

Social Stratification and Residential Segregation in Haidian District, Beijing, China

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Abstract

In this paper we analyze social stratification and residential segregation in the context of the Haidian district in Beijing, China's capital. We start looking at the multiple theories created by scholars to explain social stratification and residential segregation, as well as the interplay between them. Then we explain the methodology for a study to quantitatively measure the impact of these two characteristics in Haidian's society. In order to perform these studies, for the macro level we will analyze official data on the overall urbanization process, including a historical analysis, a quantitative measurement of segregation applied to multiple districts, and the map visualization of factors that can cause residential segregation. For the middle level we will use a survey targeted at individuals from different socio-economic backgrounds. And for the micro level we will also personally interview people in high-income and low-income neighbourhoods to understand their relationships with individuals from a different social class and their personal view of society.

Keywords: Residential segregation; Social stratification; Haidian district; Inequality; Planned economy; Market forces; High quality urbanization

Highlights

- We examine existing residential segregation theories
- We quantitatively measure residential segregation in relation to social stratification
- We survey citizens in different social classes to determine how they view other classes and mixed-class housing initiatives
- We explain policy implications and future research Introduction

Introduction

Context

Social stratification is a phenomenon that emerges from social communities with multiple members [1]. A persons' social status is based on their opportunity to gain wealth, power and reputation [2]. In the following picture, the different classes can be observed socially stratified and segregated into different floors in the same building. This shows that residential segregation can happen in the vertical plane, like in Paris, and does not necessarily occur only in geographically different spaces. However, in the case of London, we can see that social stratification leads to geographical residential segregation. Urban citizens with similar characteristics reside together in specific areas and separate from other groups with different characteristics [3]. These characteristics can be race, religion, occupation, lifestyle, education level, wealth disparity, etc. [4]. It is to a great extent caused by social stratification, and it may in turn aggravate the social stratification, creating a cycle (Figures 1 and 2).

The "Fringe" is the edge between two different places. The "Urban Fringe" is the transition area between the continuous high-density urban area and outer suburbs where there is low-density of population as well as large areas of agricultural land. The urban fringe can have rural or urban activities, or a mixture of both, as exemplified in the following picture; both are located in the urban fringe (Figure 3).

The Beijing city is divided into three distinct sections: Urban Center, consisting of Xicheng, Dongcheng, Xuanwu and Chongwen.

This is where urban activities first developed. They are the busiest and liveliest areas in the city. However, it may encounter urban decay. Inner Suburbs, consisting of Chaoyang, Fengtai, Shijingshan and Haidian districts. They are located in between the city center and the farmland and they consist the urban fringe. Outer Suburbs, consisting of Yanqing, Huairou, Miyun, Pinggu, etc. These have with no direct contact with the city center. The economic activities there are mainly agricultural, and residents have very different lifestyles from urban citizens [5].

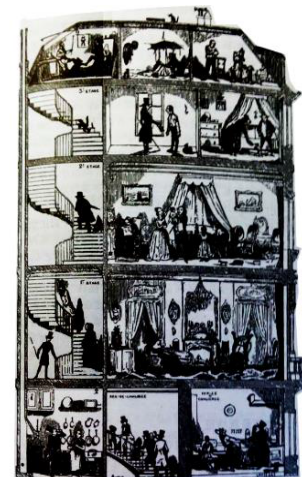


Figure 1: Cross-section of a typical residential house in Paris in 1853.

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Received December 29, 2016; Accepted April 03, 2017; Published April 05, 2017

Citation: Roitman LA, Yanhan Z, Zhuoli T, He C (2017) Social Stratification and Residential Segregation in Haidian District, Beijing, China. Int J Econ Manag Sci 6: 412. doi: [10.4172/2162-6359.1000412](https://doi.org/10.4172/2162-6359.1000412)

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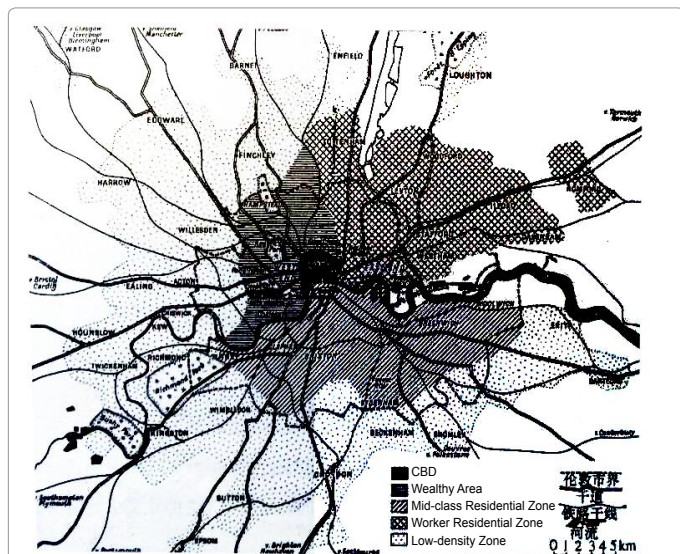


Figure 2: Map for Residential Segregation in London.

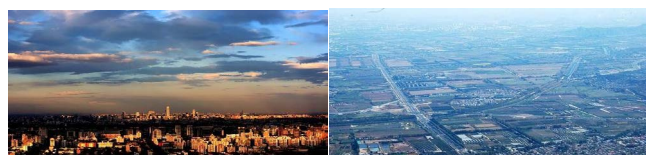


Figure 3: On the left, district center, Haidian, Beijing on the right, large farmland in the fringe, Haidian, Beijing.

There are two main theories from which we can analyze urbanization in the Haidian district. One of them is the theory of New Urbanism, which considers the demand for land and output of scales, and tries to make sense out of the community through densification and diversification. For example, it gave rise to economically affordable houses developed after 1998, such as Huilongguan, Tiantongyuan, or Jiandongyuan. The other theory is the theory of Residential Suburbanization, which states that people escape from the crowded city center to pursue a higher quality life. It was represented by the emergence of villa districts in the early 1990s. Examples of it in practice are the Lijing Project and the Yujing Project [6].

Significance

Affordable and mixed housing projects are an important enterprise by the government. By the end of 2002, multiple projects had been realized: 160 villa projects, comprising 5% of the total amount of residential buildings. 40000 houses were built, covering a total gross area of 10000000 meters squared. This was 50% of the total amount of investment in Beijing residential buildings. We need to analyze their impact and understand whether investing in these kinds of developments is a successful way of promoting inter-class acceptance.

The Haidian district is in a good location with rich natural resources. It has a total area of 431 kilometers squared, it has 22 sub-district offices, 5 towns and 2 different areas. It developed into the cultural and educational center after 1949. High-technology industries appeared in the 1980s. Haidian district is also famous for the Zhongguancun Science and Technology Park.

Objectives and research questions

In this research, we decided to analyze residential segregation in the context of social stratification to identify possible improvements to policy and decrease the amount of social stratification, leading to a potentially more robust and fair society, which in turn could strengthen the economy.

Our specific research questions are:

- What is the formation mechanism of social stratification and residential segregation?
- What does the geographical pattern of residential segregation look like?
- What are the evolution trends on residential segregation?
- What is the influence of residential segregation on urban social space?
- What is the influence of residential segregation on individual evaluations of the society?
- What are the current policies to deal with residential segregation and its problems?

Literature Review

Social stratification

Social stratification has long been one of the most key topics in the field of sociology. One of the most famous theories is functionalism, represented by K. Davis and W.E. Moore. The functionalists hold the view that social stratification is inevitable for social operation. It has positive effects because inequality drives people to promote themselves to higher positions [1]. The most important positions in the society are obtained by the most qualified people. On the other hand, the poor provide cheap labor force for the low-skilled labor market since they are less qualified [7,8]. Functional theories are mainly based on the efficiency of social operation and have drawn wide criticism, of which the strongest one comes from Melvyn Tumin. He argued that obstacles were set up in advance in a stable hierarchy system, which actually led to a waste of talents [9].

Following functionalism, the rise of Social-conflict Theory reflects an opposite attitude towards social stratification, which is represented by Karl Marx and Max Weber. It laid stress on the polarity rising between individuals, groups and social hierarchies. Instead of focusing on the creation of social value, it argues that the function power has is to maintain social order [10]. Marx especially stressed the periodical change of the means of production economic relations under certain class relations. And Weber believed a conflict would eventually emerge from inequality and social stratification.

