

## Comparative Study on Spatial Distribution of 3A-level Scenic Villages and Farmerhouse Characteristic Villages in Zhejiang Province

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### Abstract

By adopting the nearest neighbor index, Gini coefficient, Kernel density analysis, correlation analysis method and using ArcGIS and SPSS software, the spatial distribution and related influencing factors of Zhejiang 3A-level scenic villages and provincial-level farmerhouse characteristic villages are compared and the following findings are found: (1) From the comparison of spatial distribution types, both of them are cohesive on the whole, as shown by the fact that both types of villages are cohesively distributed in various prefecture-level cities and towns; (2) From the perspective of distribution equilibrium, 3A-level scenic villages are distributed relatively reasonably while the farmerhouse characteristic villages are distributed rather evenly; (3) From the analysis of nuclear density distribution, it's found that for the farmerhouse characteristic villages, the Kernel density is more widely distributed and the areas with concentrated Kernel density are presented in "O" type. For 3A-level scenic villages, there is a "demarcation zone" in the south-central part of Zhejiang Province. There are more Kernel density concentration areas in the north of "demarcation zone" than in the south. Besides, the Kernel density distribution pattern of the double-title village is similar to that of the 3A-level scenic village. With the north of Lishui and Taizhou as the dividing line, there are more high density areas in the north than in the south; (4) From the analysis on the distribution of two types of villages and the relevant influencing factors, we can see that: First, the two types of villages have a tendency to distribute along the piedmont plain of the main mountain ranges in Zhejiang province and the farmerhouse characteristic villages are closer to the mountain area; Second, the vast majority of the two types of villages are located near the highway network. In addition, both types of villages regard the city as an important reliance for their own development, and as for the specific location, they are close to Zhejiang prefecture-level cities. Finally, it can be seen that the higher overall economic development level of the local area has great appeal to the villages of the 3A-level scenic villages, The high-level development of regional tourism has a positive effect on the creation of both types of villages.

**Keywords:** A-level scenic villages, farmerhouse characteristic villages, geographic spatial distribution, comparative analysis

### I. Introduction

3A-level scenic villages and farmerhouse characteristic villages, both as the important carrier of rural tourism in Zhejiang province and products of beautiful villages in different phases, depict a gorgeous picture scroll of Zhejiang rural tourism. In 2007, Zhejiang First Batch Provincial Farmerhouse Characteristic Villages started to be built. These farmerhouse characteristic villages, with the farm household management as the subject, provide various leisure tourism service items for the tourists by depending on the local natural and human resources [1]. The start-up of the farmerhouse characteristic villages not only opens a brand new development chapter of Zhejiang farmerhouse, but also lays a good foundation for the upgrading of the follow-up rural village tourism operational types. In 2017, the 14th party congress was held in Zhejiang province and in the meeting, it was

proposed that 10,000 A-level scenic villages, including 1000 3A-level scenic villages, should be built in 2022. As the demonstration of 10,000 scenic villages and 4.0 upgraded version of beautiful villages, 3A-level scenic villages will become the “Habitable, Enterprise-adaptable and Travel-suitable” synthesis which combines the agriculture, culture and tourism [2]. During the upsurge of “New Ten Million Project”, 3A-level scenic villages also undertake the role of pushing the quality development of Zhejiang rural tourism and promoting the holistic tourism [3]. Under the background of gradually implementing the rural revitalization strategy, the rapid growth of rural tourism industry has provided the the important industrial pillar and advancement impetus for the rural revitalization [4], and the rising of 3A-level scenic villages and the constant optimization of farmerhouse characteristic villages offer more possibilities for the further development of Zhejiang rural tourism. The domestic scholars have done relatively deeper research into A-level scenic villages and farmerhouse characteristic villages. As for the former, some scholars put forward the clustering development strategy of A-level scenic villages by summarizing main types of scenic villages [5], make the exploration suitability evaluation after the field investigation about A-level scenic villages [6] and construct the landscape evaluation system of scenic villages from the perspective of AVC three-force theory [7]; as for the latter, some scholars make analysis on the concept, development status and development mode of farmerhouse tourism [8], discuss the development path of farmerhouse tourism e-commerce in the Internet age [9], do research into the two aspects, including the tourism public service supply and demand situation and spacial distribution in Zhejiang province of farmerhouse characteristic villages [10-11] and do the strategic research with the focus of development bottleneck of Lishui farmerhouse industry entering “The 13th Five-year Plan ” [12]. To sum up, the research of domestic scholars pays more attention to the connotation definition, managerial mode and development strategy of 3A-level scenic villages and farmerhouse characteristic villages, but does little to comparative analysis of spacial distribution form of the two. Considering this, the paper takes Zhejiang 3A-level scenic villages and farmerhouse characteristic villages as the research subjects, analyses the spacial distribution feature, laws and related factors of the two kinds of villages and explores the spacial distribution differences and similarities of the two with the aim of providing some scientific basis and reference for the macro spacial distribution optimization of two types of villages.

