 53        | 4.52   |          |           |
| Supportive                      | Small     | 275       | 4.57   | -0.55   | .10**     |
|                                 | Regular   | 53        | 4.64   |          |           |
| Socializing                     | Small     | 275       | 4.27   |          |           |
|                                 | Regular   | 53        | 4.27   |          |           |
| Productive                      | Small     | 275       | 3.69   | -2.60   | .01*      |
|                                 | Regular   | 53        | 4.21   |          |           |
| Caring                          | Small     | 275       | 4.61   | -2.36   | .02*      |
|                                 | Regular   | 53        | 5.12   |          |           |
| Indoor                          | Small     | 275       | 4.03   | -0.41   | .01*      |
|                                 | Regular   | 53        | 4.40   |          |           |
| Outdoor                         | Small     | 275       | 4.83   | -1.90   | .06**     |
|                                 | Regular   | 53        | 5.09   |          |           |

| Table 2. Different Influential Factors on Small and Regular Household Residents |
|---------------------------------|-----------|-----------|-----------------|-----------|
| **Factor**                      | Small     | N         | %     | Regular | N | % | χ² | p |
| Demographics                    |           |           |       |         |   |   |    |   |
| Marital status                  | Unmarried | 104       | 31.7 | 9      | 2.7 | 14.88 | .00* |
|                                 | Married   | 139       | 42.4 | 12     | 42  | 12.8 | .01* |
|                                 | Divorced/pereaved Relationship | 32 | 9.8 | 2 | 0.6 |
|                                 | Married couple | 119 | 49.0 | 0 | 0.0 | 65.15 | .00* |
|                                 | Parents & children | 55 | 22.6 | 40 | 16.5 |
|                                 | Others    | 16        | 6.6  | 13     | 5.3 |
| Residential condition           | Scale of residential unit | -14m² | 16 | 4.9 | 1 | 0.3 | 63.22 | .00* |
|                                 | 14-30m²   | 36         | 11.0 | 2      | 0.6 |
|                                 | 30-50m²   | 50         | 15.2 | 20     | 6.1 |
|                                 | 50-60m²   | 50         | 15.2 | 30     | 9.1 |
|                                 | 60m²+     | 123        | 37.5 | 0      | 0.0 |
| Lifestyle                       | Car ownership | Not own | 132 | 40.2 | 17 | 5.2 | 4.55 | .03* |
|                                 | Own       | 143        | 43.6 | 36     | 11.0 |
| Household continuity            | Living with same resident | -1 year | 39 | 11.9 | 1 | 0.3 | 15.39 | .00* |
|                                 |          | 1 - 3 years | 61 | 18.6 | 5 | 1.5 |
|                                 |          | 3 - 5 years | 33 | 10.1 | 5 | 1.5 |
|                                 |          | 5 years -  | 142 | 43.3 | 42 | 12.8 |
|                                 | Living in same residence | -1 year | 45 | 13.7 | 2 | 0.6 | 8.54 | .04* |
|                                 |          | 1 - 3 years | 80 | 24.4 | 12 | 3.7 |
|                                 |          | 3 - 5 years | 59 | 17.4 | 9 | 2.7 |
|                                 |          | 5 years -  | 111 | 33.8 | 30 | 9.1 |
|                                 | Living in same community | -1 year | 27 | 8.2 | 2 | 0.6 | 8.21 | .04* |
|                                 |          | 1 - 3 years | 53 | 16.2 | 4 | 1.2 |
|                                 |          | 3 - 5 years | 31 | 9.5  | 5 | 1.5 |
|                                 |          | 5 years -  | 164 | 50.0 | 42 | 12.8 |

*: p<0.05; **: p<0.01; n.s: not significant
As well as differences between small and regular households, it is important to pay attention to disparities inside of each group. Even though the single or 2-resident households were distinguished from regular households by the number of family members, they showed significant differences in residential needs depending on various variables. These results demonstrate that diverse subgroups with heterogeneous characteristics exist even within the small household groups indicating that it is inappropriate to consider small households as a single group simply based on the number of household members. These showed that the findings of previous socio-demographic researches suggesting that there might exist great heterogeneity among the subgroups of small households (Bahn, 2012) were proven to be true in the aspect of residential needs. Therefore, it is necessary to identify each subgroup's respective residential needs by segmenting small households into various subgroups.

