

Research on Spatial Distribution Structure of Class A Tourist Scenic Spots in China Based on Grey Relational Analysis

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Abstract: Tourist attractions are a special type of landscape on the surface of the earth, while Class A tourist attractions are a tourism classification system with Chinese characteristics. The spatial structure of tourist attractions refers to the spatial relationship and combination of natural and human attractions. It is a combination of nodes (scenic spots), corridors (transportation lines) and area (administrative regions). This paper analyzes the general rules of spatial distribution of A Class Tourist Scenic Spot in China, and provides concrete basis for the planning, management and development of A class tourist resources in China. The spatial pattern of accessibility distribution of scenic spots is analyzed by gray correlation. Entropy changes from low entropy to high entropy. The spatial structure is still in a low-level equilibrium stage. Dominant resources should be taken as the spatial stronghold for priority development to promote the evolution of spatial structure from disorder to order. In order to provide scientific reference for revealing the spatial structure of high-quality tourist attractions and provide new ideas for the research methods of spatial structure of tourist attractions.

1. Introduction

Class A tourism scenic spot is the highest level of tourism scenic spot assessed by the state at present, which represents the highest level of tourism resources development and tourism destination construction in China. Tourist attractions are the material carrier of tourism supply and the important support for tourism development [1]. The spatial structure of tourist attractions refers to the spatial relationship and combination of natural and cultural landscape resources. It is a collection of nodes (scenic spots), corridors (transportation lines) and area (administrative regions) [2]. Because of the high degree of industrial relevance of tourism industry, all provinces in the country are striving to build and build their tourism brand and tourism routes, so the competitiveness of tourism industry is also very fierce [3]. Grey correlation degree is a method to analyze the correlation between things and factors. The correlation degree is judged according to the similarity degree of curves between things or factors. The research on the spatial structure of tourist attractions has changed from qualitative analysis to the combination of GIS spatial analysis and mathematical statistics, from the static representation of the current time point to the dynamic research on the evolution of scenic spots distribution, and from the description of spatial pattern to the research on spatial structure optimization. Tourist attractions are an important part of tourism, and the identification of tourist attractions is the national standard for the National Tourism Administration to comprehensively evaluate the quality and grade of tourist attractions [4]. As a method to measure the degree of correlation between factors, it is also called "grey correlation degree". It is characterized by an effective method to calculate the grey correlation coefficient to reflect the strength of the relationship between the comparison sequence and the reference sequence based on the sample data of each element under the condition of less data and uncertain information [5].

Since the evaluation of A in tourist attractions, the support and encouragement from governments at all levels have made the evaluation of A in tourist attractions widely recognized throughout the country. The establishment of A Class Tourist Scenic Spot is an important means to improve the comprehensive quality of tourist attractions. It is also an effective way to improve the attractiveness of scenic spots. It will have twice the result with half the effort to improve the

economic and social benefits of scenic spots [6]. In this paper, the spatial distribution structure of A Class Tourist Scenic Spot in China is studied and analyzed. Its spatial structure and distribution characteristics are analyzed. The grey comprehensive correlation degree not only takes into account the absolute change of the sequence, but also the relative change of the sequence. At the same time, it overcomes the defect that the correlation degree does not satisfy the integrity and normativeness [7]. Class A scenic spot can be regarded as each point approximately in the national scale, so the nearest point index can be used to distinguish its spatial distribution type in the whole country [8]. Compared with correlation analysis and regression analysis, grey correlation degree analysis is more suitable for comparing the importance of correlation factors with more main factors. In order to provide scientific reference for the optimization of the spatial structure of high-quality tourism resources and the regional joint development of scenic spots [9]. Travel costs and travel time to tourist attractions directly affect the motivation of tourists. Therefore, it is not only necessary but also of practical significance to study the spatial accessibility of tourist attractions, which can provide scientific basis for expanding the service scope of tourist attractions, choosing suitable travel destinations for tourists and optimizing the layout of tourist attractions by the government [10].

