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# Determinants of Residential Satisfaction in Housing Submarkets in Seoul*

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**Abstract**

This study asks if the determinants of residential satisfaction differ by housing submarkets in Seoul, the capital and the largest city of South Korea. We focus on differences in residential satisfaction between Gangnam and non-Gangnam areas that are representative housing submarkets in Seoul. Using the 2014 Housing Survey data and ordered logit analyses, we analyze factors affecting residential satisfaction in four daily-life zones of southeast, southwest, northeast, and northwest Seoul. The empirical analyses show that residential satisfaction is greater in Gangnam than in non-Gangnam areas, which suggests that the imbalance between Gangnam and the rest of Seoul is still significant despite governmental efforts to reduce the disparity. In addition, there are considerable differences in the determinants of residential satisfaction between Gangnam and non-Gangnam areas. Neighborhood physical attributes are more important for residential satisfaction in Gangnam while neighborhood social attributes are more important for residential satisfaction in non-Gangnam areas. This finding suggests that varying strategies should be employed to enhance residential satisfaction in different housing submarkets.

*Keywords* ■ Residential Satisfaction, Housing Submarkets, Gangnam

## Ⅰ. Introduction

In the song, "Gangnam Style," a Korean rapper Psy sings about the lavish lifestyle of people in Gangnam.[1] As a residential, business, and commercial district located in south Seoul, the capital and the largest city of South Korea[2], Gangnam is characterized by good schools, expensive housing, convenient living environments, luxurious lifestyles, and concentration of the rich. The growth of Gangnam was initiated by the central government in the 1970s to accommodate rapid population growth in old Seoul. At the same time, Gangbuk, located in northern Seoul, which had been the economic and population center of

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Seoul for a long time, socioeconomically declined with the exclusion from government-supported development. Gangbuk is currently characterized by old, deteriorated housing, narrow streets, poor transportation accessibility, and lack of cultural and recreational amenities. These conditions suggest that Seoul is broadly subdivided into housing submarkets of Gangnam and Gangbuk that are characterized by distinctive demographic, socioeconomic, and physical characteristics.

While a large housing market is generally divided spatially into submarkets and residential satisfaction may vary by housing submarket, increasing socioeconomic disparities between housing submarkets can be harmful for growth of the whole city with redistributive tax pressures and political instability (Alesina and Rodrik, 1994; Ezcurra, 2007). Therefore, examining what factors satisfy and dissatisfy residents in housing submarkets, for example, by analyzing determinants of housing prices and residential satisfaction can effectively address disparities between housing submarkets. In particular, given that housing prices are distorted by various factors such as speculation in Seoul, examining residential satisfaction that is an indicator measuring the difference between a resident's expectation about residential environment and actual residential environment (Galster 1987) may be a better way to address disparities between housing submarkets. Additionally, the influence of social factors such as neighborhood interactions can be better examined with residential satisfaction than with housing prices.

In this regard, we ask *if the determinants of residential satisfaction differ by housing submarkets in Seoul*. Although there are studies examining differences in housing submarkets in Seoul (e.g., Kim and Nam 2012; Lee and Lee 2011; Chung et al. 2009), only a few studies examine the determinants of residential satisfaction varying by housing submarkets.

While Gangnam and Gangbuk can be the most basic housing submarkets in Seoul, these submarkets are further subdivided into southeastern (Gangnam) and southwestern, northeastern, and northwestern areas (non-Gangnam areas) with traditional norms about Seoul's housing markets. These four areas also represent the largest daily-life zones that the Seoul Urban Master Plan defines to implement specified planning strategies for. Our study focuses on disparities between Gangnam and non-Gangnam areas and examine factors affecting residential satisfaction in the four daily-life zones in Seoul by analyzing the 2014 Korea Housing Survey and employing ordered logit analyses.

Examining the determinants of residential satisfaction in the daily-life zones can be useful in suggesting policy directions and evaluating planning strategies as the zones are official boundaries determined by the city for urban planning. In addition, by comparing determinants of residential satisfaction between Gangnam and non-Gangnam areas, this study will help prescribe policies alleviating the imbalance between Gangnam and the rest of Seoul, thereby promoting socio-economic sustainability in Seoul as a whole, and enhancing residents' quality of life.

## Ⅱ. Literature Review

### 1. Housing subarket theories and Seoul's housing submarkets

A core concept in defining housing submarket is substitutability. According to Grigsby et al. (1987), dwellings in a housing market can be readily substituted to one another in a submarket, compared with those in other housing markets in a large housing market. Scholars argue that various types of housing submarkets exist and the factors subdividing housing markets include spatial factors (e.g., administrative boundaries and local spatial characteristics), structural factors (e.g., dwelling types), tenure, year of construction, and demander factors (e.g., race and income) (Watkins, 2001; Bourne, 1981). The existence of housing submarkets suggests that households in a submarket have homogeneous characteristics and preferences. However, in reality, households are bound by moving costs and lack of access to complete information, which prevents residential mobility (Oliver, 2001; Schneider, 1987), and thus, a housing submarket cannot be characterized by households with 'complete' homogeneity.

A significant number of studies confirm the existence and persistence of housing submarkets (Schnare and Struyk, 1976; Goodman and Thibodeau, 1998; Watkins, 2001, Bourassa et al., 2003; Jones et al., 2003). The fact that housing submarkets exist implies that estimating consumer choice parameters by a single equation with an assumption of a unitary market can lead to a significant bias (Maclennan, 2012). In this regard, a large number of studies empirically analyze the existence of housing submarkets and indeed, most of the studies confirm its existence (see Watkins, 2001 for submarket studies).

Seoul is a metropolitan city including 25 self-governing districts and about 10 million people. As Seoul is very large in terms of housing market size, the most basically and traditionally recognized housing submarkets are Gangnam and Gangbuk markets. While Gangnam is characterized by luxurious high-rise buildings, good school districts, increased access to transportation networks, and high concentration of major hospitals and recreational facilities, Gangbuk is characterized by old and deteriorated housing, low school quality, less convenient residential environment, poor transportation accessibility, and lack of cultural and recreational amenities (Lee and Seo, 2009).

To deal with the imbalance between Gangnam and Gangbuk, the Plan for Balanced Development has been implemented to enhance infrastructures in transportation, industries, housing, and green spaces in the other regions of Seoul. In addition, the New Town project redeveloped old towns in northern Seoul, which demolished existing low-rise housing and built new high-rise housing. The development of the first three new towns, including Gireum, Eunpyung, and Wangshipri, began in 2002 and has been completed in recent years. Although additional new town areas were designated in other old parts of Seoul, many of the proposed new town projects could not be implemented due to the

global economic recession that began in the late 2000s.

While physical and socio-economic characteristics differ between Gangnam and Gangbuk, there have been also criticisms that unitary local ordinances and criteria have been applied to regions in Seoul. Choi (2015) criticizes that uniform regulations to development have been applied across different housing submarkets in Seoul without consideration for the disparities between Gangnam and Gangbuk, and thus, have increased the imbalance between them.

Following the criticisms assuming a unitary housing market, the 2020 Urban Master Plan of Seoul subdivides Seoul into daily-life zones so that differential urban planning strategies can be applied, which can contribute to balanced development in Seoul (Seoul Metropolitan Government, 2012). The 2020 Urban Master Plan of Seoul broadly subdivides Seoul into five large daily-life zones, which are further subdivided into nine medium daily-life zones. As shown in Table 1, the large daily-life zones are divided based on demographic and socioeconomic characteristics, land use patterns, and physical environments, thereby forming housing submarkets. Table 2 also describes the characteristics and planning strategies in the five daily-life zones, including Gangnam (southeast), non-Gangnam (southwest, northeast, and northwest), and downtown areas.