### Table 3. Summary of Comparing Differences within Each Group of Small Households and Regular Households

| Needs                      | Resi. | Vari. | Avail. | Re. | Vari. | Avail. |
|----------------------------|-------|-------|--------|-----|-------|--------|
| Gender                     | C     | B,D   | E      | LM  | L     |        |
| Age                        |       |       |        |     |       |        |
| Resident                   | D     | E,K   |        |     |       |        |
| Relationship               | A,B,C | F     |        |     |       |        |
| Marital status             | A,B,C,D| E,K | M,N   |     |       |        |
| Occupation                 | A,B   | L     | M,N   |     |       |        |
| District                   | D     | E,F,K | O     |     |       |        |
| Residential condition      |       |       |        |     |       |        |
| Residence type             | A,B,C,D| E   |       |     |       |        |
| Scale of unit              | B,C,D | E     |       |     |       |        |
| Scale of complex           | A,B,C,D| E   |       |     |       |        |
| Lifestyle                  |       |       |        |     |       |        |
| Car                        |       |       |        |     |       |        |
| Weekdays                   | B,C,D | E,H   | D     |     |       |        |
| Weekend                    | A,B,C | E     |       |     |       |        |
| Household continuity       |       |       |        |     |       |        |
| With resident              |       |       |        |     |       |        |
| In residence               |       |       |        |     |       |        |
| At community               |       |       |        |     |       |        |

| general residential needs  | (A) comfortability, (B) convenience, (C) safety & security, (D) communality |
| amenity needs              | (E) resting, (F) exercising, (G) cultural, (H) supportive; (I) socializing, (J) productive, (K) caring availability (L) access by foot, (M) access by car, (N) availability, (O) communal influence |

### 6. Comparison of Residential Needs among Subgroups of Small Households

Based on the results above, small households were divided into subgroups according to their different residential needs. Each subgroup was identified again according to all independent variables, which are general socio-demographics, residential conditions, lifestyle, and continuation period of the current households. Then, each was characterized depending on the general residential needs and communal amenity needs.

#### 6.1 Results

- **Classification**: Small households were categorized into 4 clusters according to general residential needs and communal amenity needs (Table 4.). Cluster 2 was the largest subgroup (N_{cluster 2} = 129), followed by Cluster 1 (N_{cluster 1} = 64), and Cluster 3 and Cluster 4 (N_{cluster 3} = N_{cluster 4} = 41).

### Table 4. Segmentation of Small Resident Households

| Needs | Cluster | F | p |
|-------|---------|---|---|
| N     | 275     | 64 | 129 | 41 | 41 |
| General residential needs | | | | | |
| Comfortability | 5.79 | 4.91 | 5.69 | 4.76 | 28.02 | .00 |
| Convenience | 5.68 | 4.70 | 5.19 | 4.08 | 44.17 | .00 |
| Safety & security | 5.84 | 4.83 | 5.70 | 4.18 | 38.32 | .00 |
| Communality | 5.01 | 3.86 | 3.59 | 2.49 | 80.74 | .00 |
| Amenity needs | | | | | |
| Resting | 5.36 | 4.00 | 4.54 | 2.79 | 122.85 | .00 |
| Exercising | 5.43 | 4.23 | 4.37 | 2.82 | 91.51 | .00 |
| Cultural | 5.25 | 4.12 | 3.61 | 2.70 | 105.56 | .00 |
| Supportive | 5.24 | 4.45 | 4.46 | 3.38 | 76.73 | .00 |
| Socializing | 4.97 | 3.85 | 3.21 | 2.27 | 135.74 | .00 |
| Productive | 4.84 | 3.61 | 2.99 | 2.08 | 106.47 | .00 |
| Casing | 5.67 | 4.13 | 4.85 | 2.74 | 77.46 | .00 |
| Indoor | 5.04 | 3.89 | 3.63 | 2.47 | 230.20 | .00 |
| Outdoor | 5.63 | 4.48 | 5.01 | 3.36 | 170.89 | .00 |
| On foot | 4.86 | 3.37 | 5.14 | 4.89 | 31.08 | .00 |
| By car | 3.93 | 2.52 | 4.63 | 4.04 | 21.35 | .00 |
| Availability | 5.33 | 4.55 | 5.03 | 4.24 | 24.72 | .00 |
| Influence | 5.37 | 4.47 | 5.03 | 4.27 | 23.28 | .00 |

