

Spatial Distribution Pattern of Minshuku in the Urban Agglomeration of Yangtze River Delta

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Abstract: The city cluster in Yangtze River Delta is the core area of China's modernization and economic development. The industry of Bed and Breakfast (B&B) in this area is relatively developed, and the distribution and spatial pattern of Minshuku will also get much attention. Earlier literature tried more to explore the influence of individual characteristics of Minshuku (such as the design style of Minshuku, etc.) on Minshuku. However, the development of Minshuku has a cluster effect, and the distribution of domestic B&Bs is very unbalanced. Analyzing the differences in the distribution of Minshuku and their causes can help the development of the backward areas and maintain the advantages of the developed areas in the industry of Minshuku. This article finds that the distribution of Minshuku is clustered in certain areas by presenting the overall spatial distribution of Minshuku and cultural attractions in Yangtze River Delta and the respective distribution of 27 cities. For example, Minshuku in the central and eastern parts of Yangtze River Delta are more concentrated, so are the scenic spots in these areas. There are also several concentrated Minshuku areas in other parts of Yangtze River Delta, but the number is significantly less than that of the central and eastern regions.

Keywords: Minshuku, Yangtze River Delta, Spatial distribution, Concentrated distribution

1. Introduction

The rapid development of mobile terminals and network platforms (such as Airbnb, Tujia, Xiaozhu Short-term Rental) have added catalysts to the development of domestic Minshuku, making Minshuku known, accepted and loved by more and more people. Minshuku has burdened high expectations of the people, because of the pushing of the government's construction of "beautiful villages", more attention from investment institutions, and the emergence of Minshuku training institutions. And it has become a major choice for people to share home and customize travel. In 2018, the number of sharing home in short-term rental platform during the National Day holiday has increased by 5 times compared with the same period last year[1]. The city cluster in Yangtze River Delta is the core area of China's modernization and economic development. The industry of Minshuku in this area is relatively developed, and the distribution and spatial pattern of Minshuku will also get much attention. Earlier literature tried more to explore the influence of individual characteristics of Minshuku (such as the design style of Minshuku, etc.) on Minshuku. However, the development of Minshuku has a cluster effect, and the distribution of domestic Minshuku is very uneven[2-3]. Analyzing the differences in the distribution of Minshuku and their causes can help the development of the backward areas and maintain the advantages of the developed areas in the industry of Minshuku.

Minshuku, originated from Japan, does not currently have a unified definition in academia. At present, it is generally considered that a Minshuku refers to using spared rooms in self-occupied houses or idle houses to provide accommodation for tourists to live in the countryside, operating as a family sideline, which is combined with local humanities, natural landscapes, ecology, environmental resources and production activities of agriculture, forestry, fishery and animal husbandry. This definition fully interprets the characteristics of a Minshuku that is different from a hotel or restaurant. A Minshuku, different from a traditional hotel, may not have high-quality and luxury facilities, but allows people to experience local customs, feel the warmth and service of the owner, and enjoy the life different from the old days, so it becomes very popular[4].

The economy of Yangtze River Delta region is developing rapidly, especially the tertiary industry. According to the National Bureau of Statistics, the tertiary industry in Yangtze River Delta region accounted for 55.4% of GDP in 2019, of which the tertiary industry in Shanghai accounted for 72.7% [5]. At the same time, the Outline of Integrated Regional Development of Yangtze River Delta, issued by the Central Committee of the Communist Party of China and the State Council, also pointed out that

Yangtze River Delta region should attach importance to the coordinated development of cultural tourism and need to create more tourism characteristic products, relying on the advantages of various famous mountains and famous cities. As one of the products under the tide of cultural tourism development, Minshuku is likely to be related to cultural tourist attractions in their spatial distribution [6].

2. Data and methods

2.1 Data sources

The area in this study is the city cluster in Yangtze River Delta defined by the Outline of Integrated Regional Development of Yangtze River Delta, including Shanghai, Jiangsu Province, Zhejiang Province, and Anhui Province (with an area of 358,000 square kilometers). A total of 27 cities are included, namely Shanghai (1 municipality), Jiangsu Province (9 prefecture-level cities: Nanjing, Wuxi, Changzhou, Suzhou, Nantong, Yangzhou, Zhenjiang, Yancheng, Taizhou), Zhejiang Province (9 prefecture-level cities: Hangzhou, Ningbo, Wenzhou, Huzhou, Jiaxing, Shaoxing, Jinhua, Zhoushan, Taizhou) and Anhui Province (8 prefecture-level cities: Hefei, Wuhu, Ma'anshan, Tongling, Anqing, Chuzhou, Chizhou, Xuancheng). First of all, this study obtained the quantities of all enterprises and Minshuku in 27 cities in Yangtze River Delta on the Chinese Yellow Pages, which was used to calculate the location entropy. Then, the article uses Ctrip, China's leading hotel booking platform, to obtain relevant data about Minshuku, including the location, price, various ratings, etc. Next, it looks for relevant information about cultural and tourist attractions in Yangtze River Delta on Ctrip, including addresses, prices, scores, national ratings and so on. Lastly, the article obtains a total of specific information of 18025 B&Bs and data on 5,659 scenic spots, of which 446 scenic spots have national ratings from 2A to 5A.

2.2 Research methods

Spatial autocorrelation analysis

The Moran's I index of spatial autocorrelation reflects the similarity of the attribute values of spatially adjacent or spatially adjacent area units. The expression of this index is shown in the following formula (1):

$$I = \frac{n \sum_{i=1}^n \sum_{j=1}^n (X_i - \bar{X})(X_j - \bar{X})}{\sum_{i=1}^n \sum_{j=1}^n W_{ij} \sum_{i=1}^n (X_i - \bar{X})^2} \quad (1)$$

Among them, X_i is the observation value of area i , W_{ij} is the spatial weight matrix, the spatial adjacent is 1, and the non-adjacent is 0, $\bar{X} = \sum_{i=1}^n X_i / n$. When the results of the experimental data are significant, if the Moran's I index is positive, it means that the areas with a higher or lower degree of agglomeration of Minshuku, are significantly gathered in space. On the contrary, if Moran's I index is negative, it means that there is a significant spatial difference between the concentration of B&Bs in the area and its surrounding areas [6].