Residential segregation

Human Ecology was founded by the Chicago School in the 1930s, led by Robert Park. It mainly discussed the urban social spatial environment and the interpersonal relationships in urban social space. Three models were put forward and regarded as the basic models for urban social segregation, and are still widely used in industrial cities now. The first model is Concentric Zone Model by B. W. Burgess in 1925. It shows the law of spatial differentiation with the concentric expansion of urban space. The second is Sector Model by H. Hoyt in 1939. It introduces the influence of traffic, which makes residential space grow along the main traffic lines. The third is Multiple Nuclei Model

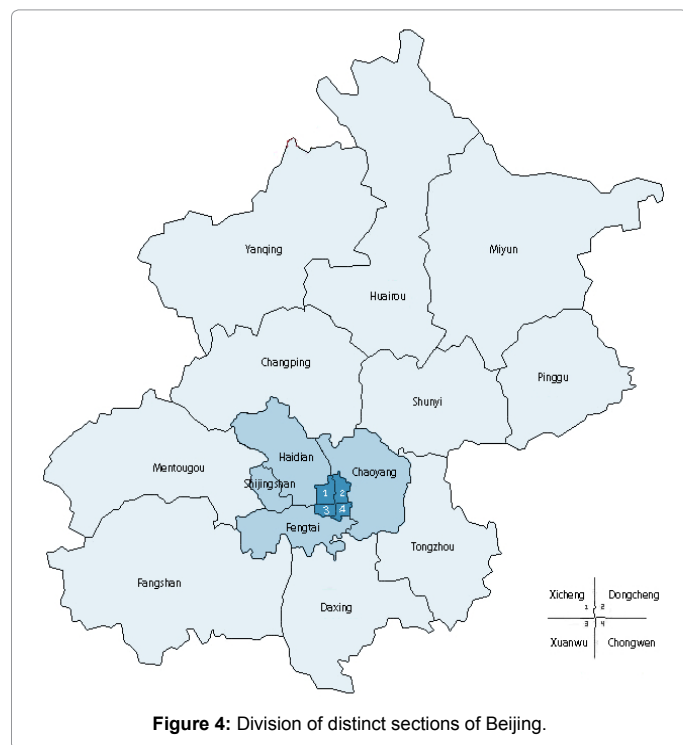


Figure 4: Division of distinct sections of Beijing.

by J. R. Harris and E. Ullman in 1945. It states a more complicated situation since cities in most cases have multiple nuclei (Figure 4).

Besides Human Ecology, many other scholars have worked on residential spatial differentiation, in multiple disciplines, one of which is Urban Anthropology. The initial researches focused on the cultural transformation of migrants from countryside to cities. Later, they also paid attention to poverty, social hierarchy and neighborhoods. Lewis first put forward the concept of “Culture of Poverty” and studied poverty culture from the perspective of society, community and individuals while Rapoport discussed human factors in terms of spatial relations and came up with new methods of urban spatial organization.

In addition, geographical distribution of residential areas has long been a key subject of spatial economics, which leads to the emergence of Spatial Economy. Among various economic theories, Alonso’s demand model is regarded as a mainstream. Based on mathematical models, it reaches the conclusion that the price of residential houses decreases progressively from the urban center to urban fringe because of the decrease of land costs, while at the same time traffic cost keeps increasing. Therefore, people would like to decide to settle down if only the saving of house prices is more than the increase of commuting costs [11]. For China currently, however, the real effect of traffic still needs discussion because of the development of public transportation.

Methodology

This paper is mainly threefold based on different scales and perspectives of the research, that is, macro scope, middle scope and micro scope. In the macro scope, the paper looks into the formation mechanism of social stratification and residential segregation, the geographical pattern of residential segregation and the evolution trends of residential segregation. Data sources are statistical reviews, including “Beijing Real Estate Statistics Yearbook” (from 2002 to 2013), “Beijing Population Census 2010” (Towns and Streets Volume), Haidian

District Statistics Yearbook 2012” “chorography of Haidian District” and official websites also provide some statistics [12], the website of National Statistical Bureau and Statistical Bureau of Haidian District included. Mathematical models are used to figure out segregation index. And ArcGIS10.2 is used to visualize the data in the maps. Ultimately the results are to be explained according to the economic, cultural and political features of the regional development. A general hypothesis is made that, for Haidian, the residential segregation may distribute following the law of the combination of three existing models above. And the segregation level may change like an inverted “U” shape curve. That is, there was a low segregation at the early age. Then the gap is widened with the development of suburban areas. But when a high level of development is reached, the gap may be narrowed again, which means more equal and collective prosperity [13-15] (Figure 5).

In the middle scope, residential segregation at the community scale is discussed. Much more attention is paid to the influences segregation brings to interpersonal relationship and employment of citizens in their daily life. Data about characters of daily interactions are mainly gained from the questionnaire surveys. The questionnaire contains 21 questions and 37 blanks, including satisfaction and self-cognition survey. 75 questionnaires were handed out online and in person to fillers who were required to have lived in Beijing for at least half a year. And 69 valid answers were obtained. The effective rate is 92%. Here a hypothesis is made that there is an evident isolation in terms of interpersonal relationship. And the rich are relatively not affected by segregation while the poor might want to get better access to richer neighborhoods to get self-promotions [16-18].

In the micro scope, attention is turned to the influences segregation brings to individual evaluation of the society, which refers to personal values and psychology trends. Interviews were designed to get popular conception of residential segregation. The respondents mainly come from Xiaoyuehe, a typical downscale neighborhood and Bishuiyuntian Community, a typical upscale neighborhood. Here two possibilities

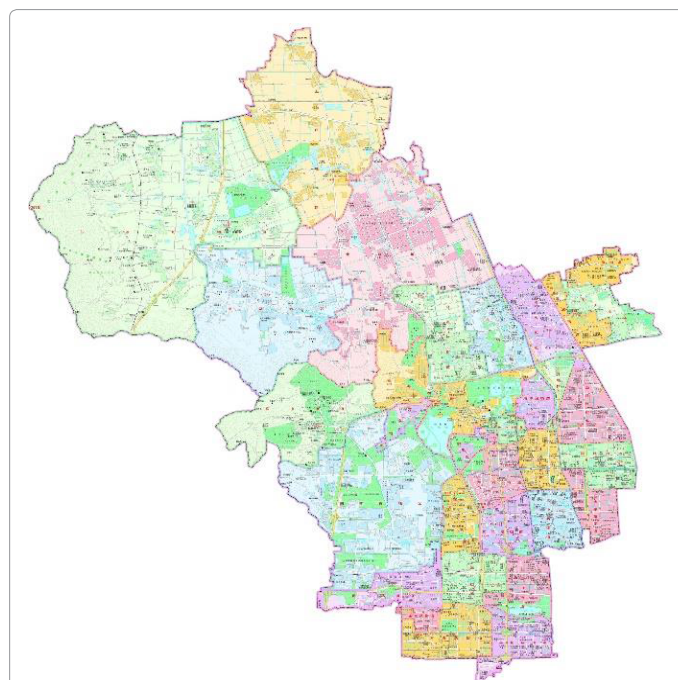


Figure 5: Map of Haidian District.

coexist at the same time. The first is “Pessimistic Circle”, which means that people who live in poor areas suffer pressure from many directions. Simultaneously they are limited in the fixed social class due to existing barrier of promotion. Such polarization forms a pessimistic circle, making the poor more likely to have relatively negative evaluation about the society [19]. On the other hand, the definition of “equality” is relative and people locate their life condition based on the comparison with surrounding people. Given that the upper class is more likely to contact others with diverse life opportunities, the rich are more likely to have a relatively negative evaluation about the society since they can look up to people with different experiences and envy them. Further investigations were made to examine the conformity of the two hypotheses above.

Empirical Results

Macro scope

The evolution process of Haidian district’s residential pattern

1) Before 1949

Right before 1949, there were only about 300 thousand old residence houses inherited from the Qing Dynasty and the Republic of China in Haidian, just as the pictures below show, including some historical sites and several university teaching buildings. A small part of the houses of the rich and the nobility had courtyards, while the rest of houses were only simple single-story houses, gathering side by side. After the foundation of new China, the government organized to clear and census, retiring the valuable houses and tearing down the useless ones [20,21] (Figure 6).