*: p<0.01

**Frequency Analysis**: Looking into the residential conditions by cluster, the multi-family housing complex accounted for the highest rate in all 4 clusters. In terms of the studio type housing, Cluster 1 accounted for the highest rate. Cluster 3 showed the lowest rate regarding the single-family housing, but it had the highest rate of 19.5% in respect to Quasi-Housing and dormitory among all 4 clusters. When it comes to the scale of household unit, Cluster 2 represented the highest rate of 50.4% in a unit area of more than 60m², while Cluster 3 took up the largest rate of 48.8% in a unit area of 14-30m². In terms of the scale of housing complex, less than 10 households accounted for the highest rating in all 4 clusters. In contrast, Cluster 2 indicated the highest rate of 34.1% in terms of housing complex scale, of more than 300 households. In terms of the current condition of communal amenities, the supportive facility accounted for the largest rate in all 4 clusters, followed by resting, cultural, exercising, socializing, caring, and productive facility. Meanwhile, in terms of lifestyle, Cluster 3 had the highest vehicle ownership rate of 74%, while Cluster 2 showed the longest time of staying home on weekdays. Cluster 2 showed the longest household continuity, which included the continuation period with the current household residents, in the current residence, and in the current neighborhood.

**Comparison**: The differences among the 4 clusters were verified. In a comparative analysis of general residential needs of 4 clusters, significant differences were observed among the mean values of each cluster (Table 5., 1-way ANOVA). Cluster 2 indicated the highest mean values in all residential needs, whereas Cluster 4 showed the lowest mean values out of all 4 clusters in all residential needs except for communality.
Also, through the Post Hoc Comparison test (Duncan test), Clusters 1 and 3 demonstrated similar tendencies in convenience needs, while they had no similarities to both Clusters 2 and 4.

**Table 5. Different General Residential Needs Among 4 Clusters**

| Needs             | Cluster | M    | t    | p     | P.H.C |
|-------------------|---------|------|------|-------|-------|
| General residential needs |         |      |      |       |       |
| Comfortability     | a. cluster 1 | 4.78 | 69.10 | .00<sup>**</sup> | b>c>d   |
|                   | b. cluster 2 | 5.97 |       |       | (D3)  |
|                   | c. cluster 3 | 5.21 |       |       |       |
|                   | d. cluster 4 | 4.48 |       |       |       |
|                   | sum       | 5.36 |       |       |       |
| Convenience       | a. cluster 1 | 4.63 | 88.46 | .00<sup>**</sup> | B      |
|                   | b. cluster 2 | 5.76 |       |       | A     |
|                   | c. cluster 3 | 4.54 |       |       | B     |
|                   | d. cluster 4 | 3.98 |       |       | C     |
|                   | sum       | 5.05 |       |       | (D3)  |
| Safety & Security | a. cluster 1 | 4.63 | 75.44 | .00<sup>**</sup> | b>c>d   |
|                   | b. cluster 2 | 6.06 |       |       | b>a   |
|                   | c. cluster 3 | 4.85 |       |       |       |
|                   | d. cluster 4 | 4.36 |       |       |       |
|                   | sum       | 5.26 |       |       |       |
| Communality       | a. cluster 1 | 3.76 | 97.38 | .00<sup>**</sup> | b>a>c,d |
|                   | b. cluster 2 | 4.90 |       |       |       |
|                   | c. cluster 3 | 2.68 |       |       |       |
|                   | d. cluster 4 | 2.94 |       |       |       |
|                   | sum       | 4.01 |       |       |       |