3. The spatial distribution of Minshuku in Yangtze River Delta

3.1 Display and Analysis of the Total Distribution of B&Bs in 27 Cities in Yangtze River Delta

First of all, this study uses Arcgis10.5 to make a simple display of the local distribution of Minshuku and cultural attractions in 27 cities (except for Taizhou, a city where no Minshuku can be found). As are shown in Figure 1 and Figure 2:

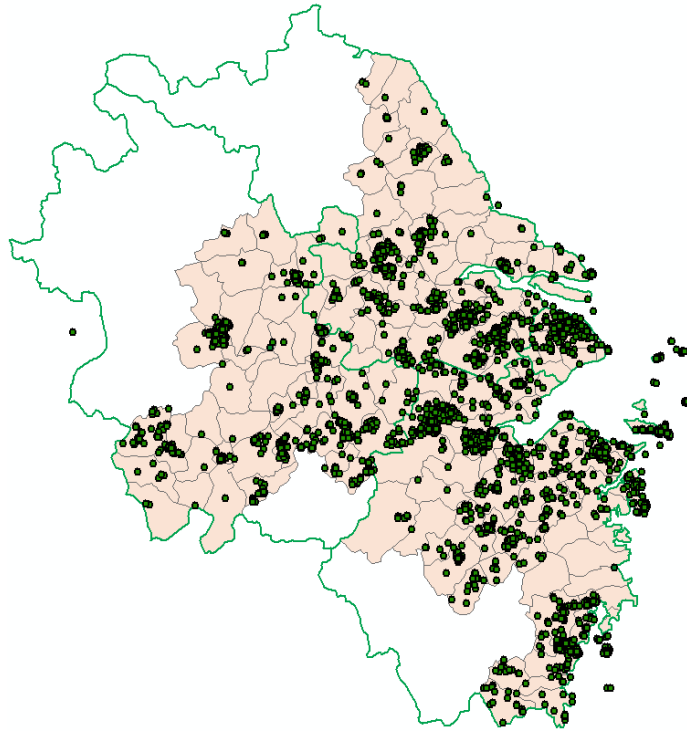


Figure 1 Distribution of B&Bs in 27 cities in Yangtze River Delta

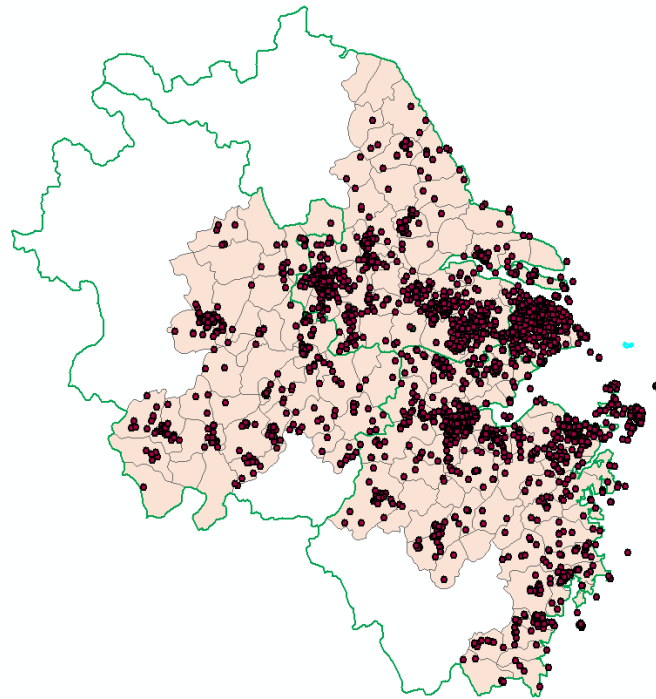


Figure 2 Distribution of scenic spots in 27 cities in Yangtze River Delta

From the above two scatter figures, it can be seen that the distribution of Minshuku is concentrated in certain areas. For example, Minshuku in the central and eastern Yangtze River Delta are more concentrated, so is the distribution of scenic spots in these areas. This is because economically developed cities, like Shanghai, Hangzhou and Suzhou, are in the middle and eastern part of the Delta, as well as their tertiary industry is also developing rapidly. Secondly, there are also several more concentrated areas in other areas of Yangtze River Delta, but the quantities are significantly less than the central and eastern regions. Therefore, the B&Bs in Yangtze River Delta show the characteristics of being concentrated in Shanghai and several surrounding cities and concentrated in other sporadic areas. As for the scenic spots in Yangtze River Delta, in addition to distributing in the same central and

eastern regions and several other small areas as B&B's space distribution, it shows that the farther the region is from the central and eastern regions, the less concentrated the distribution of cultural attractions is. So the scenic spots in Yangtze River Delta show the characteristics of being concentrated in Shanghai and several surrounding cities and other scattered areas, along with the feature that they are farther away from the center, the more sparsely. On the whole, the distribution characteristics of Minshuku in Yangtze River Delta are more consistent with the distribution characteristics of scenic spots. Besides they are all concentrated the central and eastern regions, the locations of other sporadic concentrated areas are not far away. Then the research below will separately analyze the cities where the B&Bs and scenic spots are concentrated.

3.2 Distribution display and analysis of Minshuku in 9 key cities in Yangtze River Delta

According to Figure 1, Figure 2 and the original data, this study finds that Minshuku are concentrated in the central and eastern regions, including Shanghai, Suzhou, Huzhou, and Hangzhou, and concentrated in several areas of Yangtze River Delta, such as Nanjing(the capital of Jiangsu Province), Yangzhou(a historical city), Hefei(the capital of Anhui Province), Ningbo(a vice-provincial city in Zhejiang), and Zhoushan(a scenic city), 9 cities in total. After comparison, it is found that the areas with a relatively concentrated distribution of scenic spots are also these 9 cities, and their proportion of scenic spots is also ranked in the top nine. Therefore, this article uses Arcgis10.5 to show the local distribution of Minshuku in 9 cities and the attractions of each city to observe their relationship overall, as are shown below, the circles represent the distribution of native attractions, pentagram are the distribution of B&Bs.