2. Distribution pattern of a class touristscencspot in china

2.1 A Class Tourist Scenic Spot in China presents the characteristics of centralized distribution as a whole

The development of tourism industry has changed from quantity expansion to quality improvement, from pure traditional tourism concept of “visiting mountains and rivers” to the concept of creating tourism culture and tourism taste. Reasonable planning and construction of A-level tourist attractions to create a tourism growth pole. There are rich and high-quality tourism resources in the central and Western regions, especially in the western regions. Overall, the distribution of A Class Tourist Scenic Spot in China is divided into three major zones, from southeast to northwest in turn: concentrated zone, transitional dispersed zone and relatively concentrated zone. Grade A scenic spots are evenly distributed, with great differences among different grades. The closest points reflect the accumulation and dispersion of point-like things in the whole space. Attractions are concentrated in large numbers in space, i.e. areas with high density. Grey correlation analysis is adopted, that is, according to the nearest distance of each scenic spot, by defining an aggregation unit, a limit distance or threshold value and the minimum number of each aggregation unit, and so on, the service range of the scenic spot is a region composed of such a series of continuous grids, and the time from the grid at the boundary of the service range of the scenic spot to the two tourist spots is the same.

2.2 The characteristics of convergence between the distribution of tourist attractions and population

Tourist scenic spot is a special landscape type for people to recreation on the earth's surface. As a movable natural body, people also carry out centralized and decentralized activities on the earth's surface. By means of the average distance between points and points, we can reflect the average value of the nearest distance between points and points, and determine the proximity of geographical space in the point distribution. Degree, absolutely correct correlation. The grey relational index is used to study the concentration degree of point objects in different sub-regions, and to analyze the distribution characteristics of geographical things in different administrative regions. Therefore, when there are many targets or the environment is complex, if not processed, the amount of computation generated by the arrangement will increase dramatically, so the distance-based local association processing is carried out first. After the cost attribute is given under the gray correlation degree, the vector data is converted into raster data, and the value of raster data is the cost value; The time cost grid of spatial features is obtained by spatially superposing the time cost grid data of each layer. Give full play to the leading role of Class A tourist attractions in

regional tourism development, actively promote the rational development and utilization of tourism resources, and reduce regional spatial differences.

China's A-level scenic spots are divided into five levels, but the number of scenic spots at all levels does not show a regular increasing law with the level from high to low. Although the restriction on the number of tourists can show the attractiveness of its market, it has become a key factor causing the distribution of tourism resources and the spatial distribution of scenic spots, the distribution of congenital resources elements and the misplacement of grade A. The guiding structure cycle of A Class Tourist Scenic Spot is shown in Table 1 and Figure 1. Grey correlation analysis can measure the degree of similarity or difference between data factors according to the geometric shape of the curve. When the number of targets increases to n , the number of cross-location points increases to n^2 , of which only n cross-location points correspond to the real target. There is a certain degree of similarity between the resources of tourist attractions and the market structure of tourist sources. The excessive concentration of tourist attractions can easily lead to fierce internal competition, which leads to the disadvantage of "internal friction". It is necessary to optimize and integrate them effectively. The spatial difference in accessibility of scenic spots directly depends on the regional difference in the distribution of scenic spots and the road network structure. Meanwhile, natural and human environment, as indirect factors, affect the accessibility of regional tourist spots by acting on the first two factors. Taking into account the possible influence of social and economic factors of natural conditions on its spatial distribution, different regions are designated as a whole for research respectively, and the influence of social and economic development level and tourism development level on it is analyzed. Under the background that administrative regions are the basic units of regional economy in our country, this spatial distribution provides conditions for balanced development of all districts and counties, but it also adds difficulties for higher-level regions to choose key growth poles.