D: Duncan; D3: Dunnett T3; ※: similar in same characters

* *: p<0.01

In comparison of communal amenity needs, the mean values of each cluster were significantly different from each other (Table 6.). Regarding the various needs of communal amenities, Cluster 2 showed the greatest mean values in all types of communal amenities, while Cluster 3 demonstrated the lowest mean values in all communal amenities. Through the P.H.C test, the same results were confirmed both in Duncan and Dunnett T3 tests; Clusters 1 and 4 demonstrated similar tendencies in terms of resting, exercising, supportive, and caring facilities, while they indicated no significant similarities to Clusters 2 and 3. In regard to the availability needs of communal amenities, differences were also found among clusters. In terms of accessibility, Cluster 1 was found to have the smallest scope of access by foot and by car, among the 4 clusters. Cluster 2 showed the highest expectation for improving communality due to the frequent utilization of communal amenities.

In regards to general socio-demographics, it was found that significant differences among the clusters were caused by age, the number of residents, marital status, relationship between residents, scale of household units, vehicle ownership, and the amount of staying time at home on weekdays (Table 7., χ<sup>2</sup>- test). The married couples of age 50 and above were concentrated in Cluster 2, and the unmarried residents in their 20s were mostly distributed in Cluster 1. Cluster 2 showed the highest rate in a unit area of 50m<sup>2</sup> and above, while Cluster 3 had the greatest rate in a unit area of 14-30m<sup>2</sup>. Cluster 2 indicated the highest rate in vehicle ownership and the longest time of staying home on weekdays.

· Ranking: In prioritization of general residential needs, all 4 clusters commonly chose sunlight coming into the residence during the daytime and noise elimination between units and floors as their 1st or 2nd priority, respectively. Noise and vibration elimination inside the residential complex was chosen as the 3rd priority by Cluster 1, crime prevention by Cluster 2, privacy within the household unit by Cluster 3, and accessibility to neighboring service facilities by Cluster 4.

**Table 6. Different Amenity Needs Among 4 Clusters**

| Needs               | Cluster | M    | t    | p     | P.H.C |
|---------------------|---------|------|------|-------|-------|
| Variety of amenities |         |      |      |       |       |
| Resting             | a. cluster 1 | 4.11 | 100.40 | .00<sup>**</sup> | B      |
|                     | b. cluster 2 | 5.11 |       |       | A     |
|                     | c. cluster 3 | 2.66 |       |       | C     |
|                     | d. cluster 4 | 4.39 |       |       | B     |
|                     | sum       | 4.40 |       |       | (D3)  |
| Exercising          | a. cluster 1 | 4.32 | 51.47 | .00<sup>**</sup> | B      |
|                     | b. cluster 2 | 5.10 |       |       | A     |
|                     | c. cluster 3 | 2.93 |       |       | C     |
|                     | d. cluster 4 | 4.24 |       |       | B     |
|                     | sum       | 4.47 |       |       | (D3)  |
| Cultural             | a. cluster 1 | 4.21 | 59.86 | .00<sup>**</sup> | b>a>d>c |
|                      | b. cluster 2 | 4.87 |       |       | C     |
|                      | c. cluster 3 | 2.68 |       |       |       |
|                      | d. cluster 4 | 3.65 |       |       |       |
|                      | sum       | 4.21 |       |       |       |
| Supportive           | a. cluster 1 | 4.48 | 45.87 | .00<sup>**</sup> | B      |
|                      | b. cluster 2 | 5.04 |       |       | A     |
|                      | c. cluster 3 | 3.52 |       |       | C     |
|                      | d. cluster 4 | 4.28 |       |       | B     |
|                      | sum       | 4.57 |       |       | (D3)  |
| Socializing          | a. cluster 1 | 3.95 | 65.78 | .00<sup>**</sup> | b>a>d>c |
|                      | b. cluster 2 | 4.53 |       |       | C     |
|                      | c. cluster 3 | 2.23 |       |       |       |
|                      | d. cluster 4 | 3.41 |       |       |       |
|                      | sum       | 3.88 |       |       |       |
| Productive           | a. cluster 1 | 3.76 | 46.03 | .00<sup>**</sup> | b>a>d>c |
|                      | b. cluster 2 | 4.35 |       |       | C     |
|                      | c. cluster 3 | 2.23 |       |       |       |
|                      | d. cluster 4 | 2.98 |       |       |       |
|                      | sum       | 3.69 |       |       |       |
| Caring               | a. cluster 1 | 4.30 | 48.33 | .00<sup>**</sup> | B      |
|                      | b. cluster 2 | 5.31 |       |       | A     |
|                      | c. cluster 3 | 2.76 |       |       | C     |
|                      | d. cluster 4 | 4.72 |       |       | B     |
|                      | sum       | 4.61 |       |       | (D3)  |