Table 1. Criteria for Daily-Life Zone

| Criteria | Specific Factors | Indicators |
|---|---|---|
| **Natural and physical environment** | - Topography, rivers<br>- Railway, urban expressway, urban arterial road | |
| **Urban growth · Area of influence** | - Process of city formation<br>- Urban arterial road<br>- Analysis of the origin and destination areas for commuting | - Status of urban development projects<br>- Volume of traffic for road network and rail network<br>- Origin/destination of commute |
| **Center functions and Land use characteristics** | - Centrality through analysis of traffic characteristics<br>- Composition of building uses | - Building and property taxation data<br>- Origin-destination trips by purpose etc. |
| **Administrative district · Educational school district** | - Change of administrative district<br>- School district | - Change of local government and administrative *dong*<br>- Status of school district (middle- and high-school) |
| **Residential characteristics** | - Population, household and residential characteristics<br>- Analysis of living environment level | - Population structure by age and educational level<br>- Household characteristics<br>- Residential area per person, housing type, built year of housing<br>- Income level, etc. |
| **Related plans** | - Regional plan, etc. | |

Source: Seoul Metropolitan Government, 2012

Table 2. Characteristics and Planning Strategies in Daily-Life Zones

| Zones | Characteristics and Challenges | Planning Strategies |
|---|---|---|
| **Downtown** | - Center for administration, diplomacy and economy<br>- 600-year tradition of historical and cultural heritage concentration<br>- Space where traditional and modern cultures coexist<br>- Continuous decline in urban resident population<br>- Deterioration of the physical environment | - Activation of urban function through restoration of Cheonggye stream<br>- Preservation of historical and cultural resources and restoration of identity<br>- Fostering international financial center and downtown specialized industry<br>- Review as special management district designation |
| **Northeast** | - Gateway connecting the city center and the northeastern suburbs<br>- Beautiful natural scenery<br>- Mix of large-scale apartment complexes and deteriorated residential areas<br>- Lack of transportation infrastructure and various convenience facilities<br>- Concentration of academic institutions and research institutes, such as universities | - Enhancement of employment base and center function (Cheongnyangni, Wangsimni, Sanggye□Mangu, Mia)<br>- Expansion of infrastructure and maintenance of old housing<br>- Expansion of local cultural welfare facilities and promotion of specialized business |
| **Northwest** | - Gateway connecting the city center and the northwestern outskirts<br>- Abundant natural green areas<br>- Old town with low-rise housing<br>- Concentration of commercial and cultural functions and universities | - Promotion of sub-center/community-based strategy (Sangam sub-center, Yeonsinnae etc.)<br>- Development of nature-friendly residential neighborhood<br>- Enhancing image through local specialized business |
| **Southwest** | - Transportation hub connecting the city center and the southwestern outskirts<br>- Yeouido: concentration of political and financial institutions and press agencies<br>- Eroding industrial base and scattering of small factory plants<br>- Lack of infrastructures, deteriorating old houses, lack of residential, commercial and industrial facilities, and lack of facilities for daily living | - Fostering subcenter (Yongdeungpo)<br>- Planned management in Magok area<br>- Securing future industry base and fostering hub logistics facilities<br>- Improving living environment of southwest boundary area and mixed land use area(residential and industry) |
| **Southeast** | - Transportation hub connecting the city center and the southern part of Seoul<br>- Planned city through land readjustment project<br>- Rapid growth in international business and IT□venture companies<br>- Advent of time to rebuild large-scale medium and low-rise apartments<br>- Relatively high income and living standards | - Need to establish planned growth management system<br>- Systematic fostering of venture, IT, international business function<br>- Expanding strategies for reconstruction and activation of housing remodeling<br>- Expanding opportunities for diverse cultural activities |

Source: Seoul Metropolitan Government, 2012

## 2. Residential satisfaction theory

Residential satisfaction is a critical factor for quality of life and individuals' well-being (Adams, 1992; Fried, 1984; Parkes et al., 2002; Schwirian and Schwirian, 1993). Residential satisfaction refers to the feeling that a resident's expectation about housing and neighborhood conditions is actually met (Galster, 1987). Whether one's expectation is met or not is important because it is a source of neighborhood stability (Feijten and van Ham, 2009) and community sustainability (Baum et al., 2010). In other words, those who are dissatisfied with their housing and neighborhood may move out of the current residence if they can afford to move and if opportunities are available (Dekker et al., 2011; Feijten and van Ham, 2009). Additionally, residential satisfaction plays an important role in quality of life, and accordingly, personal well-being (Adams, 1992; Sirgy and Cornwell, 2002). Therefore, understanding what factors affect residential satisfaction is critical for developing successful housing policies (Lu, 1999).

Some studies on residential satisfaction focus on overall residential satisfaction, considering both housing and neighborhood satisfaction, while most studies in urban planning focus on neighborhood satisfaction, as examining neighborhood satisfaction can give implications for urban policy. Our study also focuses on neighborhood satisfaction as the imbalance between Gangnam and Gangbuk is more associated with residential environment at the neighborhood level than satisfaction with housing structure.

Previous studies suggest that residential satisfaction is multifaceted (Lovejoy et al., 2010; Parkes et al., 2002). In other words, residential satisfaction is affected by a number of factors including neighborhood physical and social attributes and household characteristics. Regarding neighborhood physical attributes, studies find that residential satisfaction is influenced by accessibility to neighborhood facilities, such as retail stores and hospitals, and neighborhood appearance, such as cleanliness (Baum et al., 2010; Hur and Morrow-Jones, 2008; McCrea, Stimson, and Western, 2005 Parkes et al., 2002; Sirgy and Cornwell, 2002). Studies also find that social attributes, such as relationships with neighbors and safety from crime, are also important factors for residential satisfaction (Cao and Wang, 2016).

Household characteristics affecting residential satisfaction consist of income level, housing tenure, and length of residence. Studies find that income level is positively related to neighborhood residential satisfaction. Affluent households with greater financial resources are more likely to have choices about the type of housing and neighborhoods, thereby selecting and living in residential environments that meet desired housing and neighborhood conditions (Galster and Hesser, 1981; Parkes et al., 2002). Also, homeowners are more likely to be satisfied with their neighborhoods than renters are as a house is usually the largest asset for households and thus homeowners are more careful in selecting a neighborhood (Grinstein-Weiss et al., 2011; Lu,

1999; McCrea et al., 2005; Mohan and Twigg, 2007). Studies also find that length of residence and the age of the residents are positively related to residential satisfaction due to social ties and psychological attachment to a place (G. Galster, 1987; Lu, 1999; Mohan and Twigg, 2007). The presence of school-aged children may positively affect making friends in a neighborhood, thereby influencing residential satisfaction (Parkes et al., 2002). In addition, a number of studies find that those who are highly educated are more satisfied with their neighborhoods (Lee and Guest, 1983; Spain, 1988). This may be because they are more knowledgeable, and thus, are more likely to live in a neighborhood that meets their desires.

## 3. Links between housing submarkets and residential satisfaction

As discussed above, there are variations in demographic, socioeconomic, and physical characteristics across Seoul, thereby forming housing submarkets such as Gangnam and Gangbuk. The existence of housing submarkets suggests that the determinants of residential satisfaction also vary by housing submarkets. However, there are relatively few studies considering different residential settings and disparities across Seoul in examining residential satisfaction. More specifically, few studies examine residential satisfaction in daily-life zones that are divided by reflecting physical and socioeconomic characteristics as well as traditional norms about Seoul's housing markets.

If factors affecting residential satisfaction are not uniform across housing submarkets, the government will need to employ differing strategies to enhance residential satisfaction in each housing submarket. In other words, to develop a successful policy to enhance residents' quality of life in Seoul's housing markets, there should be further studies on whether the determinants of residential satisfaction are differentiated by housing submarkets and what factors are more important for residential satisfaction in different housing submarkets.