2) 1949 to 1978

The first 17 years after the foundation of new China witnessed the peak of the construction industry. The construction process was to a great extent motivated by the “Unit System”, that is, units in charge of different areas, such as the central government ministry, People’s Liberation Army and many research institutes, expropriated land to build offices and simultaneously many residential buildings inside the Unit Community and surrounding areas, especially along Fuxing Road and Zhongguancun Area.

Under the planned economy system, houses were allocated according to working units and experiences. House differentiation depended heavily on the differentiation of units. In general, employees with higher positions got bigger houses; those who were in better units were easier to be allocated houses; those who had longer working years had the priority to get newer houses; and those who worked in state-owned units were more like to get access to better houses compared with those who ran private business [12].

Overall, however, the total level of residential segregation was low due to limitation of economic conditions and institutions. In this period, almost all the residential buildings were single-story houses or simple storied buildings, such as Taipingzhuang and Yingfang. The Figure below shows a typical unit community (Figure 7).

The construction of residential houses was scattered and fragmented until 1978.

3) 1979 to 1995

After Reform and Opening, Beijing developed at a high speed. Over 60 large residential zones and communities were uniformly constructed between 1977 and 1983 according to the Beijing statistics yearbook, characterized by Xisanqi, Wenhuiyuan, Weigongcun, Wuluju and Yingtaoyuan in Haidian District. The scale expanded from less than 10 thousand to 20 or 30 thousand. Group patterns were adopted since 1985 (Figure 8).

This period also witnessed the first emergence of luxury villas. Around 1995, “Yuanmingyuan Garden” was under construction right on the opposite side of the Yuanmingyuan Ruins Park, along the Qinghe River. It occupied an area of 75 hectares, consisting of 197 villas



Figure 7: The inverted “U” shape curve.



Figure 8: View of the old town.



Figure 9: The Unit Community of the Education Committee.

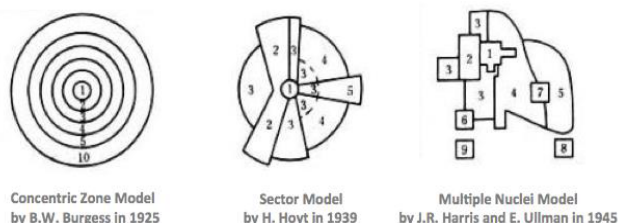


Figure 6: Three models put forward by Chicago School.

with independent courtyards and 1980 luxury apartments. Since then, the construction of luxury houses developed at an amazing speed in Beijing. By the end of 2002, Beijing had accomplished 160 villa projects, 40000 houses and 10 million square meters in total, which comprised 5% of the total amount of residential buildings and 50% of the total amount of investment in Beijing's residential buildings (Figure 9).

4) After 1995

In the middle of the 90's, the development of high-technology parks attracted large flows of people into Haidian District. And the boom in the housing market (instead of governmental and unit control) directly led to further differentiation of residences, given that living conditions were more dependent on the prices. The high-income class, in demand for better environment and security, manifested resistance against lower-income classes. People in the low-income class got no opportunity in housing market, and thus had no choice but to turn to the government for help, which facilitated the provision of cheap houses offered by governments. Since then, the residential segregation started to severely and gradually show a clear pattern.

Current degree of residential segregation: Here, the Differentiation Index is introduced to examine the current degree of residential segregation. It is also called "Localization Index" and is usually used to measure the degree of segregation of residents in a certain characteristic (Duncan, 1955). The equation is as follows:

$$I_d = \frac{1}{2} \sum_{i=1}^n \left| \frac{X_i}{\sum_{i=1}^n X_i} - \frac{Y_i}{\sum_{i=1}^n Y_i} \right|$$

The value of I_d is between 0 and 1. 0 means no differentiation while 1 means complete differentiation. X and Y means 2 different social factors, here Y_i is the population of specific sub-districts, thus I_d is the degree of segregation relative to current population distribution. Many factors can be used to measure the level of segregation; here we choose the proportion of migrant population and the proportion of population with education levels of colleges or higher as X to figure out I_d .

1) The proportion of migrant population as X

The original data and processing data are showed as above Table 1; I_d ultimately turns out to be 0.118.

2) The proportion of population with education levels of colleges or higher as X

The original data and processing data are showed as above Table 2, I_d ultimately turns out to be 0.169. However the level is not extremely high compared to the average level of overall Beijing. Corresponding to the hypothesis before, Haidian may still be on its upward slope of segregation level.

The maps below show a clear pattern of social stratification. Xibeiwang and Wanliu have the highest proportion of migrant populations while the southeast area has the lowest proportion. It

Sub-districts	Permanent population	Migration population	$\frac{X_i}{\sum_{i=1}^n X_i}$	Y_i	$\frac{Y_i}{\sum_{i=1}^n Y_i}$
Wanliu	28062	23247	0.01850662	46134.0034	0.01130948
Xibeiwang	142664	99279	0.07903467	214977.018	0.05332882
Shangdi	102105	66402	0.05286173	126647.027	0.03714214
Sijiqing	170579	109760	0.08737845	248197.021	0.06179203
Dongsheng	49852	29377	0.02338663	61860.0113	0.01746357
Xiangshan	28535	16324	0.01299532	37152.005	0.00988777
Qinglongqiao	128887	65623	0.05224158	144417.032	0.04287369
Malianwa	106585	52986	0.04218144	110609.032	0.03517247
Qinghe	139752	67931	0.05407895	153747.035	0.04577727
Wenquan Town	50800	22486	0.0179008	61573.0076	0.01615362
Shuguang	102397	45217	0.03599664	104361.028	0.03253692
Shangzhuang Town	44814	19514	0.01553483	56671.005	0.01417911
Tiancunlu	106744	43708	0.03479535	109042.027	0.03316247
Zhongguancun	159637	63333	0.05041854	141500.053	0.04914681
Xisanqi	144126	56362	0.04486902	130013.046	0.04419136
Balizhuang	135984	46079	0.03668287	115120.043	0.04013014
Beitaipingzhuang	201614	66041	0.05257435	158976.07	0.05899623
Haidian	144700	46563	0.03706817	109158.053	0.04215799
Yongdinglu	49346	15024	0.0119604	44477.0129	0.01418837
Sujiatuo Town	46786	14227	0.01132592	52828.0053	0.01344842
Xueyuanlu	243307	67946	0.05409089	148743.105	0.06860606
Huayuanlu	148829	40293	0.03207671	104482.055	0.04168607
Beixiaguan	158776	40945	0.03259576	102990.063	0.04402229
Yangfangdian	127134	31547	0.02511414	96230.0404	0.0349763
Ganjiakou	118455	27790	0.02212324	82997.041	0.03223517
Wanshoulu	172456	38850	0.03092796	128035.054	0.04657585
Zizhuyuan	138411	26349	0.02097608	69437.0617	0.03631623
Yanyuan	37548	6546	0.00521118	14930.0189	0.00971915
Qinghuayuan	51785	6396	0.00509177	16947.0267	0.0128242

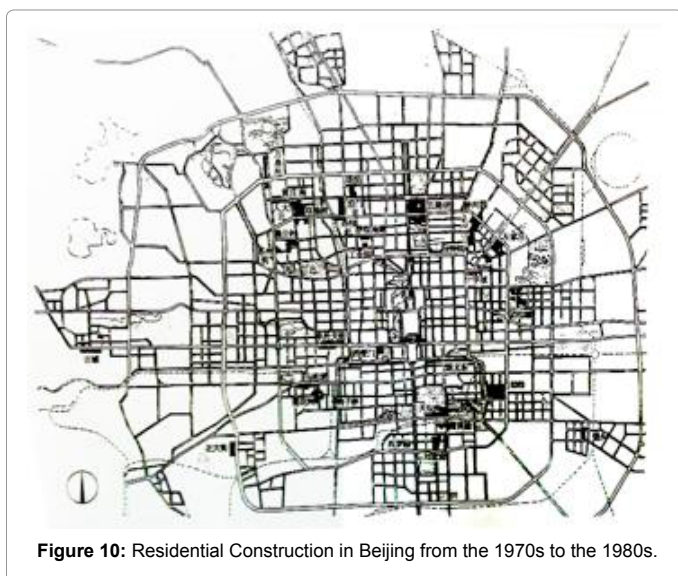
Source: Population Census, Beijing, 2010.