## II.Data Source and Research Method

### 2.1 Data source

The research subjects, which include 626 3A-level scenic villages and 390 provincial farmerhouse characteristic villages, are chosen from the catalogue of 3A-level scenic villages and provincial farmerhouse characteristic villages published on the official websites such as [www.zjly.gov.cn](http://www.zjly.gov.cn), [www.zjagri.gov.cn](http://www.zjagri.gov.cn) and all the prefecture-level cities’ government site until Jan.1.2019 after deleting some villages which are unqualified through evaluation. The related social and economic data comes from Zhejiang Statistics Almanac of Zhejiang Statistics Information Network (2018 version) and the map of Zhejiang province is from National Fundamental Geographic Information Center.

### 2.2 Research method

In the research, firstly, get the exact geographic coordinates of 3A-level scenic villages and provincial farmerhouse characteristic villages with the Google Earth software and form an Excel, then convert the latitude and longitude information stored in the Excel to the point element with geographic coordinate attribute through ArcGIS10.2, a geographic analysis software and then overlay into the registration-completed holistic electronic base-map of Zhejiang province. Secondly, do the further comparison and analysis on the 3A-level scenic villages and provincial farmerhouse characteristic villages from the overall vision, and compare and analyze the spacial distribution aggregation degree, distribution form of the 3A-level scenic villages, provincial Farmerhouse characteristic villages and overlapped area of double-title villages by using the Average Nearest Neighbor and Kernel Density in the Arc Tool box of Arc GIS, meanwhile, compare the natural resources and social and economic conditions of distribution areas of the two kinds of villages. The index and methods used in the research are as follows.

### 2.2.1 Nearest neighbor index

The distribution of the 3A-level scenic villages and provincial farmhouse characteristic villages in provincial level area is manifested as the point element and nearest neighbor index can be used to analyze the mutual proximity degree of pointed things scattering in the space [13]. The research uses the nearest neighbor index to calculate the aggregation status of two kinds of villages to judge their spacial distribution type. The formula is as follows:

$$R = \frac{\bar{r}_1}{\bar{r}_E} \quad (1)$$

In the formula, R is the nearest neighbor index,  $\bar{r}_1$  is the actual average nearest distance of villages distributing in pointed way and  $\bar{r}_E$  is the theoretical average nearest distance. R=1 indicates the pointed distribution of villages has a tendency to be random; R<1 indicates the pointed distribution of villages has a tendency to aggregate and R>1 indicates the point element of villages tend to be distributed evenly.

### 2.2.2 Gini coefficient

In the geography, Gini Coefficient is mainly used to describe the distribution status of elements in the space [14-15]. To study the dispersion degree of two kinds of villages distributed in the Zhejiang province, Gini coefficient is adopted and the formula is as follows:

$$G = 1 - \frac{1}{n} (2 \sum_{i=1}^{n-1} \omega_i + 1) \quad (2)$$

In the formula, G is gini coefficient, n stands for the total number of prefecture-level cities in Zhejiang province, and  $\omega_i$  is the percentage of accumulated quantity of 3A-level scenic villages and provincial farmhouse characteristic villages respectively accounting for the total number. G ranges from 0 to 1. The bigger G value shows the larger distribution unbalance of villages and the higher geographic aggregation degree. When G<0.2, the villages are distributed much evenly; When G is between 0.2 and 0.3, the villages are distributed relatively evenly; When G is between 0.3 and 0.4, the villages are distributed comparatively reasonably; When G is between 0.4 and 0.5, the villages are distributed relatively concentratedly; When G >0.5, the villages are distributed much concentratedly.

### 2.2.3 Kernel density analysis

Kernel density analysis can be used to clearly describe the point element aggregation and dispersion characteristics of 3A-level scenic villages and provincial farmhouse characteristic villages in Zhejiang province [16] and provide direct reference for studying the general distribution condition of two types of villages. The formula is as follows:

$$f(x) = \frac{1}{nh} \sum_{i=1}^n K\left(\frac{x - X_i}{h}\right) \quad (3)$$

In the formula,  $f(x)$  is the Kernel density value of the  $x$  point village;  $(x - X_i)$  is the distance between element  $x$  to event  $X_i$  position,  $h > 0$ , which is the search radius, K is kernel function;  $n$  is the quantity of all the set observation points. The larger  $f(x)$  indicates that the distribution density of villages is higher. The research uses Jenks, the natural optimal discontinuous point classification, to classify the Kernel density values of villages and define them as “Much low, low, relatively low, relatively high, high and much high” respectively [17].

#### 2.2.4 Correlation analysis

Use the correlation analysis method to study the actual effect of social and economic index and natural resources condition on the distribution of two kinds of villages and the formula is as follows:

$$r_{xy} = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2} \sqrt{\sum_{i=1}^n (y_i - \bar{y})^2}} \quad (4)$$

In the formula,  $r_{xy}$  is Pearson correlation coefficient,  $x$  and  $y$  are the quantity variable of 3A-level scenic villages or provincial farmerhouse characteristic villages in Zhejiang province and the index of social economy and natural resources condition respectively. When  $r_{xy}$  is larger than 0, the variable elements of  $x$  and  $y$  show the positive correlation to a certain degree; When  $r_{xy}$  is smaller than 0, the variable elements of  $x$  and  $y$  show the negative correlation. The absolute value of  $r_{xy}$  gets nearer to 1, the positive or negative correlation degree of two variables is higher. In addition,  $n$  is the quantity of variables,  $x_i$  and  $y_i$  are the observation values of the  $i$  variable and  $\bar{x}$  and  $\bar{y}$  are the average values of two variables respectively [18].