Table 1 A class touristscencspot-oriented structural loop

	Attract	Increase
Economic gains	19.50	18.32
Conditional requirements	17.06	16.15

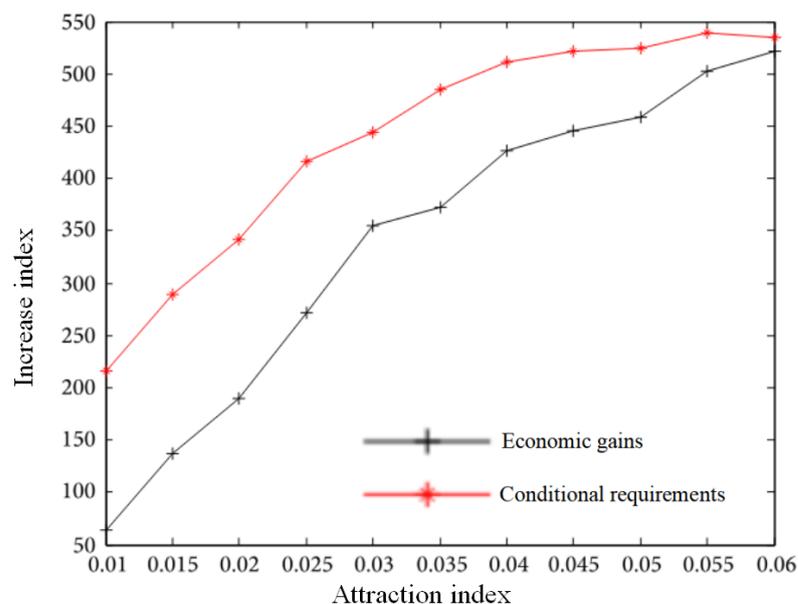


Fig.1. A class touristscencspot-oriented structural loop

3. Structural optimization of A-level tourist attractions

3.1 Distribution and Topography of Class A Tourist Scenic Areas

Class A tourist attractions are concentrated in the eastern part of the country, which is also the third step with relatively low terrain. The emergence of A-level scenic spots is not only conducive to ending the chaotic situation of A-level scenic spots, but also can highlight the overall characteristics of A-level scenic spots in China and form an international tourism brand. The algorithm combines local distance correlation with global grey correlation based on spatial distribution. It divides all Cross-locating points into several combinations, effectively utilizes the spatial distribution information of multiple targets, and there is no need to select the correlation threshold in the process of correlation. The distribution of A Class Tourist Scenic Spot is close to the market. to some extent, it also implies that the distribution of A Class Tourist Scenic Spot is completely market-oriented rather than resource-oriented. In order to expand the depth and hinterland of tourism development, several tourism core areas are formed in the areas where tourist attractions are concentrated, and relying on the advantages of highly concentrated tourist attractions in the core areas, the development of tourist attractions in the vast marginal areas is driven. Tourist attractions are market-oriented rather than resource-oriented distribution systems, so the higher the grade, the weaker the correlation with population density, Even in areas with low population density, as long as the quality of resources is superior, there is also a market.

3.2 Overall spatial distribution characteristics of accessibility

Tourist accessibility directly affects the strength of interaction between tourists and tourist destinations. Railway, highway, air and even water transport are important travel media for tourists to travel long distances. The construction of tourist corridors has a very important impact on the development of tourist attractions. Tourism corridors can be divided into external traffic between tourist destinations and tourist origins, urban traffic of tourist destinations and internal traffic of tourist attractions. And each coordinate sequence of cross location points contains two series components of correlation coefficients of horizontal and vertical axis. The homogeneity of scenic spots in agglomeration centers leads to fierce competition. It is necessary to innovate the mode of competition and cooperation, implement linkage development, and create heterogeneous tourism products so as to achieve greater space for development. Tourist accessibility directly affects the efficiency of tourism time, and then affects the occurrence of tourists' decision-making behavior. The lack of tourism resources combination, unbalanced tourism development in the region and other shortcomings, so we should pay attention to the construction of the overall brand of tourism, to bid farewell to the fragmented individual tourist destinations or the situation of no focus on overlapping tourist attractions.