Table 1: Differentiation Index shows differentiation in Haidian District

Sub-districts	Well-educated population	Ill-educated population	$\frac{X_i}{\sum_i X_i}$	Y_i	$\frac{Y_i}{\sum_i Y_i}$
Wanliu	5175	46134	0.0033505	51309	0.0113095
Xibeiwang	26966	214977	0.0174586	241943	0.0533288
Shangdi	41860	126647	0.0271015	168507	0.0371421
Sijiqing	32142	248197	0.0208097	280339	0.061792
Dongsheng	17369	61860	0.0112452	79229	0.0174636
Xiangshan	7707	37152	0.0049898	44859	0.0098878
Qinglongqiao	50093	144417	0.0324318	194510	0.0428737
Malianwa	48962	110609	0.0316995	159571	0.0351725
Qinghe	53936	153747	0.0349199	207683	0.0457773
Wenquan Town	11713	61573	0.0075834	73286	0.0161536
Shuguang	43253	104361	0.0280034	147614	0.0325369
Shangzhuang Town	7657	56671	0.0049574	64328	0.0141791
Tiancunlu	41410	109042	0.0268101	150452	0.0331625
Zhongguancun	81470	141500	0.0527462	222970	0.0491468
Xisanqi	70475	130013	0.0456277	200488	0.0441914
Balizhuang	66943	115120	0.043341	182063	0.0401301
Beitaipingzhuang	108679	158976	0.0703622	267655	0.0589962
Haidian	82105	109158	0.0531574	191263	0.042158
Yongdinglu	19893	44477	0.0128794	64370	0.0141884
Sujiatuo Town	8185	52828	0.0052992	61013	0.0134484
Xueyuanlu	162510	148743	0.1052141	311253	0.0686061
Huayuanlu	84640	104482	0.0547986	189122	0.0416861
Beixiaguan	96731	102990	0.0626267	199721	0.0440223
Yangfangdian	62451	96230	0.0404327	158681	0.0349763
Ganjiakou	63248	82997	0.0409487	146245	0.0322352
Wanshoulu	83271	128035	0.0539123	211306	0.0465758
Zizhuyuan	95323	69437	0.0617151	164760	0.0363162
Yanyuan	29164	14930	0.0188817	44094	0.0097192
Qinghuayuan	41234	16947	0.0266962	58181	0.0128242

Source: Population Census, Beijing, 2010.

Table 2: The differentiation Index shows differentiation in Haidian District and the original data, processing data ultimately turns out to be 0.169.



shows the opposite rule to population density and proportion of well-educated population; that is, the places with highest density and most well-educated citizens lie in the southeast area (Figures 10-13).

In summary, the three maps above all share certain characteristics in common. As the map below shows, the development axis extends from



southeast to northwest. People in the southeast have higher density, higher level of education and lower level of migration. In the developed areas lie three key development points, namely, Qinghuayuan and Yanyuan Area, Zhongguancun and Huayuanlu Area, Wanshoulu and Yangfang Area. The price change of commercial houses clearly shows the trend of suburbanization, while the hot spots of the trade of second-hand and rent houses continuously lies in the southeast area. Generally a filtering effect can be seen through the whole process. Old houses in the center change hands from the richer to the poorer, thus causing the decreasing economic conditions of old house owners in the regional central area (Figure 14).

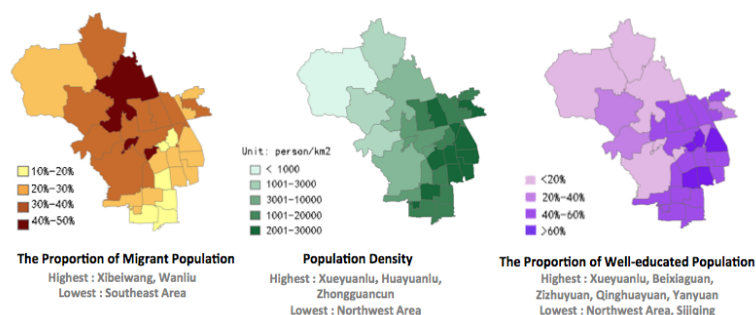


Figure 12: Basic factors that influence the residential differentiation.

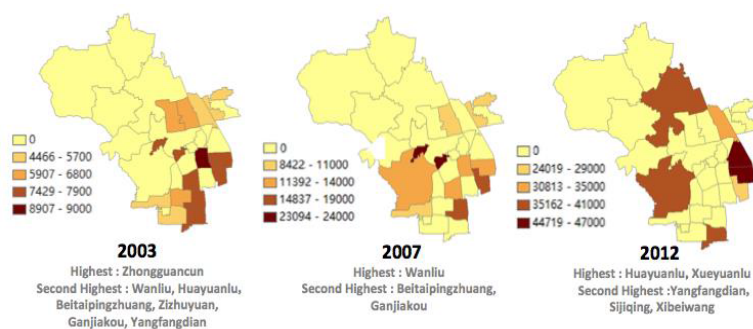


Figure 13: Newly-built Commercial Housing Trade Prices (Unit: m²).

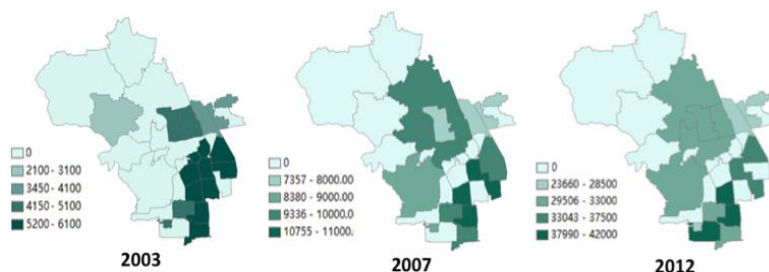


Figure 14: Second-hand Housing Trade Prices (Unit: m²).

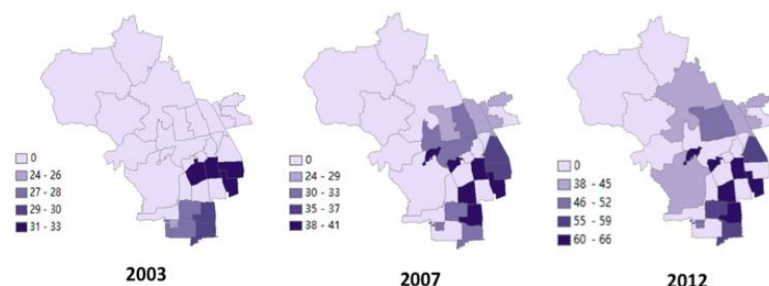


Figure 15: Housing Rent Prices (Unit: Yuan/month*m²).

Concluding the findings above, three grades of residential zones are distinguished, namely, upscale zones, mid-range zones and downscale zones. The map below shows the distribution of residential zones, the colors from dark to light show the degrading of residential conditions (Figure 15).

The most upscale zones are located in three areas. The first one is Zizhuyuan and Haidian, which is located in Zhongguancun, and the

main residents are upstarts and IT white-collar workers. The second area is Xueyuanlu and Huayuanlu. This area contains many famous universities characterized by Peking University, Tsinghua University, Beihang University, etc. Making use of the harmonious and educational atmosphere, it develops high-technology industries, attracting high proportions of high-income and well-educated residents. The Sijiqing county and Wanliu form the third wealthy area with the advantage of

natural sceneries, such as Xishan Park, Xinda Fishing Park, Summer Palace and Yanyuan Golf Club. This area is famous as Xishan cottage area, such as Wanchenghuafu and Xishanmeishuguan. Figure 16 below show three typical rich neighborhoods located in Haidian

On the other hand, the lightest color manifests the location of relatively downscale neighborhoods. The first area is Sujiatuo Town and Wenquan Town, which is represented by economically affordable housing (EAH) and price-fixed housing (PFH). It's quite close to the rural-urban fringe with high proportion of agricultural population and low provision of infrastructure and public transportation. The second area is Xibeiwang Town and Malianwa Town. This area is also

characterized by large EAH and PFH projects such as Zhuxinzhuang PFH and Qinghexiaoying PFH. This area has a large population mobility, which means people there usually work in the downtown and suffer from traffic congestion. The third area is Qinghe and Xisanqi. It belongs to the rural-urban fringe as well, famous for Tiantongyuan EAH, one of the highest-density residential zones. Due to the lack of supporting facilities, huge flows of workers commuting between the city center and homes, forming serious problems of pendulum-type traffic. In addition, it lacks proper green land as well as public open spaces as well. Figures 17 and 18 below show three typical publically provided neighborhoods located in Haidian

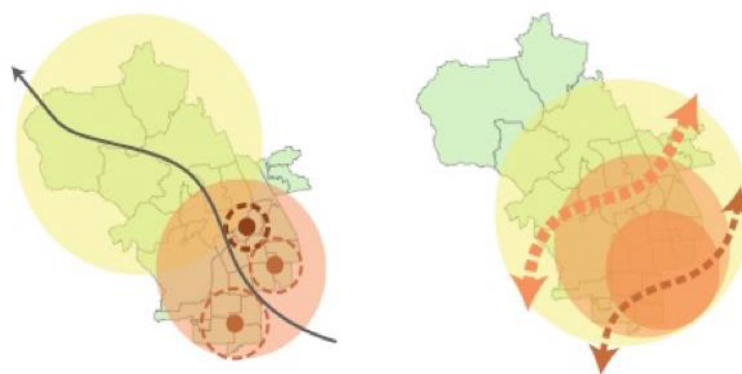


Figure 16: The character of development in Haidian.