### III. Results and analysis

#### 3.1 Comparison of Distribution Types Between 3A-level Scenic Villages and Provincial Farmerhouse Characteristic Villages

Calculate and analyze the nearest neighbor index of 3A-level scenic villages and provincial farmerhouse characteristic villages in the four geographic areas and the whole Zhejiang province area respectively by using Arc GIS analysis software and on the basis of formula (1).

Table 1 3A-level scenic villages and farmerhouse characteristic villages spatial distribution type

Area	Village Type	Village Quantity	Index Value	Spacial Distribution Type
Northern Zhejiang	3A-level Scenic Villages	178(Huzhou 44, Hangzhou106, Jiaxing 28)	0.740494	Cohesive type
	Farmerhouse Characteristic Villages	114 (Huzhou 33, Hangzhou 59, Jiaxing22)	0.653679	Cohesive type
Eastern Zhejiang	3A-level Scenic Villages	175(Ningbo 85, Shaoxing84, Zhoushan6)	0.697727	Cohesive type
	Farmerhouse Characteristic Villages	83 (Ningbo 34, Shaoxing28, Zhoushan 21)	0.666162	Cohesive type
Western Zhejiang	3A-level Scenic Villages	190 (Quzhou 97, Jinhua 68, Lishui25)	0.809237	Cohesive type
	Farmerhouse Characteristic Villages	133 (Quzhou 43, Jinhua 36, Lishui54)	0.714332	Cohesive type
Southern Zhejiang	3A-level Scenic Villages	83 (Taizhou 26, Wenzhou 57)	0.772746	Cohesive type
	Farmerhouse Characteristic Villages	60 (Taizhou 28, Wenzhou 32)	0.868426	Cohesive type

The Whole Province	3A-level Scenic Villages	626	0.731390	Cohesive type
	Farmerhouse Characteristic Villages	390	0.665006	Cohesive type

According to the calculation results of the average nearest neighbor index (as shown in Table 1), in the whole provincial area, the spacial distribution of 3A-level scenic villages and provincial farmerhouse characteristic villages tend to aggregate. The R index of 3A-level scenic villages is 0.731390 and the R index of provincial farmerhouse characteristic villages is 0.665006, therefore, it can be judged that the general spacial distribution mode of two types of villages is cohesive type. To further study the specific spacial distribution form of two kinds of villages in the four large geographic areas, we analyze the distribution types of 3A-level scenic villages and provincial farmerhouse characteristic villages from the perspective of four areas, including northern Zhejiang, eastern Zhejiang, western Zhejiang and southern Zhejiang respectively. The calculation shows that 3A-level scenic villages and provincial farmerhouse characteristic villages have shown the cohesive type in all four large geographic areas, which means that the two kinds of villages both tend to congregate in these four areas. Since the set-up of 3A-level scenic villages started in 2017, under the strong support of the government's related policies, the follow-up work is done swiftly. 3A-level scenic villages in the whole province have sprung up constantly. Under such background, the local government is able to connect the surrounding villages of the area which has excellent village tourism resources together, thus making the spacial distribution aggregation of 3A-level scenic villages apparent. For the provincial farmerhouse characteristic villages, the aggregation of business operation forms, which reflect the cohesive form of farmerhouse characteristic villages distribution in the geographical space. Can push the construction of the farmerhouse with rich village tourism content.

### 3.2 Comparison of Distribution Characteristics Between 3A-level Scenic Villages and Farmerhouse Characteristic Villages

#### 3.2.1 Distribution Balance

According to the formula (2), calculate the distribution balance of 3A-level scenic villages and the farmerhouse characteristic villages respectively by using the Gini coefficient. The results show that 3A-level scenic villages  $G=0.31978$ , between 0.3 and 0.4, which indicates that the distribution balance of 3A-level scenic villages is relatively reasonable; the farmerhouse characteristic villages  $G=0.17764$ , which is lower than 0.2, and this shows that the distribution balance of the farmerhouse characteristic villages is much even. Therefore, seen from the whole province of Zhejiang, the distribution balances of two kinds of villages show a certain degree of difference. The G index number of 3A-level scenic villages is larger than that of the farmerhouse characteristic villages, therefore, the distribution balance of the farmerhouse characteristic villages is better than that of 3A-level scenic villages.

#### 3.2.2 Kernel Density Analysis

Through Arcgis10.2 software and based on the formula (3), the kernel density analysis is done to the point elements of 3A-level scenic villages and the farmerhouse characteristic villages respectively on the base map of Zhejiang province to further compare and analyze the tendency of spacial convergence and divergence of the two kinds of villages. The result is shown as in Fig.1 and 2. We can see that there do exist some similarities and differences between 3A-level scenic villages and the farmerhouse characteristic villages in the specific geographic spacial distribution. First, seen from the areas with the higher kernel density and above, the areas with higher kernel density of 3A-level scenic villages include norther Zhejiang, eastern Zhejiang, western Taizhou city, Quzhou city, Jinhua and most of wenzhou city. However, there is basically no area with higher kernel density in Lishui and Zhoushan city. Comparatively speaking, the kernel density dispersion of the farmerhouse characteristic villages is much broader, and every municipal city has the areas with higher kernel density and above; Secondly, from the perspective of distribution spacial form of kernel density, there appears a kernel density "division zone" of 3A-level scenic villages from the southwest to the northeast along the area from central Lishui city to central