The distribution of B&Bs and scenic spots in Shanghai, Suzhou, Huzhou, and Hangzhou are shown in Figure 3, Figure 4, Figure 5, and Figure 6.

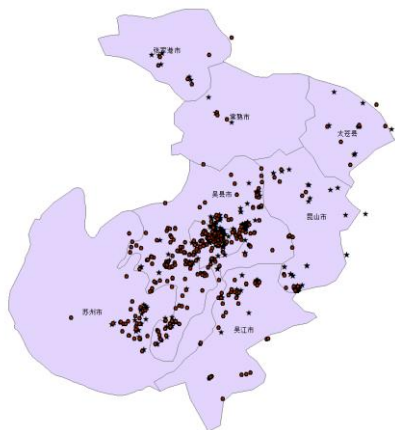


Figure 3 Distribution of B&Bs and scenic spots in Shanghai

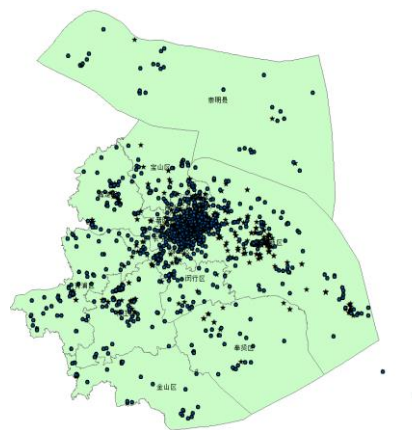


Figure 4 Distribution of B&Bs and scenic spots in Suzhou

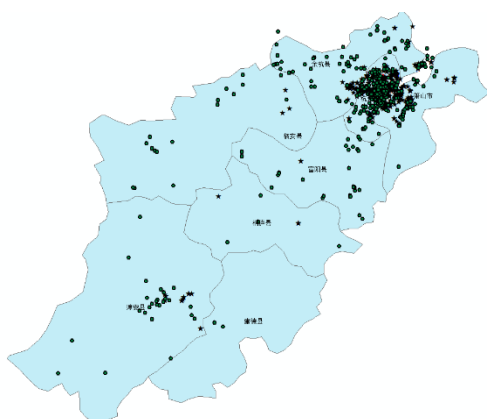


Figure 5 Distribution of B&Bs and scenic spots in Huzhou

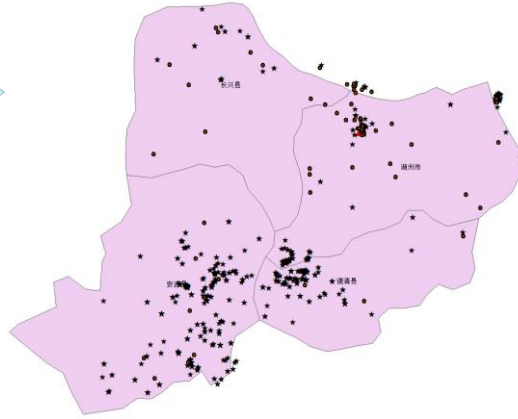


Figure 6 Distribution of B&Bs and scenic spots in Hangzhou

The distribution map and quantities of B&Bs and scenic spots in Shanghai, Suzhou, Huzhou, and

Hangzhou are shown in Table 1 below:

Table 1 Distribution map and quantities of B&Bs and scenic spots in Shanghai, Suzhou, Huzhou, and Hangzhou

Postcode	Area	Quantities of B&Bs	Number of scenic spots			
			3A	4A	5A	total
2000	Shanghai (Luwan District, Yangpu District, Changning District, Zhabei District, Jing'an District, Hongkou District, Huangpu District, Xuhui District)	386		12		569
2001	Pudong New Area, Shanghai	332	3	9	3	301
2003	Putuo District, Shanghai	30		2		40
2011	Minhang District, Shanghai	21		3		82
2014	Fengxian District, Shanghai	16		2		25
2016	Songjiang District, Shanghai	39		4		79
2017	Qingpu District, Shanghai	8		6		87
2018	Jiading District, Shanghai	37		6		58
2019	Baoshan District, Shanghai	18		6		45
2021	Chongming District, Shanghai	4		6		34
2150	Suzhou City (Jinchang District, Huqiu District, Pingjiang District, Canglang District)	353		6	5	211
2151	Suzhou City (Wuzhong District, Xiangcheng District)	131	1	14	2	243
2152	Wujiang, Suzhou City	50	1	2	1	54
2153	Kunshan, Suzhou City	164		2	1	44
2154	Taicang, Suzhou City	10		2		10
2155	Changshu, Suzhou City	12			1	3
2156	Zhangjiagang, Suzhou City	7				6
3130	Huzhou City, Zhejiang Province (Wuxing District, Nanxun District)	130		5	1	65
3131	Changxing County, Huzhou City	23		5		12
3132	Deqing County, Huzhou City	314		1		4
3133	Anji County, Huzhou City	433		3		9
3100	Hangzhou City (Binjiang District, Xihu District, Jianggan District, Xiacheng District, Gongshu District, Shangcheng District)	750		6	2	542
3111	Yuhang District, Hangzhou	56		5	1	72
3112	Xiaoshan District, Hangzhou	61		4		51
3113	Lin'an, Hangzhou City	3		5		18
3114	Fuyang District, Hangzhou	4		4		33
3115	Tonglu County, Hangzhou City	4		1		5
3116	Jiande City, Hangzhou	0				2
3117	Chun'an County, Hangzhou City	22				26

As a whole, most of the Minshuku in Shanghai are concentrated in the downtown area and Pudong New Area, from a detailed point of view, Luwan District, Yangpu District, Changning District, Zhabei District, Jing'an District, Hongkou District, Huangpu District, Xuhui District (Zip Code 2000) and Pudong New Area (Zip code 2111) have a relatively large number of Minshuku, accounting for 80.58% in all B&Bs of Shanghai. And the two regions accounted for 43.32% and 37.26% respectively. At the same time, most of scenic spots in Shanghai are concentrated in the downtown area, the 3rd and 4th zip

codes of 2100 and 2111 accounting for 65.91% of the total, and the 5A-level scenic spots are distributed in the area whose zip code is 2001. It can be roughly seen from the table that the distribution characteristics of scenic spots and B&Bs are relatively consistent. Pudong New Area Disneyland is the only Disneyland in mainland China. The typical representative of Qingpu District's history and culture is Zhujiajiao Ancient Town near North Street, which is one of the representatives of large ancient water towns. And these popular attractions have brought a large amount of travelers, making the living space of Minshuku here become larger, so there will be B&Bs gathering near the cultural and tourist attractions[9].