D: Duncan; D3: Dunnett T3; ※: similar in same characters

* *: p<0.01

In terms of prioritization of communal facilities inside of the housing complex, all 4 clusters commonly chose parking area as their 1st priority and waste
collecting lot as the 2nd priority. As the 3rd priority, cultural facilities such as small library and book café were selected by Clusters 1 and 3, resting facilities such as green zone and landscape were chosen by Cluster 2, and indoor exercising facilities like fitness center were chosen by cluster 4. All clusters indicated widely varying differences in terms of prioritization of communal facilities outside of the housing complex. Cultural facilities such as small library and book café, and resting facilities such as green zone, landscape, and pergola, were chosen relatively often as the 1st or 2nd priority. Meanwhile, Clusters 1 and 4 chose outdoor exercising facilities including a basketball court as the 2nd priority; Cluster 3 chose restaurant as the 1st priority and outdoor gym equipment as the 3rd priority.

6.2 Discussion

All of the results above were taken into account, and 4 clusters of single or 2-resident households could be characterized into 4 types (Table 7.). It is necessary to pay attention to the distinctive traits of each type of single or 2-resident households. They were categorized according to the general residential needs and communal amenity needs, which were not fully consistent with those of the subgroups that have been categorized according to conventional socio-demographics.

- **Type 1** with the largest number of respondents was a group mainly consisting of married couples in their 50s and above. They were living in houses with a relatively larger unit area considering the number of residents, and had the longest time of staying home on weekdays among 4 types. Also, they indicated the highest values in all items related to residential needs and communal amenity needs among the 4 types; they especially cared highly on safety needs, and thought a crime prevention facility was top priority over anything else. Most respondents of Type 1 owned cars, but they had the