Taizhou city, and around the “division zone”, the kernel density is commonly low while in the northern and southern part of the “division zone”, there are areas with higher kernel density and above. The concentrated area of kernel density distribution of the farmerhouse characteristic villages are basically around the central area of Jinhua city, which appears in a shape of “O” roughly in Zhejiang province; Finally, through the kernel density analysis on the 133 double-title villages which are both 3A-level scenic villages and the farmerhouse characteristic villages (as shown in Fig.3), we can see that apart from the fragmentary overlapping of the two kinds of villages in the southern Zhejiang and western Zhejiang, the largest overlapping areas are mainly distributed in the northern Hubei province, the common border between southern Hubei province and northern Hangzhou city, southern Jiaxing city, the common border between southern Shaoxing city and Jinhua city, western and Southeast Ningbo city.

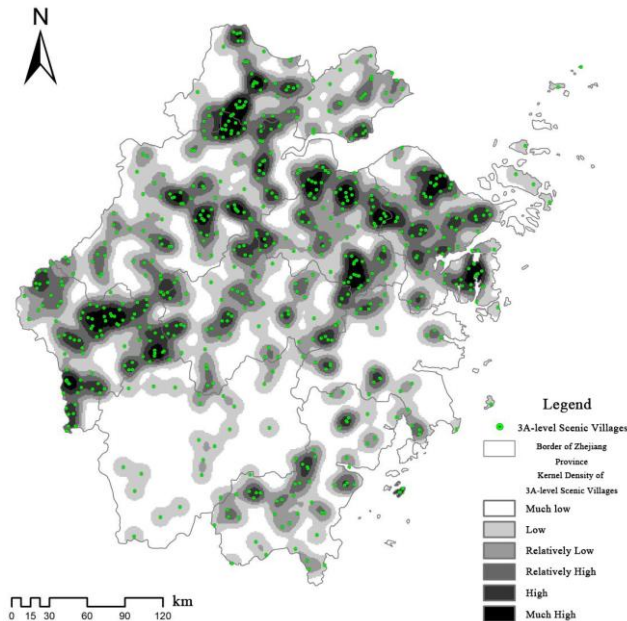


Fig.1 Kernel density of 3A-level scenic villages

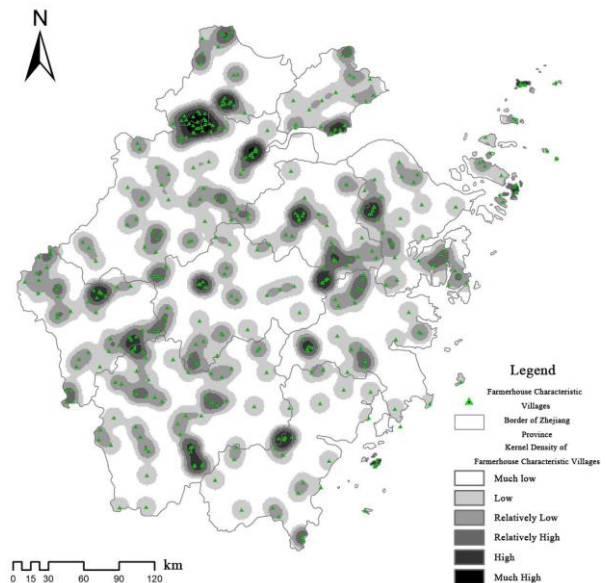


Fig.2 Kernel Density of farmerhouse characteristic villages

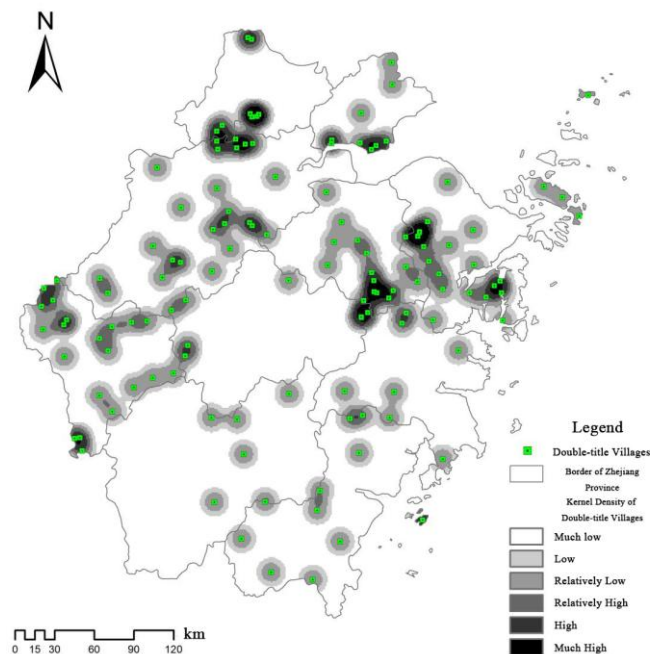


Fig.3 Kernel Density of Double-title Villages

#### IV. Comparison of Factors Affecting the Spatial Distribution of 3A-level Scenic Villages and Farmerhouse Characteristic Villages