The studies analyzing the impact of governmental efforts to reduce the gap between Gangnam and Gangbuk bring about significant implications on residential satisfaction varying by housing submarket. For example, Yu et al. (2006) find that the newtown projects improved residential environment in Gangbuk but the new towns' competitive position is still weak compared to Gangnam. Youn and Lim (2012) analyze the income gap between housing submarkets and find that the number of high-income families decreased in Gangnam while increasing in non-Gangnam areas between 2001 and 2009. Based on the finding, they argue that income inequality between Gangnam and non-Gangnam areas declined. On the other side, Lee and Seo (2009) find that the gap between Gangam and Gangbuk has been exacerbated by fiscal independency and the quality of public services in health, education, residential environment, and transportation. In addition, Hong and Kim (2014) find that Seoul's efforts to reduce disparities between Gangnam and non-Gangnam area by developing sub-centers in the downtown (in the north), west, and Gangnam

(in the southeast) were not so successful, and instead increased the disparities by further inducing development and population migration to Gangnam. In short, although there have been governmental efforts to reduce the continued imbalance between Gangnam and non-Gangnam areas, it seems that the disparities have not been significantly reduced. Based on these conditions, we propose our first hypothesis:

H1: *Residential satisfaction is greater in Gangnam than in non-Gangnam areas*

Although not directly examining residential satisfaction, some studies suggest that the determinants of residential satisfaction may be differentiated by housing submarkets in Seoul. First of all, Cho et al.'s (2016) study analyzed residential environments of apartment complexes in Seoul and confirms that there is a lack of cultural facilities, transportation facilities, parks, and hospitals in Gangbuk compared to Gangnam. Kim and Nam's (2012) study examine the factors affecting housing tenure and housing type choices varying by housing submarkets in Seoul. For example, older people in non-Gangnam areas prefer living in single-family housing, while people in Gangnam are more likely to live in apartments because the majority of housing in Gangnam is apartments. In addition, Kim and Nam's (2012) study find that unlike those in non-Gangnam areas, people living with parents in Gangnam are more likely to be renters because of expensive housing prices in Gangnam. Heo and Lee (2008) compare the determinants of land prices in housing submarkets and find that the availability of subway stops has a higher impact on land prices in Gangbuk than Gangnam due to limited availability of subway stops in Gangbuk compared to Gangnam, where there are more subway stops. Shin and Nam's (2012) study is one of the few studies examining the determinants of residential satisfaction varying by housing submarkets in Seoul. They focus on people living in apartment complexes and analyze the determinants of residential satisfaction in four distinctive zones in Seoul. In defining the four zones, they ran a cluster analysis by considering safety (e.g., proximity to police station), convenience (e.g., access to public transportation), and pleasantness (e.g., ratio of green areas). The major findings in this study are that the determinants of residential satisfaction are differentiated by housing submarkets and residents respond more sensitively to the factors of what they feel insufficient. For example, the share of green space is positively related to residential satisfaction only in the zone where there is insufficient green space. In short, these studies find that determinants of housing choices, land prices, and preferences differ across Seoul's housing submarkets, thereby suggesting that the determinants of residential satisfaction also differ across housing submarkets. Based on this logic, we propose our second hypothesis:

H2: *The determinants of residential satisfaction vary by housing submarkets in Seoul.*

Our study is similar to Shin and Nam's (2012) study in that we examine the determinants of residential satisfaction varying by housing submarkets in Seoul. However, our study is differentiated from their study because we analyze residential satisfaction of those living in all types of housing rather than focusing on those living in apartments. Although apartments have become the major housing type in Seoul and Korea, a significant share of households still live in non-apartments such as single-family housing and low-rise multi-family housing (see Table 3 below). That is, Shin and Nam's (2012) study reflects only preferences of households living in apartment. Additionally, our study focuses on the disparities between Gangnam and non-Gangnam areas by examining the determinants of residential satisfaction in the daily-life zones that were officially defined by the City of Seoul and do not correspond to the four zones defined in Shin and Nam's (2013) study.

## Ⅲ. Methods

### 1. Data and study area

This study examines the determinants of residential satisfaction in Seoul's housing submarkets. We utilized the 2014 Korea Housing Survey that was prepared by the Ministry of Land, Infrastructure and Transport. As a national survey, the Korea Housing Survey has been taken every two years since 2006. The population for the 2014 survey included all households in Korea, which were 17,999,283 households. To take the survey in a stratified random sample, the country was divided into 17 provinces, urban vs rural areas, and apartment vs non-apartment zones (MLIT, 2014). Among the total sample of 20,205, we used 3,674 surveys that were acquired from households living in Seoul. The survey asks various questions about housing, including dwelling, neighborhood, and demographic characteristics.

Figure 1 shows the spatial distribution of the five daily-life zones in Seoul. In general, the southeast zone broadly refers to Gangnam and the northeast zone broadly refers to Gangbuk. Each of the daily-life zones includes three to eight districts that are a lower level of administrative unit than a city.

In analyzing the determinants of residential satisfaction in Seoul's housing submarkets, we considered only four zones, excluding the downtown zone from the analysis. Jongno, a district in the downtown zone, was omitted from the sampling process for the 2014 Korea Housing Survey due to the small population size and low presence of apartment complexes in the district. We also did not include the downtown zone in the analysis because the downtown zone is primarily occupied by businesses, and thus, not the cornerstone in the discussion about the disparity between Gangnam and Gangbuk.