Generally speaking, most of the Minshuku in Suzhou are concentrated in the downtown area and Kunshan area. From the details, there are more Minshuku concentrated in the areas with zip codes whose first four number are 2150, 2151, and 2153, accounting for 89.13% of all Minshuku in Suzhou, and the three regions accounted for 48.56%, 18.02% and 22.56% respectively. According to the zip code, the 2150 area represents the more central districts of Suzhou, including Jinchang District, Huqiu District, Pingjiang District, and Canglang District, and the 2151 area represents Wuzhong District and Xiangcheng District, Suzhou City, and the 2153 area represents Kunshan, Suzhou City. The distribution of cultural attractions in Suzhou City is generally concentrated in the downtown area and Kunshan area, and the attractions in the area 2150 and 2151 are relatively concentrated from details, accounting for 79.98% of all attractions in Suzhou, and the two areas accounted for 40.58% and 39.39% respectively. It can be roughly seen from the table that the distribution characteristics of scenic spots and B&Bs are relatively consistent. Many famous garden buildings in Suzhou are distributed in the 2150 area, such as the Humble Administrator's Garden, Lion Forest, Tiger Hill, etc. In the 2151 area, there are many natural landscapes and scenic spots that rely on natural landscapes, such as the Spring Resort of Yangshan, Suzhou Wuzhong Taihu Tourist Area, etc. In the Kunshan area of 2153, there are historical and cultural sites such as Zhouzhuang and Shen Wansan's former residence. These 4A-level and 5A-level landscapes are full of Suzhou's cultural characteristics, attracting many tourists to come. Therefore, the industry of Minshuku here is also booming.

The distribution of Minshuku in Huzhou City generally shows a concentrated trend in three regions, mainly in the zip codes beginning with 3130, 3132, and 3133, accounting for 97.44% of all Minshuku in Huzhou. And B&Bs in the three regions accounted for 14.44%, 34.89% and 48.11% respectively. According to the zip code, the 3130 area represents Wuxing District and Nanxun District of Huzhou City, and the 3132 area represents Deqing County of Huzhou City, and the 3133 area represents Anji County of Huzhou City. Generally speaking, most of the cultural attractions in Huzhou are located in the urban area. From the details, there are many attractions in the areas where the zip codes begin with 3130 and 3133, accounting for 90.71% of all attractions in Huzhou. And the scenic spots in the two regions accounted for 53.21% and 37.5% respectively. It can be easily seen that there is only one 5A-level scenic spot and few 4A-level scenic spots in Huzhou City, which are mainly distributed in these two areas. Especially, Anji County, Huzhou City, where the zip code begins with 3133, has a large number of B&Bs concentrated, even though there are not many attractions or important scenic spots. There are many famous scenic spots in the center of Huzhou. For example, the ancient town of Nanxun, which is a representative of historical and cultural attractions, is also the only 5A-level scenic spot in Huzhou. In addition, there are many other scenic spots such as Taihu Lake Tourist Resort. There is a famous cultural attraction named Mogan Mountain Tourist Resort in Deqing County, Huzhou City, which is also one of the important areas where Minshuku have emerged. This is because of many villas built in Mountain Mogan. And these villa-type Minshuku are unique, successfully attracting many tourists from all over the country and becoming a hot spot for leisure and vacation. Although Anji County of Huzhou City itself does not have many cultural attractions, but because of its proximity to the Mogan Mountain Scenic Area in Deqing County, the distribution of B&Bs here is also relatively concentrated. This also shows that the concentration of B&Bs in an area is not only related to the distribution of attractions in the area, but also be affected by related factors in the neighboring area.

Generally speaking, most of Minshuku in Hangzhou are concentrated in the downtown area. From the details, there are more Minshuku in the area where the zip codes beginning with 3100, 3111, and 3112, accounting for 96.33% of all Minshuku in Hangzhou. And B&Bs in these regions accounted for 83.33%, 6.22% and 6.78% respectively. According to the zip code, the 3100 area represents the more central districts of Hangzhou, including Binjiang District, Xihu District, Jianggan District, Xiacheng District, Gongshu District, and Shangcheng District, and the 3111 area represents Yuhang District, and the 3112 area represents Xiaoshan District. The distribution of cultural attractions in Hangzhou is generally concentrated in the downtown area. In terms of details, there are many attractions in the areas with the zip codes beginning with 3100, 3111 and 3112, accounting for 88.23% of all attractions in Hangzhou. And attractions in the three regions accounted for 72.20%, 9.43% and 6.59% respectively.

This is because there are many famous scenic spots in the 3100 area, such as some famous historical and cultural attractions like Hangzhou Songcheng Scenic Area, West Lake Scenic Area, Zhoujia Village, Beijing-Hangzhou Grand Canal, Qinghefang Street and some natural and cultural attractions like Xixi National Wetland Park. In the 3111 area, there are many natural landscapes and scenic spots that rely on natural landscapes like Hongyuan of Xixi National Wetland Park, Shangougou Scenic Area, Shuangxi Drifting Scenic Area, etc., as well as modern cultural attractions Liangzhu Museum. From the distribution of attractions and Minshuku in Hangzhou, it can be seen that the city center has a greater influence and there are more scenic spots and Minshuku in concentrated areas. There also exist scenic spots that reflect certain cultural characteristics next to Minshuku in other districts of Hangzhou. For example, Qiandao Lake in Chun'an County is also a typical representative of modern natural culture, surrounding with a certain number of Minshuku. And the quantities of B&Bs here are relatively sparse, compared with the quantities in the downtown area of Hangzhou.