##### 4.1 Topographic factor

Topography affects the distribution of natural resources [19] and human elements [20] of different areas to a large extent and can promote or prohibit the local economic development and the cultural communication. For the 3A-level scenic villages and farmerhouse characteristic villages, the topographic factors have a deep effect on the distribution mode in the geographic space. In the research, overlap the point elements of 3A-level scenic villages and farmerhouse characteristic villages with Zhejiang elevation topographic map respectively and then get the distribution map of 3A-level scenic villages and farmerhouse characteristic villages in the aspect of topography(as seen in Fig.4-5). Seen from the Figure, most of two types of villages are distributed along the main mountain range inside Zhejiang province and both of two kinds of villages have relatively concentrated distribution in the Tianmu Mountain, Siming Mountain, Kuaiji Mountain, Tiantai Mountain, Qianli Hillock, Xianxia Mountain and the piedmont plain around Yandang Mountain. Most of 3A-level scenic villages and farmerhouse characteristic villages tend to be built along the mountain, which has a strong correlation with their development orientation. For the two kinds of villages which will start the village tourism as the main business operation form, being close to the mountain means that they will be comparatively far away from the noisy and fast-paced city and the quiet and tranquil environment is beneficial to the arrangement of leisure tourism items. Besides, in the mountain area of Zhejiang province, the forest oxygen bar, which has the high aero-anion concentration, and woodland landscape with abundant seasonal changes are important assistance to attract the tourists. By further extracting the elevation information of point elements, we can find, through the statistical analysis and comparison, 77.64% of 3A-level scenic villages are distributed in the comparatively flat plain area whose altitude is below 200 meters and the proportion of the farmerhouse characteristic villages is 57.44%; 17.41% of 3A-level scenic villages are distributed in the hilly areas whose altitudes are between 200 and 500 and the proportion of the farmerhouse characteristic villages is 22.82%; 4.95% of 3A-level scenic villages are distributed in the mountain areas whose altitudes are between 500 and 1200 and the proportion of the farmerhouse characteristic villages is 14.62%. Therefore, compared with 3A-level scenic villages, the farmerhouse characteristic villages are much nearer to the mountain area with complicated topographic conditions.

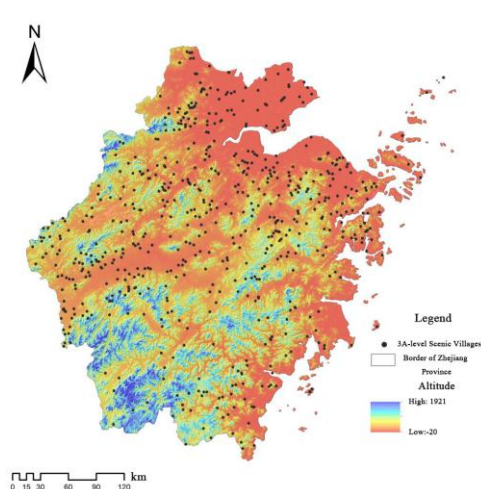


Fig.4 The Distribution of 3A-level scenic villages on the topography

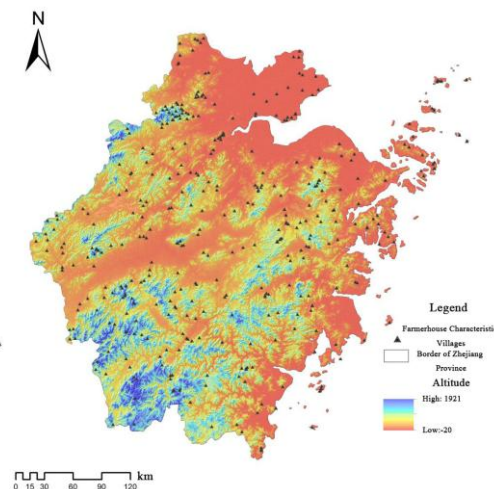
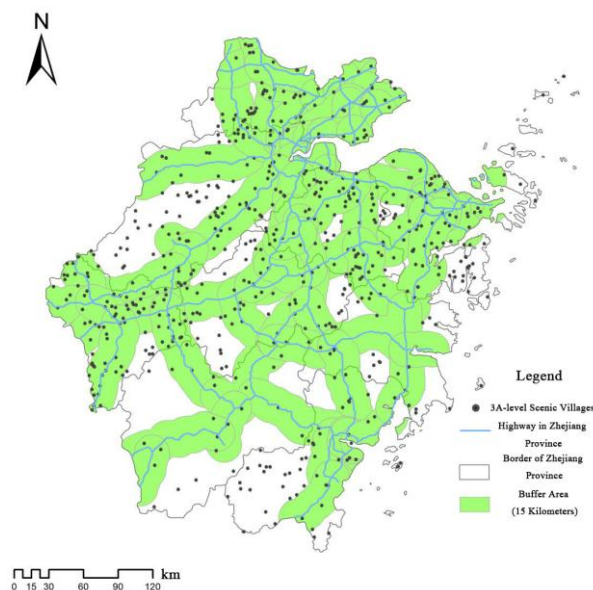