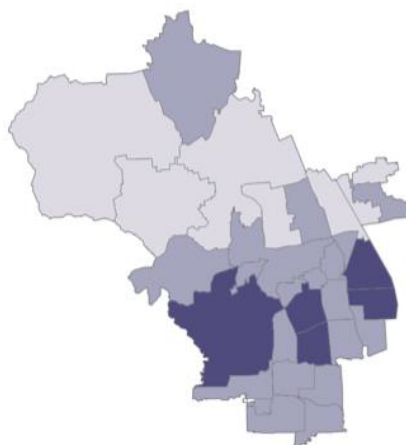


Figure 17: Distribution of different levels of neighborhoods.

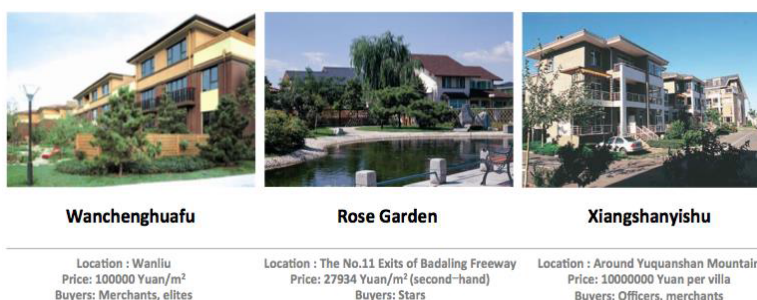


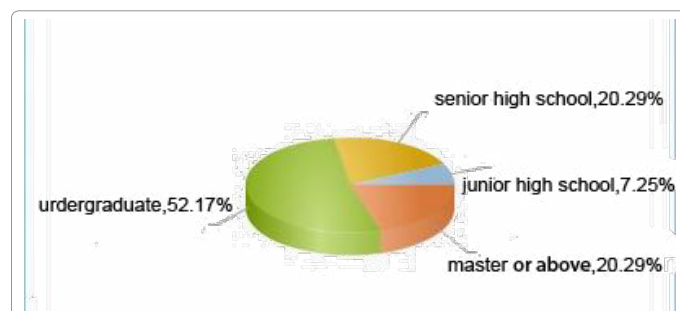
Figure 18: Typical upscale neighborhoods in Haidian.

Middle scope

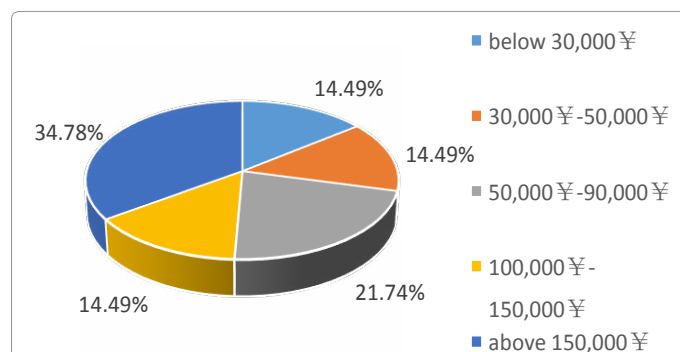
The middle scope mainly measures interpersonal relationship of residents. We adopted two methods which are: questionnaire survey and interview survey, to study this problem. In this part, we mainly focus on two questions: how do people's basic characteristics influence the level of their communities they are able to live in? Do people that live in different types of communities have different interpersonal relationships with their neighbors? We mainly use cross-over analysis and data visualization to throw light on these two questions.

Hukou condition	subtotal	proportion
local urban resident	20	28.99%
nonlocal urban resident	26	37.68%
nonlocal rural resident	20	28.99%
local rural resident	3	4.35%
valid answers	69	

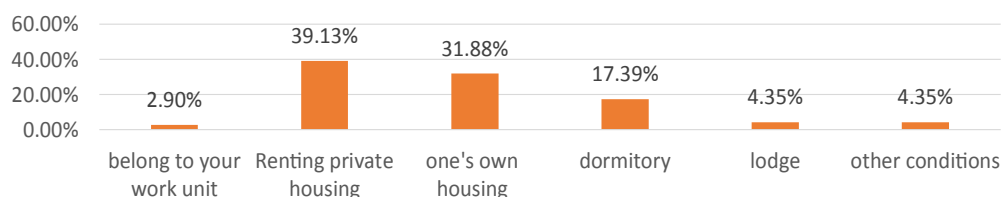
Graph 1: Composition of Hukou conditions of fillers.



Graph 2: Composition of educational level of fillers.



Graph 3: Annual household income.



Graph 4: Housing property.

Analysis of the questionnaire survey: We got 69 valid questionnaires so far. Actually, the questionnaire is useful at both the middle scope and the microscope, so we had adopted the data for both of the two scopes.

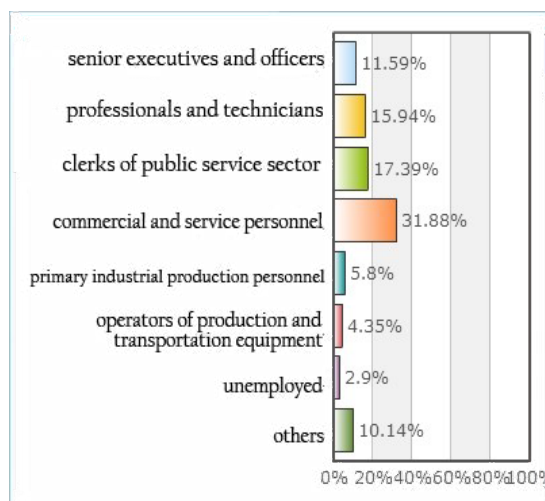
Firstly, in order to prove that our questionnaire survey data is effective, we show some basic information analysis of the answerers. The four key characteristics are hukou, economic condition, education level and occupation.

According to the survey, we divided people into 4 groups with hukou- local urban residents, nonlocal urban residents, nonlocal rural residents and local rural residents. Graph 1 shows the distribution of hukou condition; we can see that answerers are well distributed so that our data doesn't have an obvious bias on the sampling in this aspect. Graph 2 shows the distribution of education level. We got enough samples for each group. Undergraduates ranked first, masters and high school students tied for second and junior high school students ranked last, which was close to the fact. This means we have got efficient survey data in the aspect of education level. Graphs 3 and 4 show answerers' economic situation. It turned out that we got more data on low-classic people than on high-classic ones. The result is comprehensible because rich people's time costs more, so they are more likely to refuse to answer a questionnaire.

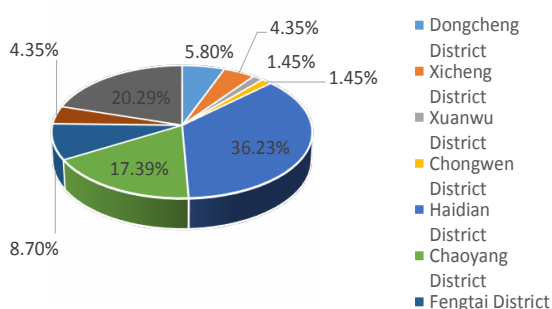
Graph 5 shows the distribution of types of works. Commercial and service personnel got the highest proportion in our survey. Graph 6 shows the distribution of people's living areas. People living in Haidian district got the highest proportion, which benefits our analysis because our paper is a case study of Haidian. Overall, the basic characteristics distribute well, so the data is efficient.