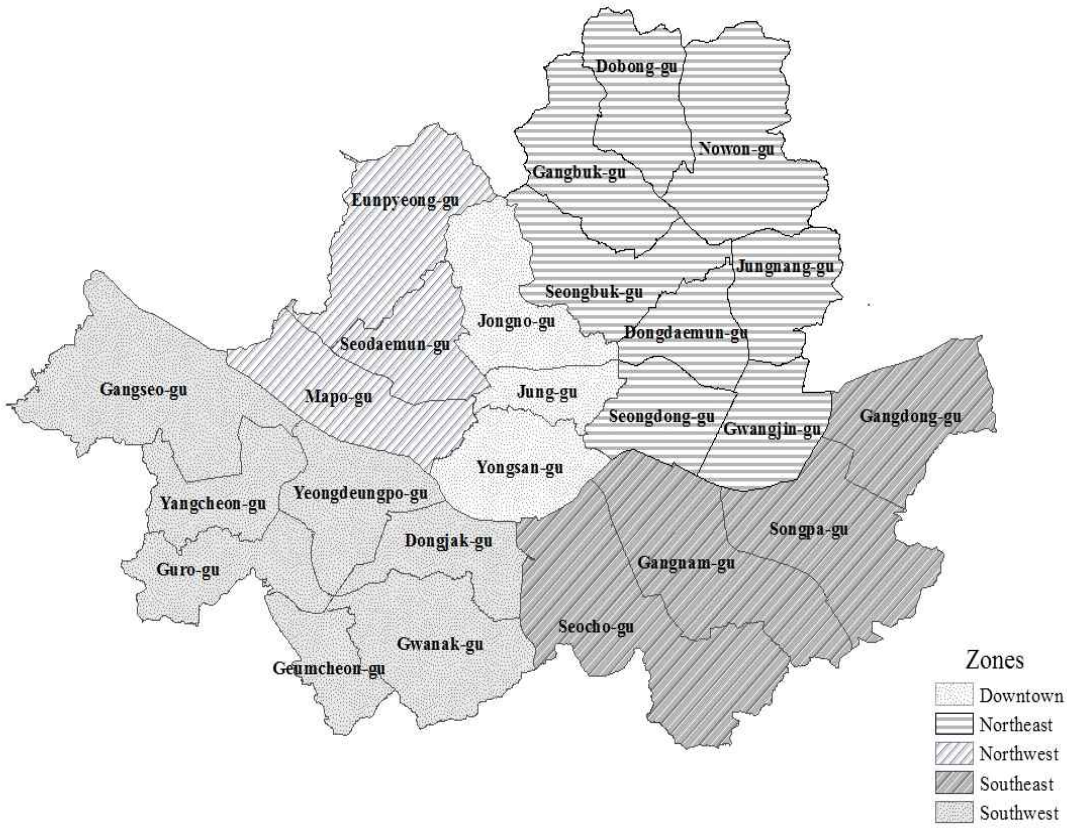


Figure 1. Spatial Distribution of the Five Daily-Life Zones in Seoul

Table 3 shows the demographic and socioeconomic characteristics for each zone. The southeast zone, Gangnam, has the largest population and household sizes (547,715 people, 213,489 households) among the four zones. In addition, the southeast zone has the greatest average household income and fiscal self-reliance ratio among the four zones. In addition, more than 50 percent of the households are living in an apartment, which is usually more expensive than single-family housing and low-rise multifamily housing in Korea. These characteristics indicate that Gangnam is concentrated with greater wealth and provides a higher standard of living as compared to other zones as discussed above. In terms of educational quality, the table shows that the academic achievement in mathematics is significantly higher in thesoutheast zone than in other zones. Also, the largest number of tutoring centers is located in the southeast zone, which reflects enthusiasm about education and higher school quality in the zone.

By contrast, the northeast zone, Gangbuk, has the lowest average household income, fiscal

Table 3. Demographic and Socioeconomic Characteristics by Daily-Life Zone

| Classification | Southeast | Southwest | Northeast | Northwest |
|---|---|---|---|---|
| **Population** | 547,715 | 452,883 | 404,642 | 406,645 |
| **Household** | 213,489 | 182,664 | 164,203 | 168,820 |
| **Household income (10,000 Korean won)** | 405.69 | 306.45 | 283.87 | 327.03 |
| **Fiscal self-reliance ratio** | 56.4% | 34.1% | 28.8% | 33.6% |
| **% Households living in apartments** | 51.0% | 37.9% | 44.5% | 32.4% |
| **Academic achievement in mathematics (out of 100)** | 77.13 | 63.64 | 63.20 | 65.87 |
| **# of Tutoring centers** | 2,693 | 2,142 | 1,940 | 712 |
| **% Foreigners** | 1.0% | 3.2% | 1.9% | 2.3% |

Source: Seoul Statistics (2016), 2014 Korea Housing Survey, Woo (2013)
Note1: Given that the Seoul Statistics do not provide income and academic performance data, the household income and academic performance data were obtained from the 2014 Korea Housing Survey and Woo's (2013) study, respectively.
Note2: Except for the academic achievement data that are for the year 2012, other data are for the year 2014.

self-reliance ratio, and academic achievement in mathematics, which reflects the long-argued socioeconomic disparities between Gangnam and Gangbuk. Additionally, the table shows that the percentage of foreigners is the greatest in the southwest zone among the four zones. Park and Jung (2010) and Park (2010) find that low-wage migrant workers and female immigrants' families have formed ethnic enclaves in the southwest zone due to inexpensive housing and proximity to manufacturing jobs.

## 2. Analytical approach and variables

The dependent variable is overall residential satisfaction. While the housing survey asked both overall housing and neighborhood satisfaction, we used neighborhood satisfaction in examining residential satisfaction as it is more relevant to examining differences in housing submarkets.

Before running ordered logit analyses, we ran t-test analyses on overall residential satisfaction and neighborhood attributes between Gangnam (southeast) and non-Gangnam areas (southwest, northeast, and northwest). The t-test analyses were to examine if there are significant differences in satisfaction with the overall residential environment and neighborhood attributes between Gangnam and non-Gangnam areas. Given that a t-test analysis is to compare a mean difference between two groups, we ran t-test analyses between the southeast zone, Gangnam, and each of the southwest, northeast, and northwest zones.

Given that the dependent variable—the level of overall residential satisfaction—was measured on an ordinal scale ranging from 1 (very dissatisfied) to 4 (very satisfied), ordered logit models were estimated to analyze the determinants of residential satisfaction in Seoul's

housing submarkets. An ordered logit model can take into account ordinal responses of the dependent variable (Lu, 1999) and the ordered logit function can be written as follows:

$$\ln[\frac{P(Y \leq j)}{1-P(Y \leq j)}] = a_j + b_1X_1 + b_2X_2 + \ldots + b_nX_n \quad (1)$$

where, = $\Pr(Y \leq j)$ is the probability that Y falls in category $j$ or below. Y is a dependent variable and $X_n$ is equal to the number of independent variables in the model. In running ordered logit analyses, we first ran a pooled model, including all samples from the four zones and dummy variables indicating each zone, having the southeast zone as the reference category. Then, we ran housing submarket models that estimate the determinants of residential satisfaction in each of the four zones. Studies on residential satisfaction suggest that residential satisfaction is influenced by neighborhood attributes, consisting of physical and social attributes, and household characteristics (Lovejoy et al., 2010; Hur and Morrow-Jones, 2008; Parkes et al., 2002). Based on the studies, we included neighborhood attribute variables and household characteristics as independent variables in the ordered logit analyses. The neighborhood attributes consist of the levels of satisfaction with neighborhood physical (i.e., access to retail stores, hospital/healthcare facilities, public institutions, and parks and recreational facilities, convenience of parking, and cleanliness) and social (i.e., educational environment, safety from crime, and neighbor interactions) attributes. Regarding the household characteristics, we included variables for average monthly household income, years of residence and age of householder. We also included dummy variables indicating that the householder has a college degree, presence of school-aged children (between 7 and 18 years old), homeowner, living in apartment, and as additional independent variables. Based on previous studies (e.g., Lovejoy et al., 2010; Hur and Morrow-Jones, 2008; Parkes et al., 2002), we expect that these household characteristics are generally positively associated with residential satisfaction.

## IV. Results

### 1. Differences in overall residential satisfaction and neighborhood attributes between housing submarkets

Table 4 shows that overall residential satisfaction is statistically significantly greater in the southeast zone than in the other three zones. This finding supports our first hypothesis that residential satisfaction is greater in Gangnam than in non-Gangnam areas. Regarding neighborhood attributes, the t-test analyses show that residents in the southeast zone were more satisfied with their neighborhood attributes than were residents in other zones. As shown in Table 4, except for the convenience of parking and neighbor interactions variables, the levels of satisfaction with neighborhood attributes are statistically significantly greater in the southeast zone than in other zones. This suggests that, despite governmental efforts to reduce the gap

Table 4. T-Test Analyses on Overall Residential Satisfaction and Neighborhood Attributes between Gangnam and non-Gangnam areas.