With the rise of urban tourism, the attraction of economically developed areas to tourists is in an advantageous position in terms of both urban features and image-building. Under the environment that service facilities and artificial landscape facilities can be “duplicated”, the evaluation of tourist attractions should pay more attention to the initial evaluation of resources, change the way of attraction, reflect the value of tourist resources, and reflect the market position of tourist resources. Increasing investment in infrastructure, introducing private capital in the case of limited government financial resources, innovating financing methods and channels, and realizing the benign interaction between tourism industry and supporting industries. Mountainous areas are widely distributed, and the evolution of their natural environment is similar to the historical process of the development of human society. The homogeneity of tourism resources makes the inter-city distribution of A-level scenic spots very average, and the degree of imbalance is very low; the inter-county distribution has weak differences, and the difference is small. Delineation of different development standards and control and guidance measures to avoid blind expansion of tourist attractions, in order to control the disorderly development of tourist attractions. Comparing the adjacent distance between the aggregation unit and each point pair, when the nearest distance of a certain point is less than the limit distance, the point is counted into the aggregation unit, and the

original point data is clustered into several elliptic regions, called first-order hotspot regions. Affected by the degree of economic development and the endowment of tourism resources, the service scope of each grade A scenic spot is characterized by a small area in the west and a large area in the east, and a small area in the north and a small area in the south. Its spatial structure is very matched with transportation accessibility. The gray associated anchor point must be in the direction of the extension line of its angle. Through distance preprocessing, some impossible permutations and combinations can be eliminated, which reduces a lot of calculations for the following correlations and basically avoids missing correlations.

The reversibility of traffic routes shows that the accessibility of this grid to tourist attractions is the minimum value of the time it takes for each tourist attraction to pass through the traffic network to any grid in the whole China region. the circulation of a class tourist scene guiding structure is shown in Figure 2.

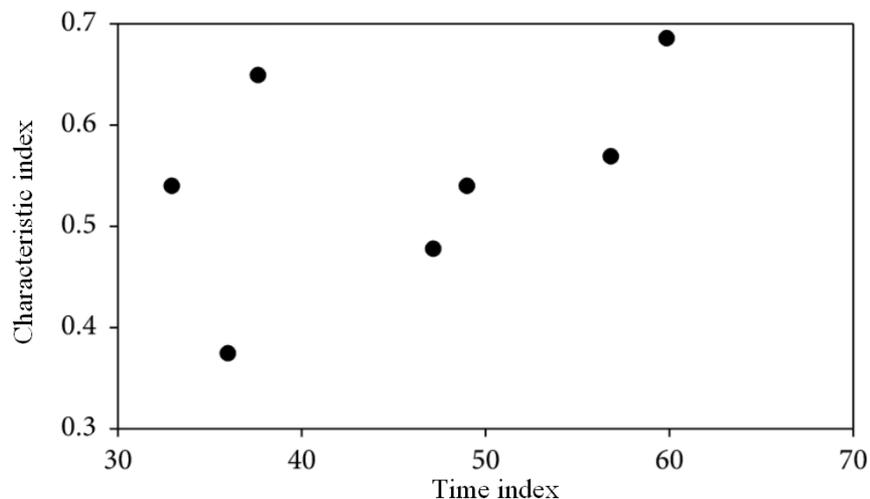


Fig.2. A class touristscencspot-oriented structural loop

5. Conclusion

This paper studies the spatial distribution structure of A Class Tourist Scenic Spot in China based on grey relational analysis. The spatial structure of tourism is an organizational form formed by human tourism activities in a certain region, which reflects the various systems in the regional tourism system. Find out the rules of distribution structure of A-class tourist attractions in China, so as to make outstanding contributions to the development of tourism in China. Based on the spatial distribution, grey correlation analysis is used to find the most similar arrangement to the target distribution curve. Select all the target positions at the moment as reference numbers, find out some of them from the scenic spots with balanced distribution as the space strongholds for priority development, construct the growth poles for regional tourism development, adjust the entropy value of the scenic spots' space structure to change to a low level, and first establish the influencing factors for the development of tourism industry for grey correlation analysis. It is necessary to establish a regional tourism cooperation mechanism, speed up the construction of roads and infrastructure linking neighboring provinces, meet the demand of changing the tourism mode from sightseeing to vacation, and realize the organic link between tourist attractions and tourist routes. Changing the mode of attraction to “resources attract tourists” instead of “tourists attract resources” should highlight the value of tourism resources and reflect the market position of scarce tourism resources.

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