In the middle-eastern region of Yangtze River Delta where Minshuku are highly concentrated, B&Bs will be concentratedly distributed under the influence of the city center, and the rich surrounding environment and convenient transportation facilities attract a large number of tourists. In addition, the areas or nearby areas, where B&Bs are concentrated, have their own hot tourist spots, such as the newly-built popular scenic spot Disneyland in Shanghai's Pudong New Area, Zhuji Ancient Town near North Street in Qingpu District, famous garden buildings of Suzhou, Mountain Mogan in Huzhou, and Hangzhou's West Lake, etc. And these economically developed cities' attractiveness and many popular attractions have brought huge commercial potential to the local, and also promoted the birth of many tourism derivatives such as Minshuku.

The distribution of B&Bs and scenic spots in Nanjing, Yangzhou, Hefei, Ningbo and Zhoushan are shown in Figure 7, Figure 8, Figure 9, Figure 10, and Figure 11.

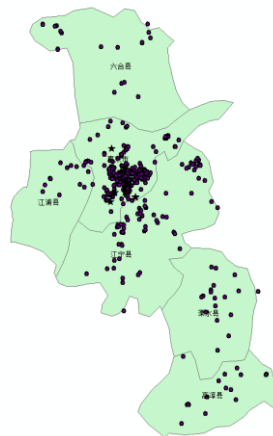


Figure 7 Distribution of B&Bs and scenic spots in Nanjing

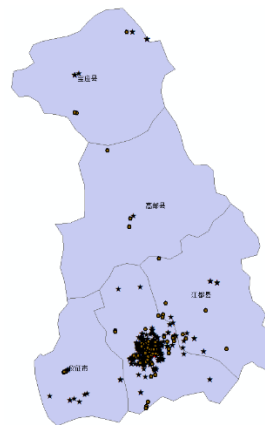


Figure 8 Distribution of B&Bs and scenic spots in Yangzhou

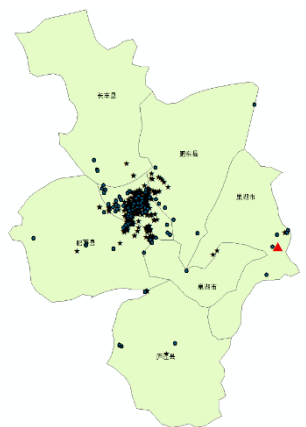


Figure 9 Distribution of B&Bs and scenic spots in Hefei

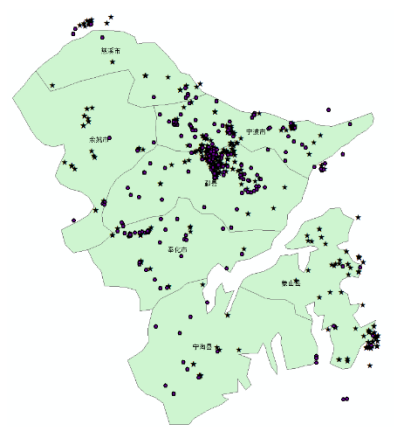


Figure 10 Distribution of B&Bs and scenic spots in Ningbo

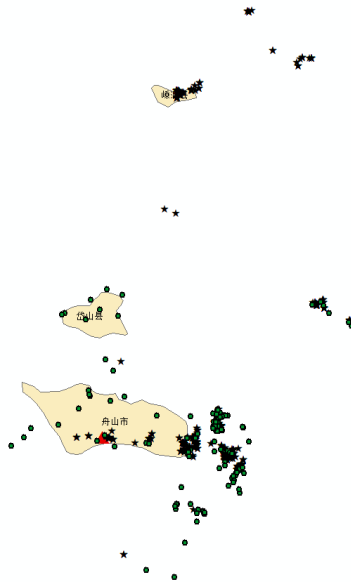


Figure 11 Distribution of B&Bs and scenic spots in Zhoushan

Generally speaking, most of the Minshuku in Nanjing are concentrated in the downtown area. In terms of details, there are more Minshuku in the centre of the four districts (Zip Code 2100) including Qinhuai District, Jianye District, Qixia District and Xuanwu District, and Jiangning District (Zip Code 2111), accounting for 93.33% of all Minshuku in Nanjing, while B&Bs in the two regions account for 53.79% and 21.24% respectively. At the same time, most of the attractions in Nanjing are also concentrated in the downtown area, where the zip codes begins with 2100 and 2111, accounting for 51% of the total, and most of the 5A-level attractions are distributed in the 2100 area. From the table, it can be roughly seen that the areas with more cultural attractions have more B&Bs. Nanjing is a famous historical and cultural city, with the reputation of being the ancient capital of the Six Dynasties. Most of its cultural features were formed with the precipitation of the long history and Nanjing itself is an ancient town. Especially, the Qinhuai District and Baixia District are the old districts of Nanjing, where there are 4A-level and 5A-level national scenic spots such as Nanjing Presidential Palace, Zhongshan Mausoleum Scenic Area, Zhongshan Scenic Area, Confucius Temple, and Memorial Hall for Victims of the Nanjing Massacre by Japanese Invaders, full of memories left by the long history. This is also an area with outstanding characteristics and styles of Nanjing, which not only has many historical monuments, but also has commercial buildings of modern development. As the capital city of Jiangsu Province, Nanjing has a very rapid economic development and convenient transportation in the city center. As a result, there are a large number of Minshuku gathering here.