| | Southeast a | Southwest b | Northeast c | Northwest d | t-value | | |
|---|---|---|---|---|---|---|---|
| | | | | | a*b | a*c | a*d |
| | Mean (s.d) | Mean (s.d) | Mean (s.d) | Mean (s.d) | | | |
| Overall residential satisfaction | 2.96 (0.558) | 2.87 (0.574) | 2.85 (0.528) | 2.89 (0.525) | 3.737*** | 4.556*** | 2.642*** |
| Access to retail stores | 3.07 (0.692) | 2.96 (0.668) | 2.98 (0.713) | 3.00 (0.590) | 3.573*** | 2.746*** | 2.214** |
| Access to hospitals/healthcare facilities | 3.15 (0.627) | 3.02 (0.636) | 3.02 (0.693) | 3.00 (0.595) | 4.440*** | 4.095*** | 4.620*** |
| Access to public intuitions | 3.15 (0.591) | 3.03 (0.632 ) | 3.02 (0.646) | 3.03 ( 0.490) | 4.245*** | 4.355*** | 4.041*** |
| Access to parks and recreational facilities | 3.11 (0.669) | 2.92 (0.727) | 2.88 (0.734) | 2.95 (0.640) | 6.183*** | 7.154*** | 4.714*** |
| Convenience of parking | 2.64 (0.937) | 2.64 (0.893) | 2.64 (0.922) | 2.59 (0.784) | 0.115 | 0.042 | 1.143 |
| Cleanliness | 3.03 (0.631) | 2.88 (0.679) | 2.94 (0.622) | 2.94 (0.616) | 5.053*** | 3.136*** | 2.977*** |
| Educational environment | 3.00 (0.633) | 2.83 (0.697) | 2.81 (0.636) | 2.93 (0.465) | 5.739*** | 6.645*** | 2.772*** |
| Safety from crime | 2.97 (0.678) | 2.85 (0.631) | 2.92 (0.666) | 2.90 (0.558) | 4.065*** | 1.650* | 2.245** |
| Neighbor interactions | 2.98 (0.565) | 3.01 (0.547) | 2.96 (0.494) | 2.99 (0.453) | 1.136 | 0.975 | 0.323 |
| **Total(N)** | 864 | 1,061 | 1,061 | 688 | | | |

*p<.1, **p<.05, ***<.01

between Gangnam and non-Gangnam areas like Gangbuk, the residential environment is still much nicer in Gangnam than in the rest of Seoul.

## 2. Determinants of residential satisfaction: A pooled model

In examining the determinants of residential satisfaction in Seoul's housing submarkets, we first ran an ordered logit analysis in a pooled model that includes all samples from the four zones and three dummy variables indicating each zone in non-Gangnam areas. As shown in Table 5, the ordered logit estimates of the pooled model show that living in the northeast and northwest zones is negatively related to overall residential satisfaction. Given that the southeast zone was used as the reference category, the negative relationship between the northeast and northwest dummy variables and overall residential satisfaction indicates that residents living in the southeast zone are more likely to be satisfied with their overall residential environment than those living in the northeast and northwest zones. This result is consistent with the t-test analyses, finding a greater level of overall residential satisfaction in the southwest zone than in other zones and supports the first hypothesis that residential satisfaction is greater in Gangnam than in non-Gangnam areas. Given that we controlled for neighborhood attributes and household

characteristics that are relevant to overall residential satisfaction, the statistically significant northeast and northwest dummy variables also suggest that households living in Gangnam are more satisfied with their residential environment by just being located in Gangnam. One may suggest that there is a selection bias that people who are more satisfied with their residential environment live in Gangnam. However, the result in our study is supported by Lee et al's (2018) finding that people living in Gangbuk are more likely to feel themselves in lower-income class even when income levels of people living in Gangnam and Gangbuk are similar, thereby suggesting pure regional disparities rather than a selection bias.

In the model, however, the southwest dummy variable is not statistically significant in the ordered logit analysis unlike the results from the t-test analyses. It seems that there is no statistically significant difference between the southeast and southwest zones, holding others constant. This may also suggest that households living in the southwest zone do not have statistically significantly difference from those living in southeast in terms of residential satisfaction as the southwest zone is located in the south centering on Han River like the southeast zone and thus is also often considered a part of a broader Gangnam as well as sharing similar spatial characteristics with the southeast zone.

Table 5 also shows that all neighborhood attribute variables are positively related to overall residential satisfaction. These results support previous studies finding that both neighborhood physical and social attributes are associated with residential satisfaction (Cao and Wang, 2016; Lovejoy et al., 2010; Parkes et al., 2002). By considering odd ratios that allow us to compare the relative importance among variables, we also found that the neighbor interactions (2.73) is the strongest factor in overall residential satisfaction. These results support studies

Table 5. Ordered Logit Estimates: Pooled Model

| Variables | Coef. | Odds Ratio |
|---|---|---|
| Intercept 1 | 0.047 | |
| Intercept 2 | 3.446 | |
| Intercept 3 | 8.651 | |
| Southwest | -0.070 | 0.93 |
| Northeast | -0.348*** | 0.72 |
| Northwest | -0.005** | 0.73 |
| Access to retail stores | 0.706*** | 2.03 |
| Access to hospitals/ healthcare facilities | 0.473*** | 1.60 |
| Access to public intuitions | 0.297** | 1.35 |
| Access to parks and recreational facilities | 0.634*** | 1.88 |
| Convenience of parking | 0.772*** | 2.16 |
| Cleanliness | 0.797*** | 2.22 |
| Educational environment | 1.002*** | 2.72 |
| Safety from crime | 0.710*** | 2.03 |
| Neighbor interactions | 1.004*** | 2.73 |
| Income | 0.000 | 1.00 |
| College graduate | 0.224** | 1.25 |
| Presence of school-aged children | 0.011 | 1.01 |
| Years of residence | -0.010 | 0.99 |
| Homeowner | 0.381*** | 1.46 |
| Living in apartment | 0.428*** | 1.53 |
| Age | 0.005 | 1.00 |
| N | 3674 | |
| Degrees of freedom | 19 | |
| Log likelihood | -2253.5213 | |
| $x^2$value | 1338.49 | |
| Psedo-$R^2$ | 0.2290 | |

*p<.1, **p<.05, ***<.01

emphasizing social interactions on higher residential satisfaction (Adriaanse, 2007; Cao and Wang, 2016; Vera-Toscano and Ateca-Amestoy, 2008). The odd ratio for the neighbor interactions variable indicates that residents who were "satisfied" with their neighbor interactions were 2.73 times more likely to be "satisfied" with their overall residential environment than those who were "dissatisfied" with their neighbor interactions.

The odd ratios also suggest that the educational environment (2.72) is the second strongest factor in overall residential satisfaction. Physical improvement has been emphasized in urban redevelopment in Korea (Ha, 2015). Thus, the fact that the neighbor interactions and the educational environment variables ranked the first and second important factors, respectively, in overall residential satisfaction suggests that a important factors, respectively, in overall residential satisfaction suggests that a neighborhood's social environment is as important as a neighborhood's physical environment in Korea in enhancing residential satisfaction. Regarding household characteristics, the model estimates show that college graduates and homeowners are more likely to be satisfied with their overall residential environment, which supports previous studies (Grinstein-Weiss et al., 2011; Lee and Guest, 1983; Lu, 1999; McCrea et al., 2005; Mohan and Twigg, 2007; Spain, 1988).

Also, living in an apartment has a positive association with overall residential satisfaction. This reflects the contemporary preference of Korean people toward high-rise apartments over single-family or low-rise multifamily housing (Ha, 2010). In Korea, living in an apartment is preferred as it is safer by having security services and provides various conveniences such as easy access to playgrounds for children.