Fig. 5 The Distribution of farmerhouse characteristic villages on the topography

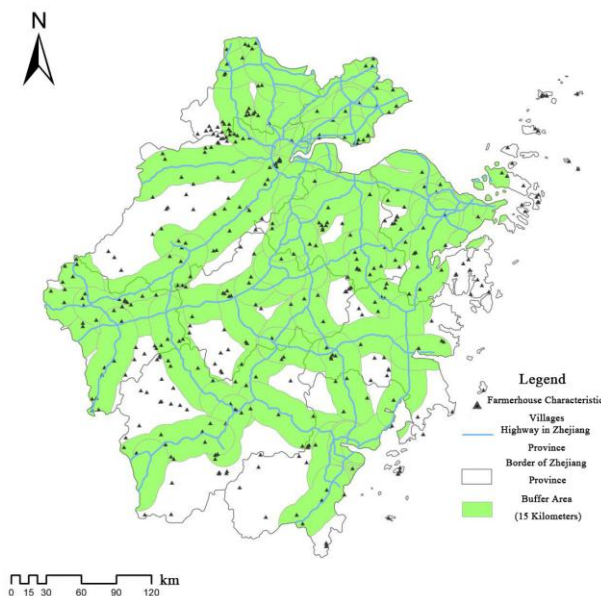
##### 4.2 Traffic Accessibility

The perfection degree of road network can affect the accessibility of tourism destination to a certain degree so as to have an indirect influence on the tourism time benefit and tourists' decisions [20]. Due to the highway's characteristic of being quick and convenient, the developed highway network inside Zhejiang province makes the

fast transportation of staffs and goods and materials possible. The research sets up 15 kilometers' (The average distance of cycling one hour) buffer area around the highway to explore the effect of Zhejiang highway network on the distribution of 3A-level scenic villages and the farmhouse characteristic villages(as seen in Fig.6-7). In general, 77% of 3A-level scenic villages are located in the 15 kilometers' buffer area of highway network and the proportion of the farmhouse characteristic villages is 67%. From here, we can see that during the construction of most of 3A-level scenic villages and the farmhouse characteristic villages, both of them take the traffic accessibility as the important condition of developing the village tourism and the two kinds of villages tend to distribute along the highway network. Thanks to the traffic convenience brought by the highway, the tourists can move back and forth more frequently between two kinds of villages as tourism destinations, which is of benefit to the development of Zhejiang all-for-one tourism. By comparison, the distribution of 3A-level scenic villages inside Zhejiang province is closer to the highway network, especially near the Quzhou, Jinhua, northern Zhejiang and eastern Zhejiang province. Most of 3A-level scenic villages are located in the buffer area. For the farmhouse characteristic villages, the proportion in northern Zhejiang, western Zhejiang and southern Zhejiang is also high.



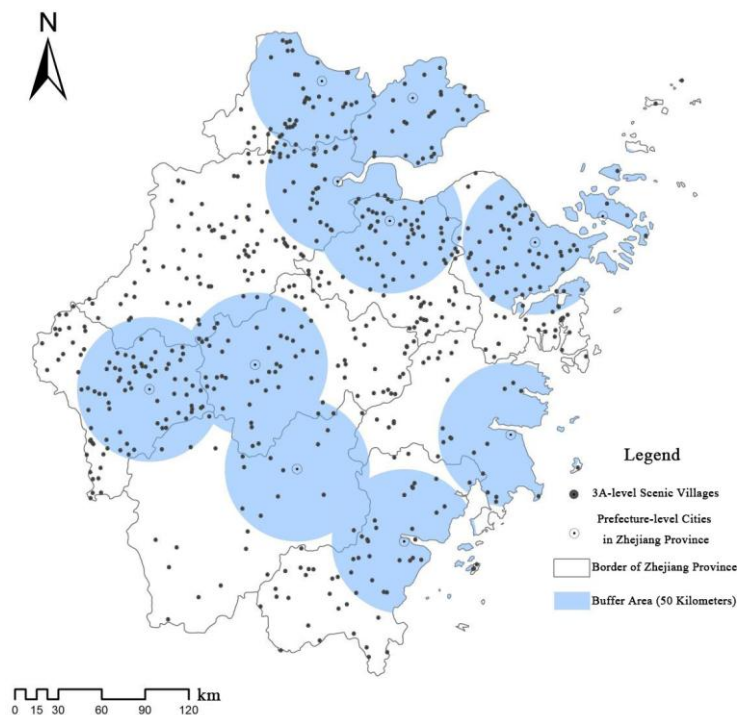
*Fig.6 Traffic Accessibility of 3A-level Scenic Villages*



*Fig.7 Traffic accessibility of farmhouse characteristic villages*

#### 4.3 The Correlation with Tourism-generating Region

The policy made by the government has provided the guidance for the building of 3A-level scenic villages and the farmhouse characteristic villages and the internal scenic spot managerial party of village construction site, self-employment venture and the related enterprises together form the market operation system of two kinds of villages and the tourism-generating market of village tourism is the external condition which is a decisive factor in the development process of two kinds of villages. The prefecture-level cities in Zhejiang province are the concentration places of village tourism potential tourists. Therefore, the buffer zone with a radius of 50 kilometers is built with the capital city of Zhejiang province and various prefecture-level cities as the center [21] to explore the influence of the important tourism-generating market---large-scale cities on the spacial distribution of 3A-level scenic villages and the farmhouse characteristic villages(as shown in Fig.8-9). Through the statistical analysis, 61% of 3A-level scenic villages are distributed in the radiation range of large-scale cities and 53% of the farmhouse characteristic villages are located in the 50 kilometers' buffer zone. Therefore, most of 3A-level scenic villages and the farmhouse characteristic villages are located in the suburban area, partly because the large-scale cities, as the important village tourism-generating aggregation site, have great appeal to the landing of 3A-level scenic villages and the farmhouse characteristic villages. Both two kinds of villages choose the strategy of "Near the city to attract the tourists", which means the geographic advantage of first attracting the tourists in the aspect of distance so as to better explore the village tourism-generating market.