Graph 7 shows the distribution of community types. Actually, the community type is the key joint of the questionnaire survey. What we want to know is what directs to different communities and what would be caused by different communities. But we had to explain that, since the sample sizes of people living in upscale communities and immigrant communities are really low; we leave out these two groups in our analysis. With the remaining four groups, we can still find some common relationships.

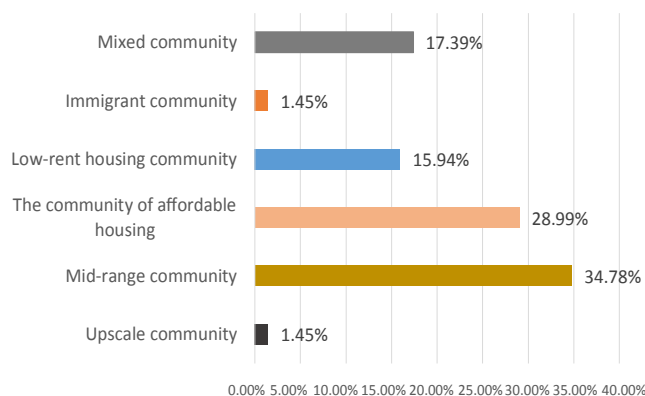
Graphs 8-11 can answer the first question: how do people's basic characteristics influence the level of their communities they are able to live in. Graph 8 shows education level of different communities. We can clearly find that when the quality of community increases, the distribution of the education level shifts right. It may imply that in better community live better educated residents. Graph 9 shows Hukou condition of different communities. When the quality of community increases, the proportion of local urban residents rises, and the proportion of nonlocal rural residents declines. We may conclude that local residents and urban residents are more likely to live in better communities. Hukou may affect the quality of the communities people



Graph 5: The distribution of types of works.



Graph 6: Living areas.



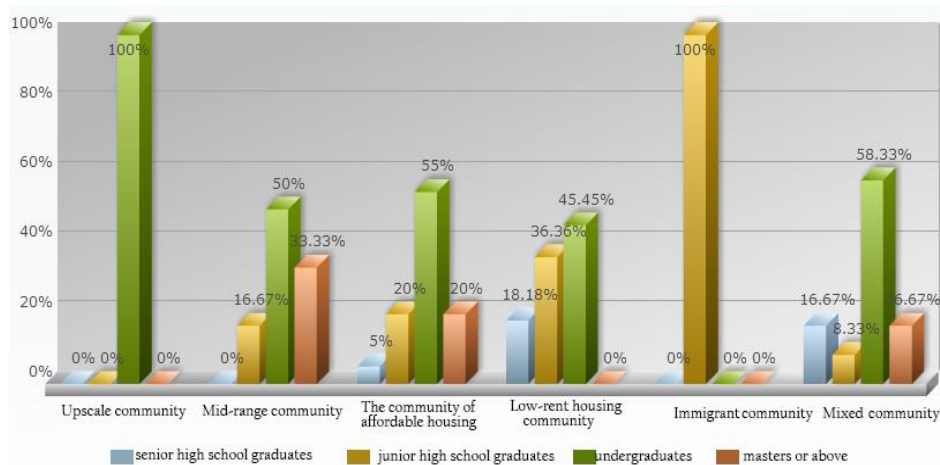
Graph 7: Community type.

live in indirectly by other factors like income and directly itself because one can only buy an apartment with a local Hukou. Graph 10 shows the economic condition of different communities. It shows that when the quality of community increases, the distribution of the annual household income shifts right. It means that richer people are more likely to live in better communities, which can be speculated easily before any study. When it comes to the types of works of different communities, the cross-analysis showed some interesting phenomena. We can know from Graph 11 that when the quality of community increases, the proportion of commercial and service persons declines,

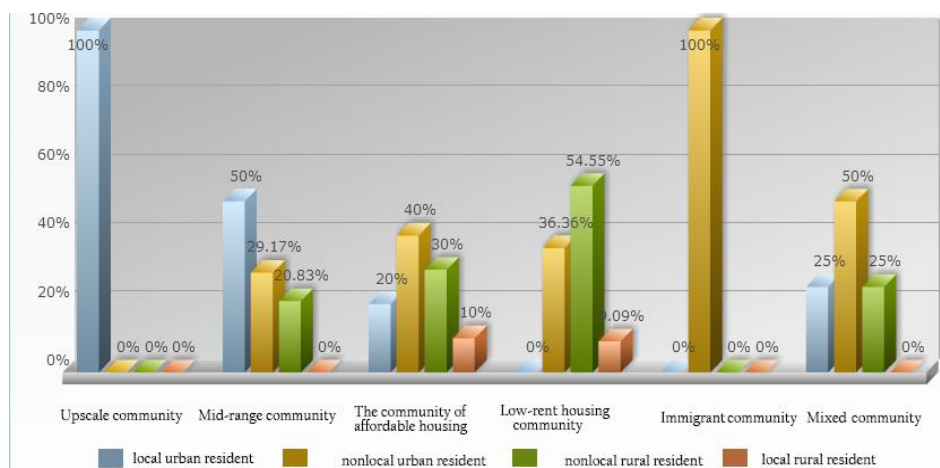
and the proportion of senior executives & officers rises. It may imply that people with higher social status may be more likely to live in high quality communities.

We can make a conclusion that, in average, a resident who lives in communities of higher quality tends to have a higher level at economic, education and social status, and tends to own local urban Hukou which is better than any other Hukou.

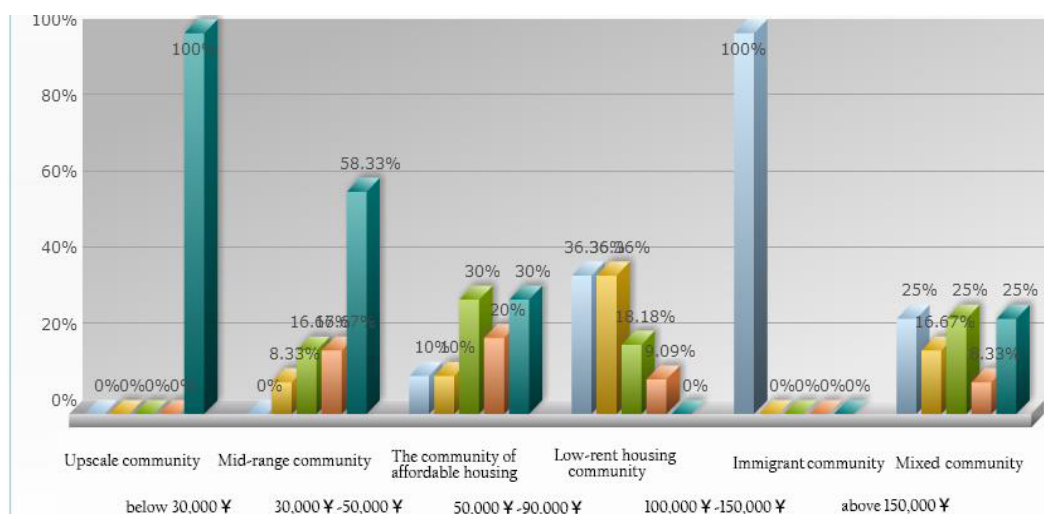
Graphs 12-14 can answer the second question: do people who live in different types of communities have different interpersonal



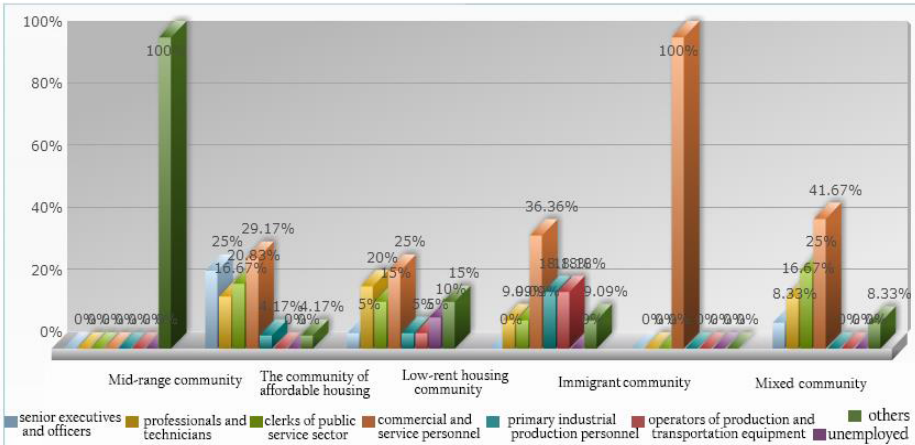
Graph 8: The education level of different communities.