## 3. Determinants of residential satisfaction: Housing submarket models

Table 6 presents the ordered logit estimates of the housing submarket models. Consistent with the pooled model, the neighborhood attribute variables, including access to parks and recreational facilities, convenience of parking, cleanliness, educational environment, and neighbor interactions, were all positively associated with overall residential satisfaction in all zones. At the same time, the ordered logit estimates for the housing submarket models show that there are some variations from the pooled model across housing submarkets. The access to public institutions variable is positively related to overall residential satisfaction in the southwest zone as in the pooled model but not statistically significant in other zones. The positive relationship between the access to public institutions and overall residential satisfaction in the southwest zone may be because residents prefer living near public institutions such as a police station due to the rapid growth of foreigners and the perception that foreigners engage in criminal activities in the zone. While we need further exploration about the association between access to public institutions and residential satisfaction in the southwest zone, Park et al.'s (2012) finding that

Table 6. Ordered Logit Estimates: Housing Submarket Models

| Variables | Southeast | | Southwest | | Northeast | | Northwest | |
|---|---|---|---|---|---|---|---|---|
| | Coef. | Odds Ratio | Coef. | Odds Ratio | Coef. | Odds Ratio | Coef. | Odds Ratio |
| Intercept 1 | 1.140 | | 0.236 | | 0.434 | | -1.179 | |
| Intercept 2 | 4.455 | | 3.928 | | 3.742 | | 2.430 | |
| Intercept 3 | 10.188 | | 8.993 | | 9.139 | | 7.499 | |
| Access to retail stores | 0.998*** | 2.71 | 0.721*** | 2.06 | 0.577** | 1.78 | 0.517 | 1.68 |
| Access to hospitals/healthcare facilities | 0.782** | 2.19 | 0.647*** | 1.91 | 0.439* | 1.55 | 0.399 | 1.49 |
| Access to public intuitions | 0.317 | 1.37 | 0.530** | 1.70 | 0.240 | 1.27 | -0.037 | 0.96 |
| Access to parks and recreational facilities | 1.389*** | 4.01 | 0.450** | 1.57 | 0.501** | 1.65 | 0.783*** | 2.19 |
| Convenience of parking | 0.921*** | 2.51 | 0.981*** | 2.67 | 0.407** | 1.50 | 0.806*** | 2.24 |
| Cleanliness | 1.513*** | 4.54 | 0.427** | 1.53 | 0.789*** | 2.20 | 0.707** | 2.03 |
| Educational environment | 0.550* | 1.73 | 0.979*** | 2.66 | 1.192*** | 3.29 | 1.124*** | 3.08 |
| Safety from crime | 0.548** | 1.79 | 0.806*** | 2.24 | 0.760*** | 2.14 | 0.376 | 1.46 |
| Neighbor interactions | 1.264*** | 3.54 | 1.011*** | 2.75 | 0.843*** | 2.32 | 0.953*** | 2.59 |
| Income | 0.000 | 1.00 | 0.000 | 1.00 | -0.000 | 1.00 | -0.001 | 1.00 |
| College-graduate | 0.071 | 1.07 | 0.279 | 1.32 | 0.395* | 1.49 | -0.050 | 0.95 |
| Presence of school-aged children | 0.630*** | 1.88 | -0.323 | 0.72 | -0.99 | 0.91 | -0.143 | 0.87 |
| Years of residence | -0.033** | 0.97 | 0.007 | 1.01 | -0.014 | 0.99 | -0.018 | 0.98 |
| Homeowner | 0.656*** | 1.93 | 0.291 | 1.34 | 0.409** | 1.50 | 0.350 | 1.42 |
| Living in apartment | 0.228 | 1.86 | 0.364** | 1.44 | 0.499*** | 1.65 | 0.698*** | 1.49 |
| Age | -0.001 | 1.00 | 0.006 | 1.01 | 0.013* | 1.01 | -0.002 | 1.00 |
| N | 864 | | 1061 | | 1061 | | 688 | |
| Degrees of freedom | 16 | | 16 | | 16 | | 16 | |
| Log likelihood | -486.71552 | | -675.8459 | | -628.90795 | | -419.65231 | |
| $x^2$value | 388.49 | | 441.92 | | 341.36 | | 206.13 | |
| Psedo-$R^2$ | 0.2852 | | 0.2464 | | 0.2135 | | 0.1972 | |

*p<.1, **p<.05, ***<.01

residents have been getting more concerned with safety in the southwest zone supports our conjecture.

We also compared the relative importance among the variables in the four zones by calculating odd ratios. As shown in Table 6, in Gangnam, the southeast zone, cleanliness (4.54) is the strongest factor in overall residential satisfaction. Access to parks and recreational facilities (4.01) ranked the second strongest factor in overall residential satisfaction in the southeast zone. That is, neighborhood physical

attributes ranked high in their relative importance in Gangnam.

By contrast to Gangnam where neighborhood physical attributes are more important for overall residential satisfaction, neighborhood social attributes were more important in non-Gangnam areas. Consistent with the pooled model finding a strong effect of neighbor interactions, the neighbor interactions variable generally has a strong effect on overall residential satisfaction in non-Gangnam areas. In particular, the neighbor interactions variable has the strongest effect on residential satisfaction in the southwest (2.75) zone and is the second strongest factor in the northeast (2.32) and northwest (2.59) zones.

Also, in the northeast (3.29) and northwest (3.08) zones, the strongest neighborhood attribute for overall residential satisfaction was the educational environment. That is, educational environment has a strong effect on overall residential satisfaction in non-Gangnam areas. Additionally, the fact that such neighborhood physical factors as access to retail stores and access to hospitals/healthcare facilities are not statistically significant while the educational environment ranked the most important factor in the northwest zone further emphasizes the importance of the educational environment on overall residential satisfaction in non-Gangnam areas. That is, along with the importance of neighbor interactions, neighborhood social attributes are more important for overall residential satisfaction in non-Gangnam areas.

Shin and Nam (2012) suggest that residents respond more sensitively to what they feel is insufficient in their area. However, it seems that Shin and Nam's argument applies only to educational environment, in non-Gangnam areas where educational quality is not as good as in Gangnam. While the t-test analyses show that the levels of satisfaction with most neighborhood attributes, including physical attributes, are greater in Gangnam, physical attributes have stronger effects on the overall residential satisfaction in Gangnam. Also, while the t-test analyses show that there is no statistically significant difference between Gangnam and non-Gangnam area in neighbor interactions, the neighbor interactions variable generally has a stronger effect on the overall residential satisfaction in non-Gangnam areas. These results may suggest that in a preferred, affluent community such as Gangnam, physical attributes are more influential for overall residential environment.

With regard to household characteristics, income was insignificant in all zones as in the pooled model while there are variations by zones for other variables. While the college-graduate variable was positively related to overall residential satisfaction in the pooled model, it was statistically significant only in the northeast zone. It seems that the positive effect of college graduates decreases when the samples are split into smaller zones. The presence of school-aged children variable is positively related to residential satisfaction in the southeast unlike in the pooled model that the variable was not statistically significant. This may be because residential environments are better situated in

the southeast zone by having, for example, good schools.

The years of residence variable is negatively associated with overall residential satisfaction in the southeast zone while it was not statistically significant in other zones. This may be because of old apartments and delayed redevelopments in the southeast zone. The new town project has provided new apartments and improved the residential environment in the northeast and northwest zones although many of the proposed new town projects could not be implemented. At the same time, the apartments that were constructed in the early era of Gangnam development have been getting older but have not been redeveloped due to the rule that an apartment should be at least 40 years old to be redeveloped and because of the economic recession initiated by the global economic crisis in the late 2000s. Between 2007 and 2010, the ratio of redeveloped areas to the total residential areas was larger in the northeast (0.49%), northwest (0.71%), and southwest (0.44%) zones than the southeast (0.00%) zone (Kim and Nam, 2012). This may be the reason why the years of residence variable is negatively related to overall residential satisfaction in the southeast zone.

As in the pooled model, homeowners are more likely to be satisfied with their residential environments in the southeast, and northeast zones while the homeowner variable is not statistically significant in the southwest and northwest zones. The reason why homeownership does not make a difference in the residential satisfaction in the southwest and northwest zones may be because relatively fewer people live in an apartment in the zones. As shown in Table 3, the proportions of residents living in an apartment is lower in the southwest (37.9%) and northwest (32.4%) zones than in the other two zones. Considering the contemporary housing preference for apartments in Korea, it seems that residential satisfaction among homeowners is not so different from residential satisfaction among renters in the southwest and northwest zones. Interestingly, living in an apartment appeared to be insignificant for residential satisfaction in the southeast zone while it was positively related to residential satisfaction in other zones as in the pooled model. Given that a larger share of households already live in apartments in the southeast zone as presented in Table 3, this may be because living in an apartment does not make a difference for overall residential satisfaction in the southeast zone, unlike in other zones. Finally, the age variable was statistically significant only in the northeast zone. While many studies find that age is positively related to residential satisfaction, it seems that age is not a critical factors in other housing submarkets in Seoul.