| Characteristics of Segments of the Small Households |
|-----------------------------------------------------|
| **Type 1 (n=129)**                                  |
| **General residential needs**                      |
| Highest on safety & security needs within the type  |
| (Cf) day lighting > (Cf) noise elimination within unit |
| > (SS) crime prevention                            |
| **Amenity needs**                                  |
| Variety                                            |
| Highest on all amenity needs among 4 types.        |
| Highest on caring facility needs within the type.  |
| Priority**, (R)** green > (Sp)** refuse receptacles > (E)** indoor exercise |
| Priority**, (C)** library, book café > (R)** pergola > (S)** club room |
| **Availability**                                   |
| Relatively narrow neighboring scope both by foot and ear. Highest awareness of availability and communal influence of public amenities |
| **General characteristics**                        |
| Largest number of married couples in their 50s and above among 4 types. Largest scale of unit household among 4 clusters, highest ratio of household unit with area of 50m² and above, highest vehicle ownership, and longest time of staying home on weekdays |
| **Type 2 (n=64)**                                  |
| **General residential needs**                      |
| Relatively high on most residential needs among 4 types. Highest on comfortability needs within the type (Cf) noise elimination between households > (Cf) day lighting > (Cf) noise elimination within complex; sensitive to noise |
| **Amenity needs**                                  |
| Variety                                            |
| Relatively high on most amenity needs other than needs of resting and caring facility, among 4 types. Highest on supportive facility needs within the type |
| Priority**, (Sp)** refuse receptacles > (R)** green zone |
| Priority**, (C)** library, book café > (R)** pergola > (E)** outdoor exercise > (Sp)** restaurant |
| **Availability**                                   |
| Narrowest neighboring scope both by foot and car among 4 types. Inactive availability but relatively high awareness of communal influence of public amenities |
| **General characteristics**                        |
| Largest number of unmarried residents in their 20s among 4 types. High ratio of residents in 30s and household unit with area of 14 m² or below, compared to other types |
| **Type 3 (n=41)**                                  |
| **general residential needs**                      |
| Lowest on all amenity needs except for communality, among 4 types. Highest on convenience needs within the type (Cf)day lighting > (Cf)noise elimination within unit > (Cf)location of facilities |
| **Amenity needs**                                  |
| Variety                                            |
| Relatively low on most amenity needs other than needs of resting and caring facilities, among 4 types. Highest on caring facility needs within the type |
| Priority**, (Sp)** refuse receptacles > (E)** indoor exercise space > (R)**green zone |
| Priority**, (C)** library, book café > (E)**outdoor exercise space, (R)**green zone |
| **availability**                                   |
| Widest neighboring scope both by foot and car among 4 types. Relatively active availability of public amenities |
| **General characteristics**                        |
| High ratio of residents in their 30s and household unit with area of 30-50 m², compared to other types |
| **Type 4 (n=41)**                                  |
| **general residential needs**                      |
| Lowest on communal needs among 4 types and relatively low on all other residential needs. Highest on comfortability needs within the type (Cf)day lighting > (Cf)noise elimination within unit > (Cf)privacy |
| **Amenity needs**                                  |
| Variety                                            |
| Lowest on all public amenity needs among 4 types |
| Highest on supportive facilities needs within the type |
| Priority**, (Sp)** refuse receptacles > (C)**library, book café > (R)**green |
| Priority**, (C)** library, book café > (E)**outdoor exercise space > (E)** exercise equipment |
| **availability**                                   |
| Relatively wide neighboring scope both by foot and car among 4 types. Lowest awareness of availability and communal influence of public amenities |
| **General characteristics**                        |
| High ratio of single resident households in their 40s, divorced or bereaved, compared to other types. Highest ratio of residence with area of 14-30 m² and of 14m² or below. Very high ratio of residents who don’t have a car compared to other types, and relatively long time of staying home on weekends. |
narrowest scope of accessibility to neighboring facilities. On the contrary, they had the greatest expectation for improving their communal interaction by actively utilizing the communal facilities. Eventually, Type 1 was found to have characteristics most similar to general households among the 4 types (confirmed by T-test).

- Type 2 was the group with the largest number of unmarried residents in their 20s; and the residents in their 30s showed a relatively higher population rate than other types and had the highest rate of houses with a unit area of 14m² and below. Type 2 had higher general residential needs than the other types and was especially sensitive to noise between household units and inside of the housing complex. Their needs for communal facilities were also generally high. They placed priority on outdoor exercising space and restaurants adjacent to the housing complex. It is noteworthy that although they had the narrowest scope of accessibility to communal facilities in and around the complex and were not willing to actively utilize the communal facilities, they had a relatively high awareness of improving social interaction through frequent use of communal facilities.