*Fig.8 3A-level scenic villages and city tourism-generating region*

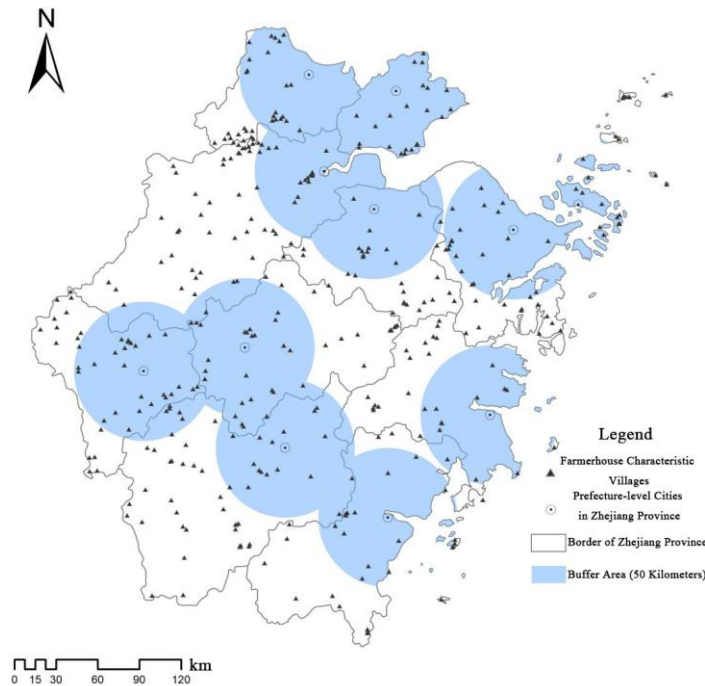


Fig.9 Farmerhouse characteristic villages and city tourism-generating region

#### 4.4 The Influencing Factor of Related Social and Economic Indices

The social and economic development condition in different districts of Zhejiang province has a deep influence on the geographic spacial distribution of 3A-level scenic villages and the farmerhouse characteristic villages. Therefore, choose 8 related indices, including the distribution quantity of two kinds of villages in the 11 prefecture-level cities, the permanent population, GDP, annual output value of tertiary industry, per capita disposable income of urban and rural residents, total annual income of tourism and annual reception capacity of tourism, and use the SPSS19.0 software on the basis of formula (4) to do the correlation analysis on the quantity of two kinds of villages in different prefecture-level cities and the related indices. It turns out that there are certain discrepancies between the effects of different indices on the overall distribution of two kinds of villages (as seen in Table 2) : there shows a higher degree positive correlation between the quantity of 3A-level scenic villages in all the cities and the local permanent population, but the quantity of the farmerhouse characteristic villages nearly has no correlation with the permanent population; there shows a significant positive correlation between the quantity of 3A-level scenic villages and the GDP, annual output value of tertiary industry of the cities, which is at 0.05 while there is relatively low positive correlation degree between the farmerhouse characteristic villages and these two indices; there is nearly no correlation between the quantity of 3A-level scenic villages and per capita disposable income of urban and rural residents respectively while there is certain negative correlation between the farmerhouse characteristic villages and those indices. It is obvious that the development of 3A-level scenic villages has a higher requirement on the local overall economic level and the general development condition of service industry with higher added value, mainly because 3A-level scenic villages are built first, followed by the input of large amount of money while the farmerhouse characteristic villages take a path of “Choose the best from the best” which puts more emphasis on the construction of the present business operation form. Such different choices of building strategies lead to the different distributions of two kinds of villages in the areas with various economic and social conditions. In addition, it can be seen from the table that there is a higher degree positive correlation between the quantity of two kinds of villages and the total revenue of local tourism and the reception capacity, which means a good development momentum of local tourism can promote the growth of two kinds of villages and the perfect tourism infrastructure, various tourism business operation forms and a huge tourism-generating market provide important support for the growth of 3A-level scenic villages and the farmerhouse characteristic villages.

Table 2 Analysis on the correlation between the quantities of two types of villages in various prefecture-level cities and related indices

Related Indicators	Village Type	Significant Level	Related Coefficient
The Permanent Population	3A Level Scenic Villages	0.116	0.502
	Farmerhouse Characteristic Villages	0.557	0.199
GDP	3A Level Scenic Villages	0.049	0.605*
	Farmerhouse Characteristic Villages	0.319	0.332
Annual Output Value of Tertiary Industry	3A Level Scenic Villages	0.049	0.604*
	Farmerhouse Characteristic Villages	0.175	0.440
Per Capita Disposable Income of Urban Residents	3A Level Scenic Villages	0.686	0.138
	Farmerhouse Characteristic Villages	0.248	-0.381
Per Capita Disposable Income of Rural Residents	3A Level Scenic Villages	0.928	0.031
	Farmerhouse Characteristic Villages	0.138	-0.477
Total Annual Income of Tourism	3A Level Scenic Villages	0.116	0.502
	Farmerhouse Characteristic Villages	0.198	0.421
Annual Reception Capacity of Tourism	3A Level Scenic Villages	0.136	0.479
	Farmerhouse Characteristic Villages	0.146	0.468

Note: \* shows the significant correlation at a level of 0.05, \*\* indicates the extremely significant correlation at a level of 0.01.