In sum, the ordered logit estimates of the housing submarket models show that factors affecting overall residential satisfaction vary by housing submarkets in Seoul, which supports the second hypothesis and Hur and Morrow-Jones (2008) and Shin and Nam's (2012) studies. Briefly, the major difference in the determinants of residential satisfaction between Gangnam and non-Gangnam areas as follow: neighborhood physical attributes are more important for overall residential satisfaction in Gangnam while

neighborhood social attributes are more important for overall residential satisfaction in non-Gangnam areas.

## V. Conclusion

Whether people are satisfied with their residential environment is an important matter because residential satisfaction can affect not only individuals' quality of life, but can also affect residential location decisions of households, thereby influencing community stability. Regional disparity can be detrimental to the growth of the whole area, considering differences across housing submarkets is critical in developing successful housing policies. This study contributes to the literature by linking residential satisfaction with housing submarkets. While most studies on housing submarkets are based on housing prices and the hedonic price model residential satisfaction that indicates the difference between one's expectation and realization of the expectation on residential environment, this study is likely to be a better measure for enhancing life quality of residents in each submarket and community stability.

This study has two major findings. First, we found that residents living in the southeast zone, Gangnam, were more satisfied with their residential environment than those living in other zones. That is, despite the governmental efforts to reduce the imbalance between Gangnam and the rest of Seoul, there are still significant disparities between Gangnam and non-Gangnam areas.

Second, we found that there are considerable differences in the determinants of residential satisfaction between Gangnam and non-Gangnam areas. By running ordered logit analyses for each of the four zones, we found that satisfaction with neighborhood cleanliness and access to parks and recreational facilities were more important factors in overall residential satisfaction in Gangnam. Given that households are more satisfied with most neighborhood attributes in Gangnam than in non-Gangnam areas, this finding suggests that Gangnam-style residential satisfaction is oriented by neighborhood physical attributes such as cleanliness and access to parks and recreational facilities. By contrast, in non-Gangnam areas, social attributes are more important for overall residential satisfaction. In particular, neighborhood interactions and educational environment were more strongly and positively related to overall residential satisfaction in non-Gangnam areas. This finding reaffirms the existence of housing submarkets and suggests the consideration of housing submarkets in studying residential satisfaction.

Based on the findings in this study, we suggest that policy makers should pay more attention to the differences among housing submarkets in Seoul. Given that the determinants of residential satisfaction differ by daily-life zones, we suggest that the Seoul government will need to employ differing strategies for community development across housing submarkets. Specifically, more attention should be paid to the social attributes for enhancing

residential satisfaction in non-Gangnam area. In both 2020 Urban Master Plan of Seoul and 2030 Urban Master Plan of Seoul, there are no specifics on how to improve social environments in the daily-life zones. Enhancing educational quality in non-Gangnam area has long been a political agenda. In addition to enhancing educational quality, maintaining and enhancing social environment can increase overall residential satisfaction. Urban development in Korea has traditionally emphasized physical improvement over social improvement. In addition, the new town project has received much criticism due to redeveloping old neighborhoods in Seoul by bulldozing old housing and displacing existing residents, thereby destroying community social capital (Ha, 2015). Fortunately, urban regeneration, unlike the traditional urban redevelopment approach, has focused on the preservation of existing housing stocks and neighborhoods and emphasized the social environment by supporting such activities as community-organized childcare and energy use reduction programs that can improve community social capital.

There are various directions for future research. First, incorporating objective measures of neighborhood attributes will enhance the robustness of the findings in this study. Wood et al. (2010) theorize the association between objective and subjective measures by proposing a conceptual model that physical (objective) walkability affects perceived (subjective) walkability and, accordingly, affects actual walking. Unfortunately, the Korea Housing Survey data do not discover geographic locations of survey respondents at the neighborhood level. The information of which *dong,* a neighborhood in Korea, a survey respondent lives in will allow a researcher to incorporate objective measures of neighborhood attributes in addition to the subjective measures of neighborhood attributes from the survey and running a multi-level model, containing individual-level and neighborhood-level data. Second, future research will need to incorporate both spatial and demander factors in studying residential satisfaction. While this study examined residential satisfaction in housing submarkets divided by spatial characteristics, demander factors such as income, life-cycle, and preferences can also construct housing submarkets, thereby affecting residential satisfaction. Third, a qualitative study will help better understand the differences in residential satisfaction between Gangnam and non-Gangnam areas. For example, by interviewing residents living in different zones, we will be able to have deeper understandings of why neighborhood physical attributes are more important in Gangnam while social attributes are more important in non-Gangnam areas for residential satisfaction. Finally, a research project could be undertaken comparing the determinants of residential satisfaction in housing submarkets across time. The Korea Housing Survey has been taken every two years since 2006. Comparing the determinants of residential satisfaction across time will allow us to better evaluate whether the governmental efforts to reduce the imbalance between Gangnam and Gangbuk have been successful.

Note 1. This music video features Gangnam and recorded about 2.7 billion views as of November, 2016, which is the most viewed on YouTube (https://www.youtube.com/watch?v=9bZkp7q19f0).

Note 1. The population of Seoul is 9.9 million as of 2015 (http://kosis.kr/).

## References


1. Adams, R. E., 1992. "Is happiness a home in the suburbs?: The influence of urban versus suburban neighborhoods on psychological health", *Journal of Community Psychology*, 20(4): 353-372.
2. Adriaanse, C. C. M., 2007. "Measuring residential satisfaction: a residential environmental satisfaction scale (RESS)", *Journal of Housing and the Built Environment*, 22(3): f287-304.
3. Alesina, A., and D. Rodrik. 1994. "Distributive politics and economic growth", *The Quarterly Journal of Economics*, 109(2):465-490.
4. Baum, S., Arthurson, K., and Rickson, K., 2010. "Happy people in mixed-up places: the association between the degree and type of local socioeconomic mix and expressions of neighbourhood satisfaction", *Urban Studies*, 47(3): 467-485.
5. Bourassa, S. C., Hoesli, M., and Peng, V. S. 2003. "Do housing submarkets really matter?", *Journal of Housing Economics*, 12(1): 12-28.
6. Bourne, L. S., 1981. *The geography of housing*, New York: Halsted Press.
7. Cao, X. J., and Wang, D., 2016. "Environmental correlates of residential satisfaction: an exploration of mismatched neighborhood characteristics in the Twin Cities", *Landscape and Urban Planning*, 150: 26-35.
8. Cho, M.-J., Im, Y.-J., and Lee, M.-H., 2016. "A study on the ecaluation of neighbourhood living environment of apartment between Kangnam area and Kangbuk area", *Journal of Korea Planning Association*, 51(2): 31-53.
9. Choi, Y., 2015. "Spatial panel analysis of the effect of government regulation on urban development: With the regional influence of districts in Seoul", *Korean Public Administration Review*, 49(4): 297-327.
10. Chung, H. C., Kim, T. H., & Oh, B. H. 2009. "An analysis of influencing factor and causality of real transaction price of mixed-use house by sub-regions in Seoul", *Seoul Studies*, 10(1): 61-74.
11. Dekker, K., Vos, S. D., Musterd, S., and Kempen, R. V., 2011. "Residential satisfaction in housing estates in European cities", *a multi-level research approach,* 26(4): 479-499.
12. Ezcurra, R., 2007. "Is income inequality harmful for regional growth?" Evidence from the European Union, *Urban Studies*, 44(10): 1953-1971.
13. Feijten, P., and van Ham, M., 2009. "Neighbourhood change... Reason to leave?", *Urban Studies*, 46(10): 2103-2122.
14. Fried, M., 1984. "The structure and significance of community satisfaction", *Population and Environment,* 7(2): 61-86.
15. Galster, G., 1987. "Identifying the correlates of dwelling satisfaction: an empirical critique", *Environment and Behavior*, 19: 539-568.
16. Galster, G. C., and Hesser, G. W., 1981. "Residential satisfaction compositional and contextual correlates", *Environment and Behavior*, 13(6): 735-758.
17. Goodman, A. C., and Thibodeau, T. G. 1998. "Housing market segmentation", *Journal of housing economics*, 7(2): 121-143.
18. Grigsby, W., G. Baratz, George C. G., and D. Maclennan, 1987. *The Dynamics of Neighbourhood Change and Decline*. London, England: Pergamon.
19. Grinstein-Weiss, M., Yeo, Y., Anacker, K., Zandt, S. V., Freeze, E. B., and Quercia, R. G., 2011. "Homeownership and neighborhood satisfaction among low-and moderate-income households", *Journal of Urban Affairs*, 33(3): 247-265.