- Type 3 demonstrated no remarkable characteristics, except that the residents in their 30s living in houses with a unit area of 30-50m² showed a relatively higher population rate than others. Among all 4 types, Type 3 had the lowest rates in all kinds of residential needs except for communality, and also had the lowest rates in most of the communal amenities except for resting and caring facilities. Type 3 had the largest scope of accessibility to communal amenities, placed top priority on indoor and outdoor exercising facilities, and had relatively high needs for communal facility. They had a rather short time of staying home on weekdays, compared to the other types, and had a tendency of having less interest in the residence itself.

- Lastly, Type 4 had a high rate of single households in their 40s, who were divorced or bereaved, compared to the other types. The rate of those residents living in houses with a unit area of 14-30m² was the highest and that of 14m² and below was also high. Their overall residential needs were low, and Type 4 showed the lowest communality needs among the 4 types. Notably, Type 4 was the only type that placed top priority on protection of privacy between the household units. They had the lowest expectation for communal influences of communal amenities. Type 4 had the lowest needs for communal facility, compared to the other types, and had the highest needs for supportive facility among all types. Although they had a relatively small scope of accessibility to facilities outside of the housing complex, they prioritized outdoor space for exercising and gym equipment, which was similar to Type 3. Type 4 had an extremely high percentage of those who did not own cars, and had a relatively longer time of staying home on weekdays. They showed the least sociable characteristics among all types.

In terms of general residential needs, the 4 types commonly shared the highest comfortability needs and the lowest communality needs. In particular, there was great priority placed on sunlight being able to shine into the residence during the daytime, and noise elimination within the household units. In terms of communal amenity needs inside of the residential complex, they commonly had the lowest needs for productive facility and higher needs for outdoor facility than indoor facility. Additionally, given the fact that they all wanted a parking area and waste collecting lot within their complexes, it could be inferred that their current residences did not have a sufficient number of these facilities. All of the types commonly preferred cultural facility outside of their residential complex, such as small library and book café, as well as resting facility including green zone and outdoor landscape with pavilion and pergola. There were no significant differences in relation to gender, occupation, and region. Also, there were no meaningful disparities in respect to time of staying home on weekends and in most of the current residential conditions including residence type, scale of the housing complex, and communal amenity experience.

7. General Discussion and Conclusions
First, the results of this research demonstrated the obvious relevance between general traits of single or 2-resident households and the residential needs of their respective subgroups. It is noteworthy that some subgroups of small households that have been categorized in the perspective of socio-demographics to have distinctively different characteristics, failed to show significant differences in terms of residential needs (e.g. undergraduates vs. unmarried office workers). Therefore, the number one factor that has the greatest influence on the residential needs of each subgroup of the small households is the relationship with a cohabitant and the age of household members, which are related to the marital status of residents. Especially, the 2-resident households created by marriage showed needs for residential and communal facility, which was much similar to the regular households. However, the researches on residential needs of small households have so far been carried out on some of the subgroups selected by extremely simple criteria such as single-resident household, undergraduate students, newly married couples, etc. Therefore, more in-depth researches need to be carried out in the future.

Secondly, the subgroups of single or 2-resident households showed widely varying needs in terms of communal amenity of multi-family housing complex, compared to the regular households. Wider differences among the subgroups of small households were found outside rather than inside the residential complex. The current Housing Act in Korea commonly places top priority on parking lots among all communal facilities.
of multi-family housing complexes and second priority on outdoor playground and hall for senior citizens regardless of residents' needs. A complementary housing policy must be established based on a firm understanding of the residential needs of small households.

Lastly, small households that are not created by marriage were found to have low needs and expectations for social interaction between residents. However, they indicated varying levels of needs for availability of communal amenities and a certain degree of expectation for social interaction through active utilization of communal amenities. This is because most of them rarely had communal experiences among residents, due to the absence of communal amenities in their current housing complexes. Therefore, multi-unit residences for small households should physically provide substantial alternatives in order to prevent residents of small households from being engrossed inside their household unit in their daily lives.