## V. Conclusions and Suggestions

### 5.1 Conclusions

By using ArcGIS and SPSS software and adopting the nearest neighbor index, Gini coefficient and Kernel density analysis method, the spatial distribution characteristics and related influencing factors of 626 Zhejiang 3A-level scenic villages and 390 provincial-level farmerhouse characteristic villages are compared and the conclusions are as follows: (1) the general spacial distribution types of 3A-level scenic villages and farmerhouse characteristic villages both are cohesive on the whole, and both types of villages are cohesively distributed in various prefecture-level cities; (2) From the perspective of distribution equilibrium, 3A-level scenic villages are distributed relatively reasonably while the farmerhouse characteristic villages are distributed rather evenly; (3) After comparing the Kernel density distribution of two kinds of villages carefully and analyzing that of double-title village, it's found that for the farmerhouse characteristic villages, the Kernel density is more widely distributed in the whole province and there is nearly no area with higher kernel density of 3A-level scenic villages inside Lishui and Zhoushan city. For 3A-level scenic villages, there is a "demarcation zone" in the south-central part of Zhejiang Province. There are more Kernel density concentration areas in the north of "demarcation zone" than in the south. Besides, the areas with higher Kernel density of the farmerhouse characteristic villages are presented in "O" type. Finally, the Kernel density distribution pattern of the double-title village is similar to that of the 3A-level scenic village. The areas with higher kernel density are mainly distributed in the north of Lishui and Taizhou; (4) Topographic factors have a remarkable influence on the distribution of two types of villages. Most of two types of villages are distributed along the piedmont plain of the main mountain ranges in Zhejiang province and the farmerhouse characteristic villages are closer to the mountain area; both kinds of villages have a close connection with the traffic accessibility and most of these villages are set up along Zhejiang highway network. By comparison, the tendency of 3A-level scenic villages along the highway is much more obvious. (6) As for the correlation with the tourism-generating places---prefecture-level cities, most of these two kinds of villages are located in the 50 kilometers' buffer zone and both of them take the development of the tourism-generating market as the important support. (7) As for the influencing factors of related social and economic indices, the landing of 3A-level scenic villages has a much higher requirement for the local general economic development level while the farmerhouse

characteristic villages' correlation with this is relatively small. The distribution of two kinds of villages have a certain degree correlation with the development status of local tourism. The more developed the local tourism is, the higher the landing possibility of two kinds of villages is.

## 5.2 Recommendations

Based on the analysis and conclusion of comparative research, the following recommendations are put forward for the better development of 3A-level scenic villages and the farmerhouse characteristic villages:

(1) Take advantage of aggregation to push forward the quality construction. Two kinds of villages have shown a clear aggregation in the aspect of spacial distribution and the close geographic connection has also provided the opportunity of the integration and aggregation development of industries. 3A-level scenic villages and the farmerhouse characteristic villages not only need to strengthen the cooperation between industries inside the villages, but also needs the coordination with villages which have other titles. From the perspective of the internal part, both need to dig into the six component elements "Food, Accommodation, Transportation, Travel, Shopping and Entertainment", deepen the connection and cooperation among the elements, extend the tourism industrial chain to realize the quality improvement. From the external part, two kinds of villages need to have a profound communication according to the own development orientation so as to learn from each other and avoid the homogeneous competition.

(2) Enrich the connotative characteristics to build the regional brands. Both 3A-level scenic villages and the farmerhouse characteristic villages have their own unique tourism resources, therefore, the development strategy of brand operation should make full use of the village tourism value. The brand operation of local village tourism should resort to the local characteristic tourism items and build the perfect system. Every household in the farmerhouse is able to provide the family banquet with special flavor for the tourists and in different villages, tourists are able to appreciate the differentiated village scenery and each village aggregation area can offer the tourists different tourist routes, all of which are the basis of brand operation. Two kinds of villages should make their own gold-lettered signboard based on fully integrating the tourism resources and upgrade them to the regional public brand so as to provide the momentum for the village tourism development of two kinds of villages through the influence of the regional brands.

(3) Implement the layout optimization to facilitate the balanced development. From the spacial distribution equilibrium, 3A-level scenic villages doesn't show much aggregation in the southern Zhejiang, where there are various landscapes, profound cultural accumulation and unique national traditions, therefore, there is great potential to build 3A-level scenic villages. With the further implementation of "New Ten Million Projects", there is a promising future for the development of 3A-level scenic villages and during the construction, more emphasis should be put on the regional equilibrium. Besides, the landing of 3A-level scenic villages will greatly promote the motivation of surrounding areas taking part in the village tourism construction so as to make contributions to the realization of all-for-one tourism of Zhejiang province.

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