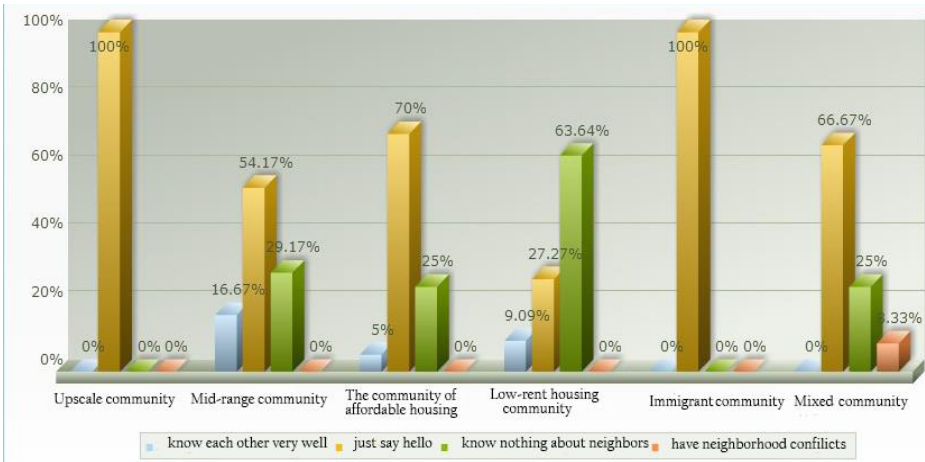
Graph 9: The Hukou conditions of different communities.



Graph 10: The economic conditions of different communities.



Graph 11: Types of occupations of different communities.



Graph 12: Relationship models of different communities.

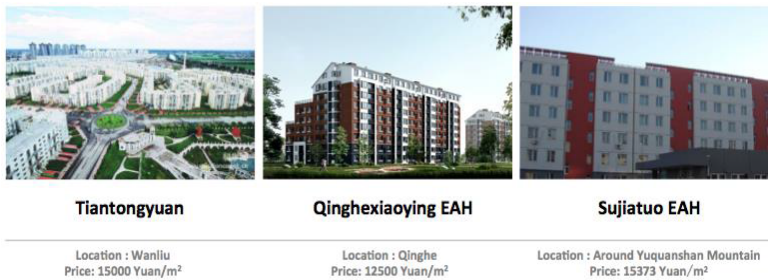
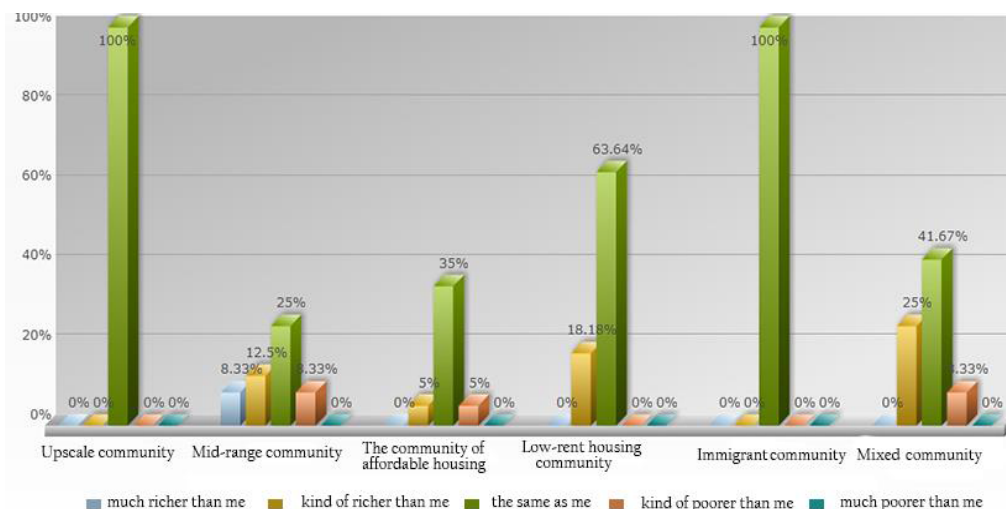


Figure 19: Typical downscale neighborhoods in Haidian.



Figure 20: The scenes of field research sites.



Graph 13: The tendency of choices of neighbors.



Graph 14: The characters of choices of neighbors.

relationships with their neighbors? Graph 12 shows the relationship models of different communities. When the quality of community increases, the distribution of the interpersonal relationship shifts right, which means that, on average, people who live in better communities do enjoy more harmonious and closer relationships with neighbors. The low-income questionnaire answerers always know little about their neighbors; they even do not greet each other. Figures 19 and 20 shows choices of neighbors of different communities. When the quality of community increases, not only does the proportion of being willing to live with richer people rise, but also does the proportion of being willing to live with poorer people. It's clearer in Graph 14 because the distribution line is flatter since the community gets better. We may account for this phenomenon by taking into account the higher education level of residents in better communities. It is reasonable that better educated people are always more open-minded and more tolerant. In other ways, it reflects that richer people are more confident of themselves so that they won't feel unsafe when keeping in contact with people from other classes.

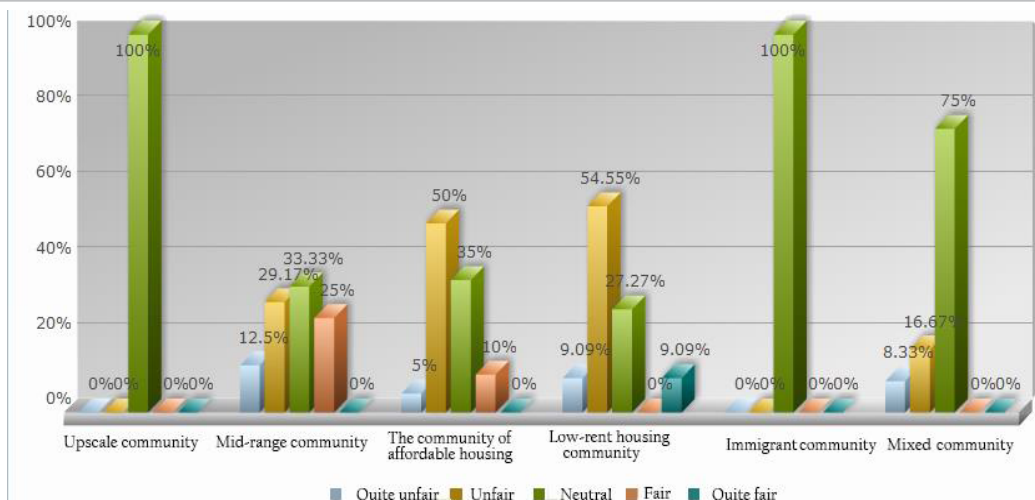
Analysis of interview survey: Wealthy neighborhood and Xiaoyuehe low-income neighborhood for interviewing.

It was really difficult to interview the rich because their communities are strictly gated-communities and they are not happy about our interviewing. Some of the rich had obvious prejudice on the poor; they equalled poorness to lack of civilization and were unwilling to live with rural migrant workers in cities. Almost all the rich people we interviewed thought that a mixed environment would be impossible to achieve. We also interviewed some poor people who worked in the rich neighborhoods; they needed to travel for a long time to work every day.

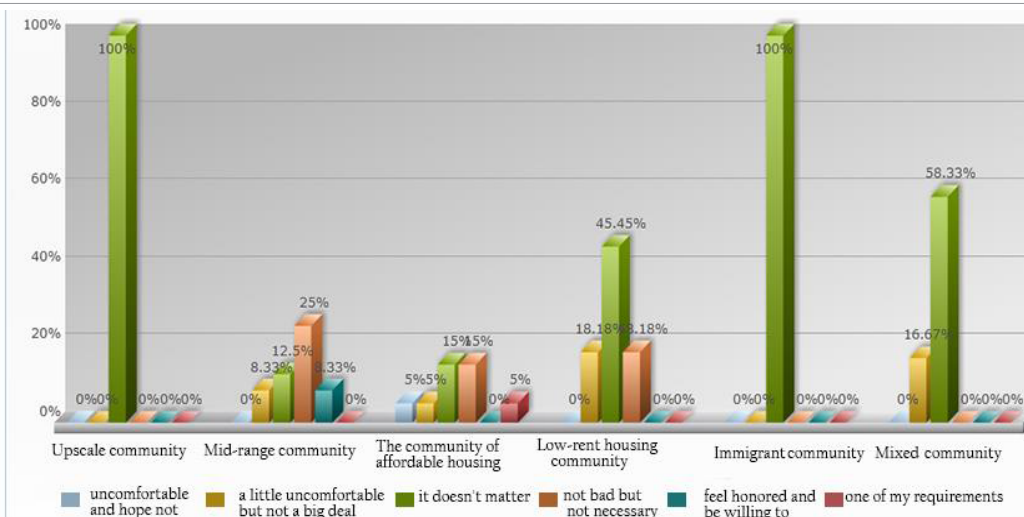
It is easier to talk with poorer people; especially some peddlers. Although many poor people equated richness to arrogance and were unwilling to live with much richer people, but they thought that a mixed environment would be possible to achieve.