As a whole, most of the Minshuku in Yangzhou are concentrated in the downtown area. From a detailed point of view, there are more Minshuku in the areas with zip codes beginning with 2250 and 2251, accounting for 93.78% of all Minshuku in Yangzhou, while B&Bs in the two regions account for 30.67% and 63.11% respectively. According to the zip code, the 2250 area represents the Guangling District of Yangzhou City, and the 2251 area represents the Hanjiang District of Yangzhou City. Generally, most of the cultural attractions in Yangzhou are concentrated in the downtown area. From the details, there are many attractions in the areas with zip codes beginning with 2250 and 2251, accounting for 91.59% of the total attractions in Yangzhou, while two Scenic spots in the region account for 37.17% and 54.42% respectively. It can be easily seen that there are few 4A-level and 5A-level scenic spots in Yangzhou and they are mainly distributed in these two areas. Yangzhou has many famous attractions, such as the National 5A-level scenic spot Slender West Lake, Daming Temple, Ge Garden, Historic District of Dongguan Street and other historical and cultural attractions. Compared with Shanghai and Suzhou which are relatively fast-developing cities, Yangzhou is more rich in historical and cultural characteristics, and contains more breath of life. These scenic spots are also integrated with the city of Yangzhou, making Yangzhou a city rich in ancient charm. Most of the cultural scenic spots here also inherit and preserve historical relics and natural landscapes, attracting many tourists to visit. The cultural attractions here are integrated with the city, making Yangzhou itself a Jiangnan culture. And for Yangzhou, which pays attention to its easy-going lifestyle, the more scenic spots there are, the more concentrated the Minshuku in the area are.

The distribution map and quantities of B&Bs and scenic spots in Nanjing, Yangzhou, Hefei, Ningbo

and Zhoushan are shown in the following table:

Table 2 Distribution map and quantities distribution of B&Bs and scenic spots in Nanjing, Yangzhou, Hefei, Ningbo and Zhoushan

Postcode	Area	Quantities of B&Bs	Number of scenic spots			
			3A	4A	5A	total
2100	Nanjing City (Qinhuai District, Jianye District, Qixia District, Xuanwu District)	476		15	5	443
2111	Jiangning District, Nanjing	188	1	6		79
2112	Lishui County, Nanjing City	62		2		19
2113	Gaochun County, Nanjing City	43		3		23
2115	Liuhe District, Nanjing	57		1		22
2114	Yizheng, Yangzhou City	14				3
2250	Yangzhou City (Guangling District)	276		5		53
2251	Hanjiang District, Yangzhou City	568		5	1	75
2252	Jiangdu, Yangzhou City	21				5
2256	Gaoyou, Yangzhou City	1		1		4
2258	Baoying County, Yangzhou City	20				3
2300	Hefei City (Baohe District, Shushan District, Luyang District, Yaohai District, Feidong County)	867		10		93
2311	Changfeng County, Hefei City	4		1		3
2312	Feixi County, Hefei City	19			1	5
2315	Lujiang County, Chaohu City	1		2		4
2316	Feidong County, Hefei City	1		1		3
2380	Juchao District, Chaohu City	8		2		6
3150	Ningbo City (Haishu District, Jiangdong District, Jiangbei District)	271		7	2	84
3151	Yinzhou District, Ningbo City	204	1	5		60
3152	Zhenhai District, Ningbo City	45		4		18
3153	Cixi, Ningbo City	61	1	3		10
3154	Yuyao, Ningbo City	63		2		7
3155	Fenghua, Ningbo City	42		3		51
3156	Ninghai County, Ningbo City	17		1		14
3157	Xiangshan County, Ningbo City	151		4		10
3158	Beilun District, Ningbo City	46		2		19
3160	Zhoushan City (Dinghai District, Zhoushan Islands New District)	47				18
3161	Putuo District, Zhoushan City	786		4	1	142
3162	Daishan County, Zhoushan City	2				10

The distribution of B&Bs in Hefei is generally concentrated in the downtown area, where the first 4 zip codes are 2300, accounting for 96.33% of all B&Bs in Hefei. According to the zip code, the 2300 area represents Baohe District, Shushan District, Luyang District, Yaohai District in Hefei. The distribution of cultural attractions in Hefei is generally located in the urban area. From the detail, there are more attractions in the area where the first 4 zip codes are 2300, accounting for 77.78% of all attractions in Hefei. It is important to note that the only 5A-level scenic spot in Hefei is located in Feixi County, where the first 4 zip code is 2312, and most of the remaining 4A-level scenic spots are mainly near the downtown of Hefei. There are many famous scenic spots in Hefei, such as Li Hongzhang's former residence, Bao Park and Three Kingdoms Heritage Park, etc.; And there stands China Intangible Cultural Heritage Park and Golden Peacock Hot Spring Resort, etc. These classics of various types of cultural characteristics converge in the urban area of Hefei, making the distribution of B&Bs here

extremely concentrated. Combining information of the chart, it can be concluded that there will be more B&Bs in the area where there are more scenic spots or key scenic spots. However, what is more special is that there are not many B&Bs in Feixi County and the spatial distribution is not enough to gather though it has an influential 5A-level scenic spot here. In addition, for Feixi County, which has a national 5A scenic spot called Sanhe Ancient Town, there are not many B&Bs distributed here. This may be caused by two reasons. One reason is that Sanhe Ancient Town, as a heritage town, needs more protection, and the surrounding supporting facilities are less developed. And the other reason is that Sanhe Ancient Town in Feixi County is located close to the downtown area of Hefei, that is, the area with the first four zip codes of 2300. So tourists are more willing to choose Minshuku within the city center duo to the better traffic and other conveniences.