20. Ha, S.-K., 2010. “Housing, social capital and community development in Seoul”, *Cities*, 27, Supplement 1: S35-S42.
21. Ha, S.-K., 2015. *The endogenous dynamics of urban renewal and gentrification in Seoul.* In L. Lees, H. B. Shin and E. López-Morales (Eds.), Global gentrification: uneven development and displacement. Bristol: Policy Press.
22. Heo, S., and Lee, S. W., 2008. “Land price differentials between Gangnam and Gangbuk areas in Seoul”, *Korea Real Estate Review*, 18(2): 125-144.
23. Hong, J. H., and Kim, M. G., 2014. “Impacts of economic dependency on intra-urban economic disparity: the relations between three city centers and other districts in Seoul”, *The Korean Journal of Local Government Studies*, 18(2): 479-505.
24. Hur, M., and Morrow-Jones, H., 2008. “Factors that influence residents' satisfaction with neighborhoods”, *Environment and Behavior*, 40(5): 619-635.
25. Jones, C., Leishman, C., and Watkins, C. 2003. “Structural change in a local urban housing market”, *Environment and Planning A*, 35(7): 1315-1326.
26. Kim, H. T., and Nam, J., 2012. “A study on the choice of housing tenure and housing types according to household characteristics of life zones in Seoul”, *Seoul Studies*, 13(2): 155-173.
27. Lee, B. A., and Guest, A. M., 1983. “Determinants of neighborhood satisfaction: a metropolitan-level analysis”, *The Sociological Quarterly*, 24(2): 287-303.
28. Lee, S. J., and Lee, J. H., 2011. “A study on characteristics of determining factor of rental price of apartment by sub-regions in Seoul.” *KIEAE Journal*, 11(4): 19-27.
29. Lee, K. Y., Jeong, J. H., and Jun, H. J. 2018, “The effect of regional disparity and housing characteristics of Seoul’s Gangnam and Gangbuk districts on the social-class recognition : Focusing on low-income class recognition”, *Journal of the Korean Urban Management Association*, 31(1): 77-100.
30. Lee, K. H., and Seo, S. J., 2009. “A study on the regional disparity between the major 3 Gangnam districts and the Major 3 Gangbuk districts in Seoul”, *Korean Public Management Review*, 23(4): 357-381.
31. Lovejoy, K., Handy, S., and Mokhtarianc, P., 2010. “Neighborhood satisfaction in suburban versus traditional environments: an evaluation of contributing characteristics in eight California neighborhoods”, Landscape and Urban Planning, 97(1): 37-48.
32. Lu, M., 1999. “Determinants of Residential Satisfaction: Ordered Logit vs. Regression Models”, *Growth and Change*, 30: 264-287.
33. Maclennan, D. 2012. Understanding housing markets: Real progress or stalled agendas. The SAGE handbook of housing studies, 5-26.
34. McCrea, R., Stimson, R., and Western, J., 2005. “Testing a moderated model of satisfaction with urban living using data for Brisbane-South East Queensland, Australia”, *Social Indicators Research*, 72(2): 121-152.
35. MLIT., 2014. “A report for the 2014 Korea Housing Survey,” retrieved in August, 2016 from http://hnuri.go.kr/stat/stat_byYearSearchViewPage.do?bbsId=BBSMSTR_000000000011&nttId=311. Seoul: The Ministry of Land, Infrastructure and Transport.
36. Mohan, J., and Twigg, L., 2007. “Sense of place, quality of life and local socioeconomic context: Evidence from the survey of English housing”, *Urban Studies*, 44(10): 2029-2045.
37. Oliver, J. E. 2001. *Democracy in Suburbia*. Princeton, NJ: Princeton University Press.
38. Park, S.-Y., Kim, J.-H., and Choi, M.-J., 2012. “Effects of foreign workers’residential community on Korean neighborhoods : The case of Garibondong and Daelimdong, Seoul”, *The Journal of Korea Planners Association*, 47(5): 217-230.

39. Park, S., and Jung, S., 2010. "Spatial distribution of foreign population and policy implications in South Korea", *The Korea Spatial Planning Review*, 64: 59-76.
40. Park, Y. H., 2010. "A study of residential segregaion of the foreign population in the Seoul Metropolitan Area", *Korean Journal of Public Administration*, 48(4): 429-453.
41. Parkes, A., Kearns, A., and Atkinson, R., 2002. "What makes people dissatisfied with their neighbourhoods?", *Urban Studies*, 39: 2413-2438.
42. Schnare, A. B., and Struyk, R. J., 1976. "Segmentation in urban housing markets", *Journal of Urban Economics*, 3(2): 146-166.
43. Schneider, M. 1987. *The Competitive City: The Political Economy of Suburbia,* Pittsburgh, PA: University of Pittsburgh Press.
44. Schwirian, K. P., and Schwirian, P. M. 1993. "Neighboring, residential satisfaction, and psychological well-being in urban elders", *Journal of Community Psychology*, 21(4): 285-299.
45. Seoul Metropolitan Government. 2012. *2020 Urban Master Plan of Seoul,* Seoul
46. Shin, E. J., and Nam, J., 2012. "Determinants of residential satisfaction by residential environment of apartment complexes in Seoul", *Journal of the Korea Planning Association*, 47(5): 139-154.
47. Sirgy, M. J., and Cornwell, T., 2002. "How neighborhood features affect quality of life", *Social Indicators Research*, 59(1): 79-114.
48. Spain, D., 1988. "The effect of changing household composition on neighborhood satisfaction", *Urban Affairs Review*, 23(4): 581-600.
49. Vera-Toscano, E., and Ateca-Amestoy, V., 2008. "The relevance of social interactions on housing satisfaction", *Social Indicators Research*, 86(2): 257-274.
50. Watkins, C. A. 2001. "The definition and identification of housing submarkets." *Environment and Planning A*, 33(12): 2235-2253.
51. Wood, L., Frank, L. D., and Giles-Corti, B. 2010. "Sense of community and its relationship with walking and neighborhood design", *Social Science & Medicine*, 70(9): 1381-1390.
52. Youn, H.-h., and Lim, B.-I., 2012. "Analysis of income gap and income inequality among regional segments of Seoul between 2001 and 2009", *Seoul Studies*, 13(2): 1-15.
53. Yu, K.-H., Lee, M.-H., and Kim, Y.-O., 2006. "A study on the impact of the balanced development project on urban spatial configuration In case of the Mi-a Balance Development Project in Seoul", *Journal of Korea Planning Association*, 41(6): 51-63.

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