Microscope

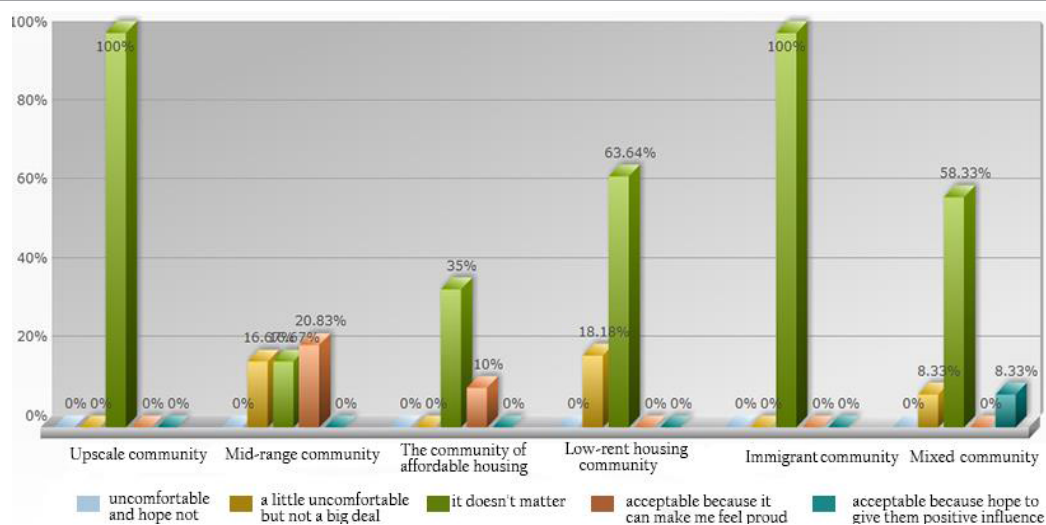
The microscope mainly measures people's different attitudes and views on society as a whole. We also mainly use two methods-questionnaire survey and interview survey. We use cross-over analysis and data visualization to throw light on this question: do people that live in different types of communities have different attitudes towards society?



Graph 15: Valuations on society of people from different communities.



Graph 16: Different residents' attitudes towards living with richer people.



Graph 17: Different residents' attitudes towards living with poorer people.

Analysis of the questionnaire survey: Graph 15 shows people's different views on society of different communities. The graph shows that when the quality of community decreases, the proportion of people feeling unfairness rises. It means that, on average, people who live in poorer communities are more likely to think poorly of society, which implies that they are not satisfied with their living condition. And generally speaking, most people find society unfair. Graph 16 shows people's different views on living with richer people. The graph shows that when the quality of community increases, the distribution of interpersonal relationship shifts right. It means that people who live in better communities are more willing to live with richer people. Graph 17 shows people's different attitudes on living with poorer people. The graph shows that when the quality of community increases, the proportion of people who remain neutral declines. The distribution of people's attitudes scattered. This may imply that people who live in better communities with more social resources and higher level of education are more likely to think twice when making risky decisions.

Analysis of interview survey: When interviewing people in Wanchenghuafu and Xiaoyuehe. We found that it is hard to enter their communities and hard to interview them. They did not welcome outsiders. Xiaoyuehe district was in a mess. The males always felt not so confident of themselves, but some females thought they lived in a good condition. Both of them had worse ideas on life and are a little pessimistic. The poor are more likely to have relatively negative evaluation about the society.

Discussion

Summary of findings

Macro scope: The development of residential houses in Haidian experienced the transformation of segregation led by occupation differentiation due to the "Unit System", to segregation caused by income differentiation due to the market economy. The level of residential segregation generally keeps increasing, however, with the regional development; differentiation between sub-districts now has a trend of decline.

1) The emergence of high-level residential districts was accompanied by the boom of institute and college districts as well as the high-technology industries based on them. Thus it is economy-oriented. On the other hand, the development of low-level residential districts to a great extent owes to large areas of indemnificatory houses provided by the government. Thus it is policy-oriented.

2) The characters of distribution of high-level residential districts can be summarized into three points. ① good natural conditions ② close to main traffic lines ③ promising areas with development priority. On the other hand, the characters of distribution of low-level residential districts can be summarized as three points as well: ① far from the downtown ② incomplete provision of infrastructure ③ close to labor intensive industries.

Middle scope: We may summarize the analysis of the middle scope like this. Urban hukou, local hukou, high level of education, high income and high social status leads one to living in better communities. When one lives in better communities, one may get more harmonious relationships and be more open-minded and confident, which helps them to get more opportunities in return. The interpersonal relationships of the poor and the rich are isolated from each other. The poor might want to get jobs at the wealthy area. We prove the two hypotheses made in part three at the middle scope.

Microscope: We can conclude from the questionnaire part and the interview part that people who live in poor areas suffer pressure from many directions and tend to be unconfident about them although a few women feel good about their life. Lack of confidence; people will not reach the height they could have reached. Although the poor want to live with the rich, they worry about being looked down upon. We may say that it is necessary for the government to break the barriers especially for the poor and bring them confidence. Creating mixed living environments helps the poor to get more information and social resources. Without the help of the government, the poor may fall into vicious spirals and become poorer, which is a dangerous condition for a country. This is pessimistic cycle, which was brought up in part three.

Policy implications

As we found out, mixed-housing projects actually help overcome the barriers between classes created via residential segregation, which is a product of the unregulated market. By regulating residential segregation, the government can prevent further polarization and divergent trends in social stratification and segregation and at the same time can prevent social instability due to envy, fear, or class warfare.

The current policy implications for mixed-income communities are the following: low income citizens can be provided with more job opportunities by the rich community, such as cleaning and cooking positions in rich homes, or dog walking. According to conservative economics theory, this can gradually bridge the gap between both social groups' income levels. As lower income citizens relate to higher income ones, develop friendships, get invited to their houses, and learn from each other, lower-income citizens can learn and understand the lifestyle and choices that the rich make, and can provide opportunities for the poor to become part of the high class. Distributes the cost of housing for labor so that richer individuals do not need to organize themselves to provide it. As we have seen from our empirical data, when people live in higher quality neighbourhoods with mixed classes, they are more accepting of the other classes. This suggests that lack of understanding arises with residential segregation. A policy that tries to concentrate multiple classes in a single residential area can possibly help decrease the perception from the poor that the rich are "arrogant" and the perception from the rich that the poor are "uncivilized". This could in turn lead to lower risk of social unrest and mobilizations against inequality and differing privileges, unfairness, etc.

On the other hand, there is still some doubt on the mixed-income communities from our part due to two different issues: The first issue is richer people have a higher purchasing power and can thus increase the market price for limited resources such as land, food, transportation, and entertainment. If poorer people live in the same space, it might be harder for them to access services and products catered to their needs at a reasonable price point. The state would have to intervene to control this issue. The second issue is low-income citizens will be more exposed to inequalities since they can see the lifestyle of the rich more closely, which can lead to increased rates of crime in the short term and even political instability in the long run. However, based on our research, this does not seem to be the case, since the poor, while isolated from the rich, can be idealizing the rich lifestyle even more than if they saw it with their own eyes. Especially if the information about other classes is received through media and not through direct means. So, based on the results we obtained, the perceived inequality would probably decrease, since poor and rich people seem more accepting to live with other classes.

Limitations and future research

We performed a limited amount of interviews and filled 69 surveys. There could be a lack of consideration of interactions among different districts (i.e. migrations and neighboring communities). We need further discussion about the mixed residential model and more mathematical analysis on the data we obtained. Social stratification and residential segregation is a complicated as well as integrated phenomenon, thus more researches are to be made to look deeper into this issue.

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