Generally speaking, most of the Minshuku in Ningbo are concentrated in the downtown area and the area where the first four zip codes are 3157. From a detailed point of view, there are more Minshuku in the areas with zip codes beginning with 3150, 3151 and 3157, accounting for 70.00% of all Minshuku in Ningbo, and Minshuku in these three regions accounted for 30.11%, 22.67% and 16.78% respectively. According to the zip code, the 3150 area represents the relatively central districts of Ningbo, including Haishu District, Jiangdong District, and Jiangbei District. The 3151 area represents the Yinzhou District of Ningbo City, and the 3157 area represents the Xiangshan County of Ningbo City. The distribution of cultural attractions in Ningbo is generally concentrated in the downtown area and Fenghua City. From the details, there are many attractions in the areas with the zip codes 3150, 3151, and 3155, which account for 71.43% of the total number of attractions in Ningbo, and the scenic spots in these three regions accounted for 30.77%, 21.98% and 18.68% respectively. Many famous scenic spots in Ningbo are distributed in the central area of the city center, such as the Tianyi Pavilion Museum and the Baoguo Temple Ancient Architecture Museum, which are the representative of the combination of typical modern human culture with history, humanities and culture; Ningbo Wulongtan Scenic Area, which is the representative of the combination of typical historical natural culture and historical humanistic culture, as well as Cicheng Ancient County which is a famous historical and cultural attraction and Daren Valley Holiday Park which is a modern cultural and cultural attraction. There are many modern cultural attractions in the 3151 area, such as the Yage'er Zoo and Science Discovery Center of Ningbo. These 4A and 5A landscapes are full of Ningbo cultural characteristics. It can be seen, from the distribution of Ningbo's scenic spots and Minshuku, that the city center has more influence and there are more concentrated scenic spots and Minshuku. However, compared with cities such as Hefei, the number of scenic spots and Minshuku in other districts of Ningbo is distributed evenly, and there is no huge difference from the number of Minshuku concentrated areas, but usually there exist some scenic spots with cultural characteristics next to the Minshuku where clusters appear. As a sub-provincial city in Zhejiang Province, Ningbo has unique advantages in economic development. Its Zhoushan Port ranks first in the world in terms of annual cargo throughput, which brings an immeasurable development prospect for Ningbo. However, with the development of the Internet in recent years, Ningbo has not put the development of the tertiary industry aside. Many cultural attractions has been developed in Ningbo and related facilities are equipped. And tourists from all over the world come here every year, which brings a lot of invisible wealth, so as to Ningbo's Minshuku have a better environment for development and are gathered near these cultural attractions.

The distribution of B&Bs in Zhoushan City is generally concentrated in one area, where the first 4 zip codes are 3161. The B&Bs here account for 87.33% of the total number of B&Bs in Zhoushan. According to the zip code, the 3161 area represents the Putuo District of Zhoushan City. On the whole, the distribution of cultural attractions in Zhoushan is also mostly distributed in this area, accounting for 84.43% of all attractions in Zhoushan. It can be easily seen that there is only one 5A-level scenic spot in Zhoushan City and there are few 4A-level scenic spots, which are basically distributed in this area. Zhoushan is a typical city where there are more scenic spots with more Minshuku distributed, and it is more obvious especially in the scenic spots with natural and cultural characteristics. Almost all the famous scenic spots in Zhoushan are located in the city center. For example, there is the Putuo Mountain Scenic Area, a national 5A-level scenic spot in Zhoushan. And it is one of the representative natural and cultural landscapes in Zhoushan and even Zhejiang so it attracts many tourists and Buddhist believers to visit. There are also Taohua Island Scenic Area, Zhujiajian Scenic Area, etc. Zhoushan, as a hot spot, mainly relies on numerous islands and beautiful sea views, attracting a large number of B&Bs to open here, and it is widely praised by tourists. Compared with other cities with mixed cultures such as Shanghai, Suzhou and Hangzhou, Zhoushan has become a hot scenic pot because of its unique scenery of natural island combined with modern man-made construction, which increases the potential of Minshuku.

In general, the same as the distribution characteristics of several urban Minshuku in the central and eastern regions of Yangtze River Delta, Minshuku will be concentrated in the downtown, etc., and the cultural attractions will also be concentrated here. The distribution characteristics of the two are basically unanimous. However, there are also areas with few scenic spots that have a large number of Minshuku, and also the areas where there are many scenic spots or more important scenic spots do not have a considerable quantities of Minshuku. This may be due to the surrounding environment or other reasons.

4. Analysis of the spatial pattern of Minshuku

First, conducting a global spatial autocorrelation analysis on B&Bs in Yangtze River Delta hopes to be able to check whether the location entropy of B&Bs in a certain zip code area is close to that of neighboring areas. The observed index here is Moran’s I index.

Before performing regression analysis on the data in this article, the location entropy of the Minshuku in each zip code area is subjected to global autocorrelation analysis to obtain the results and the corresponding scatter diagrams as shown in Table 3 and Figure 12:

Table 3 Moran's I Index

Moran's I	E(I)	Sd(I)	z	p
0.127	-0.020	0.045	3.259	0.001

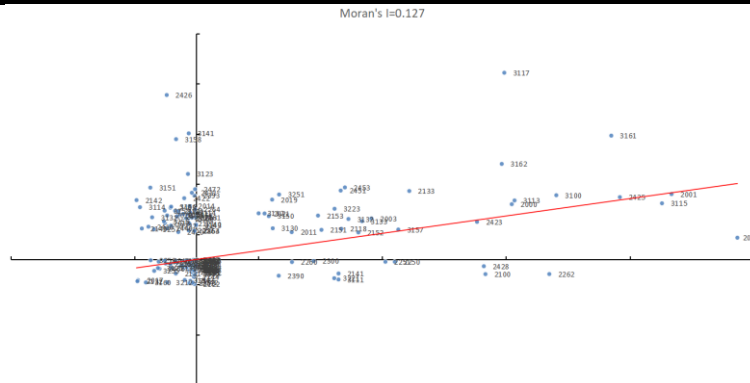


Figure 12 The scatter plot of Moran's I index

In addition, in order to explore whether there will be differences in the spatial distribution of Minshuku that do not pass price, the following will classify Minshuku according to standard room prices, and divide all areas into economical and high-end categories. According to the dividing standard of the hotel industry, a single room under 300 RMB is classified economical Minshuku, and a single room above 300 RMB belongs to high-end Minshuku. Perform LISA analysis for each category, and the results are as follows:

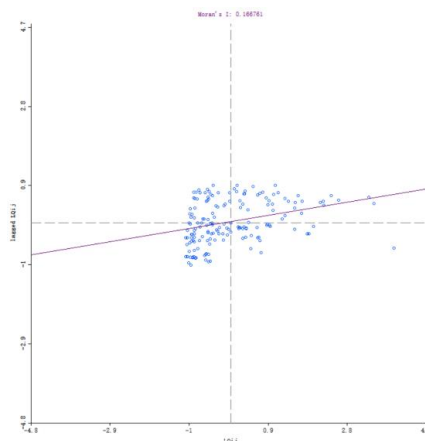


Figure 13 Scatter plot of Moran for economical Minshuku

Perform global spatial autocorrelation tests on economical Minshuku (the average price is less than 300 RMB) and high-end Minshuku (the price is higher than 300 RMB), and the results are shown in Figure 13 and Figure 14 below:

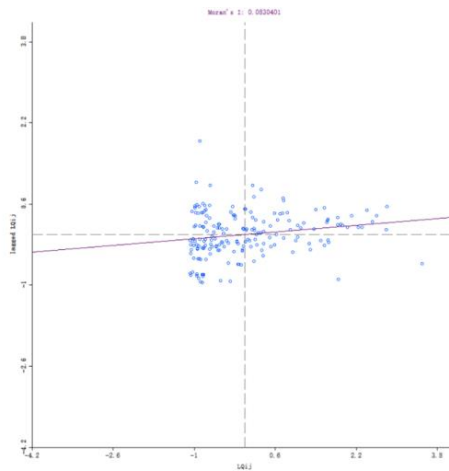


Figure 14 Scatter plot for Moran of high-end Minshuku

The Moran's I index of economical Minshuku is 0.083401, indicating that the distribution of economical Minshuku is positively correlated. Basically, high aggregation is surrounded by high aggregation, and low aggregation is surrounded by low aggregation. B&Bs with lower location entropy have higher similarity, and other distributions are relatively even. The Moran's I index of high-end Minshuku is 0.166761, indicating that the distribution of economical Minshuku is positively correlated. Basically, high aggregation is surrounded by high aggregation, and low aggregation is surrounded by low aggregation. In addition, the scattered points are loosely distributed in the HH quadrant and more concentrated in the LL. It shows that the areas with higher location entropy gather, and the areas with lower location entropy also get together.

At the same time, comparing the global autocorrelation index of all Minshuku in Yangtze River Delta with the global autocorrelation index of economical and high-end Minshuku, the spatial pattern of Minshuku can be seen that basically the surrounding area where the concentration of Minshuku is high (that is, the location entropy is large) while the concentration of B&Bs in the area is higher, and the concentration of Minshuku in the surrounding areas of the area with a low concentration of B&Bs will also be lower. Such spatial distribution characteristics is more obvious in high-end Minshuku, while this feature of economical Minshuku is less obvious. The reason may be that high-end Minshuku are generally villas or the types that need to be built. Their investment of a B&B is relatively large when it opens, and the principle of location selection is relatively uniform. The opening is based on unified data analysis such as passenger flow and target customer groups. So B&Bs is easier to gather. The operators of economical Minshuku may be more random about choosing locations. The main reason is that the operators of economical Minshuku can be roughly divided into two categories. One is entrepreneurs who specialize in opening economical homes, and the other is to use their own idle estate to open a B&B. As a result, the location of economical Minshuku will not be consistent, and it does not easily appear to areas with high concentration of Minshuku to depend on each other, so the distribution of Minshuku is relatively random.

5. Conclusion and discussion

Earlier literature tried more to explore the influence of the individual characteristics (such as the design style of Minshuku, etc.) on Minshuku. However, the development of Minshuku has a cluster effect, and the distribution characteristics of domestic Minshuku are very uneven. Few scholars and entrepreneurs pay attention to the distribution characteristics of Minshuku clusters, and there have been few previous studies exploring the relationship between the spatial distribution of Minshuku and culture. So this article fills these gaps.

This study selects city cluster with developed tertiary industry in Yangtze River Delta to study the spatial distribution and spatial pattern of Minshuku in 27 cities. First, this article collects information on the location of Minshuku and scenic spots in 27 cities in Yangtze River Delta through Ctrip.com, and shows the spatial distribution of the overall Minshuku and scenic spots in Yangtze River Delta. The

results turn out that the overall distribution of Minshuku in Yangtze River Delta is concentrated in the economically developed areas in the eastern region, and concentrated in a few other regions of the Delta. At the same time, the distribution of scenic spots in Yangtze River Delta is distributed in large numbers in the central and eastern regions, and also concentrated in several other regions. As a result, after comparing data and graphs, it is found that the concentrated areas of these scenic spots correspond to the concentrated areas of Minshuku.

Then, this research selects 9 cities with relatively concentrated distribution of Minshuku to display their spatial distribution, and analyze their distribution with descriptive statistics. The results show that Minshuku in most cities are concentrated in the downtown area, and the proportion of Minshuku distribution is different in the downtown due to various economic levels; however, there are also a large number of Minshuku in the non-downtown areas in many cities. At the same time, the urban attractions present a trend of centralized distribution in the city center and random distribution in the non-downtown areas. Some of them are consistent with the spatial distribution of Minshuku, while others are inconsistent. There are two main reasons. One is that there are no hardware conditions suitable for opening a B&B near the scenic spots, and there is no policy to promote development of Minshuku. And the other reason is that, the neighbouring area adjacent to some scenic spots is more suitable for the construction of Minshuku, which affects the distribution of Minshuku in this area. This study uses the Moran index and the zip code to divide the 27 cities into 170 more detailed areas, and divides the Minshuku into two categories: economical and high-end, and conducts global autocorrelation analysis. The results show that the B&Bs in Yangtze River Delta have significant spatial autocorrelation, and the surroundings of areas with high (or low) degree of B&B spatial aggregation have a higher (or low) degree of B&B agglomeration. The spatial pattern characteristics of Minshuku are more obvious in high-end Minshuku. It may be due to a relatively single standard for location selection, which will lead high concentration areas to get together.

After researching the data, this article suggests that the operator of Minshuku should analyze the cultural influence of the surrounding area in the process of site selection, apart from considering the cultural influence of the area. And secondly, the support of local government for the cultural tourism industry should be considered, such as Ningbo, Zhoushan and other cities with strong governmental support, where it is easier to build Minshuku with success.

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