7.1 Implications

This research was conducted to clearly understand the residential needs of single or 2-resident households, in order to suggest an ideal housing model, since their population is on the rise causing a significant structural change in Korean socio-demographics.

What makes this research unique compared to the previous researches is the heuristic approach to identify the general residential needs of the small households overall, as well as the specific residential needs of each subgroup, rather than dealing with the current housing conditions of a certain subgroup of small households. In the process, we found the differences in residential needs between small households and regular households created by blood relationships. We then divided small households into subgroups according to their residential needs, and identified and analyzed the respective residential characteristics of each subgroup. This study empirically embraced the previous researches, which have been sporadically carried out up until now.

Another distinctive feature of this research is that it is focused on the needs for communal amenities of multi-family housing complexes, unlike the previous researches which have mainly focused on the household units. It was intended to offer substantial solutions to the pending problem; the residents of current multi-family housing are rather satisfied with the location and internal furnishing of their housings, but they are not satisfied with the communal amenities (Lee, 2013).

Therefore, the results of this research provide conditions for ideal housing, desired by members of small households. This was the original purpose of our research, and these data can be utilized to suggest practical guidelines for housing supply policies. In addition, with the results of this research, communal amenities of multi-family housing can start to become a form of communal living room or garden by bringing together residents, in order to meet the new residential needs of this changing society.

7.2 Limitation

In this research, small households did not show significantly high levels of needs for safety and security, unlike our initial expectation. This research excluded equipment and facilities that do not occupy physical floor space. But most safety-related equipment is usually not considered as space or facilities, so they were not included as the evaluation items of this research.

The number of samples was highly concentrated on Type 1, due to a large number of married couples out of 2-resident households at the sampling stage. The members of small households in their 50s and 60s included a high ratio of married couples, in the stratified samples according to gender, age, and region ($\chi^2=44.62, p<0.01$). In future research, it would be helpful to separate 2-resident households created by marriage from other subgroups of small households, since they have similar residential needs to regular households. This will be helpful for a better understanding of the residential needs and characteristics of single or 2-resident small households.

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References

1) Frenkel, A. et al. (2013) Residential Location Choice of Knowledge-workers: The Role of Amenities, Workplace and Lifestyle, Cities, 35, pp.33-41.
2) Bahn, J.H (2012) Socio-economic Features and Changes of one person Household, Korea Labor Institute, v. 85, pp.55-67.
3) Hwang, S.E et al. (2013) A Research Study on Crime Prevention Kang, S.J. et al. (2011) A Study on 1-2 Person Household's Lifestyle and Needs of Small Houses, Journal of Korean Housing Association, 22(2), pp.121-129.
4) Kim, J.Y (2013) Housing Consciousness and Needs of Single Woman Household for the Small-sized Rental Housing Development - Focused on the Residents of Seoul, Inchon, and Gyeongi-do, Journal of Korean Housing Association, 24(4), pp.109-120.
5) Lee, D.H (2012) A Study on the Rental Housing Types for the Low-income One Person Household in Seoul, Journal of Architectural Institute of Korea, 28 (12), pp.75-84.
6) Lee, H.Y & Noh, S.C, Choi, E.Y (2010), Growth Pattern and Spatial Distribution of One-person Households by Socio-Economic Demographic Characteristics, Korean Geographical Society, 46(4).
7) Park, S.B & Choi, I.Y (2012) A Study on Evaluation Items for Shared Space Performance of Apartment in Korea, Journal of Architectural Institute of Korea, 28 (10), p.49-56.
8) Park et al. (2005) focused on qualitative analysis of residents' and facility managers' experiences = A POE Process Model for Super-Tall Residential Building, Architectural Institute of Korea, 21 (11), pp.137-146.
9) Shin, H.K, Jo, I.S (2012) The Improvement of Related Legal Systems of Community Facilities for Community Activation Korean Housing Association, Journal of Korean Housing Association 23(2), p.47-57.
10) Statistics Korea (2010) Population and Housing Census.