ISSN 2616-5783 Vol.6, Issue 1: 67-76, DOI: 10.25236/AJHSS.2023.060110

Construction of Recreation Opportunity Spectrum (ROS) in Urban Landscape Areas - A Case Study of Chongqing, China

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Abstract: *Urban beautiful spaces are essential sources of relaxation for visitors and play a vital role in urban ecosystem management. The Recreation Opportunity Spectrum (ROS) theory, a mature recreation resource planning and management tool proposed by the US Forest Service and developed in the practise of many countries' recreation areas, is used in this study to take typical urban scenic areas in Chongqing's main urban area as examples. The research area determines the natural, social, and management environment of urban scenic areas three major environmental classifications, divided into natural scenic recreation, ecological and humanistic recreation, rural landscape recreation, urban services recreation four types of urban scenic area environment, and then establishes the urban scenic area environment.*

Keywords: *urban landscape, recreation opportunity spectrum, Chongqing*

With the development of urbanization and the explosive growth of tourism, urban scenic areas, as important carriers of urban recreation, are gradually receiving attention from all parties, and the ensuing conflicts are becoming increasingly prominent, especially the conflict between the protection of resources in urban scenic areas and the satisfaction of tourists' growing recreational needs[1] . At present, traditional scenic planning and management methods do not pay enough attention to the recreational needs of tourists and surrounding residents in urban scenic areas, and most of the internal facilities and ecological environment of urban scenic areas are under greater pressure, leading to negative impacts on the management efficiency and scenic attractiveness of urban scenic areas. As a major place for urban residents to get close to nature and carry out outdoor recreational activities, it is important to study the balance between the protection of urban scenic resources and the desire of urban recreationists to use scenic resources. A few scholars have already conducted studies on urban landscape areas, some of them focus on the concept of urban landscape areas[2, 3] , the relationship between urban landscape[1, 4, 5] , planning and construction[6-10]. , etc. However, most of the studies are conducted from the perspective of management and planning personnel, and not enough attention is paid to them as users of urban landscape areas.

The Recreation Opportunity Spectrum (ROS) is a theory identified by the U.S. Forest Service as having a prominent role in recreation resource management.[11] Its basic intent is to identify different types of recreation based on the classification of environmental background, and to motivate recreationists to participate in their favorite recreation activities in their preferred environment to obtain another satisfying experience.[12-14] . Wu Bihu, a scholar in China, was the first to introduce the concept of recreation opportunities. With the introduction and conceptual development of the recreation opportunity spectrum theory, there has been a gradual increase in the number of theoretical and applied studies. Huang Xiang and Bao Jigang[15] discuss the construction of an ecological recreation opportunity spectrum in China, followed by an adaptation evaluation. Ma Yangmei[16] constructs an ecotourism opportunity spectrum (ECOS) that is consistent with the current situation in China with the help of the characteristics of tourism and guided by the idea of sustainable ecotourism development. Song Zengwen[17] built the Adventure Tourism Opportunity Spectrum (ATOS) based on the theory of recreation opportunity spectrum, taking Sanjiangyuan as an example. Yang Huijuan[18] et al. established a localized forest park recreation opportunity spectrum (CFROS) by combining Chinese policy standards, management status and research results in order to solve the many contradictions in the development of Chinese forest parks. Tang Rui[19] and others introduced the Waterfront Recreation Opportunity Spectrum (WROS) and explored the waterfront tourism product development path of Chaohu Lake. Zhao Meng[20] attempted to construct the R-ROS system to solve the contradiction between ecological protection and recreational activities in residential landscape planning. In summary, recreation

ISSN 2616-5783 Vol.6, Issue 1: 67-76, DOI: 10.25236/AJHSS.2023.060110

opportunity spectrum, as one of the most effective methods for recreation resources and management, has been widely used in foreign recreation areas, and its application in China also tends to be stable and reasonable, with high practicability and adaptability. However, for the recreation structure is more complex, the spatial location of the unique urban scenic area research is still blank. The urban landscape recreation activities of the environment organize, analyze, expand the ROS framework theory to the field of China's unique scenic areas, further refine the construction of urban landscape recreation opportunities spectrum list, determine the appropriate type of recreation opportunities, which can alleviate the recreation activities of urban landscape resources and ecological. It also helps to match the recreation preferences of the surrounding residents and urban tourists, and provides guidance for the planning, design and management of urban scenic areas.

1. Research object and method

1.1 Overview of the study area

The scenic areas in the main urban area of Chongqing, the main research area of this study, have gone through a process of gradually moving from the suburbs to the central urban area. During the period of the accompanying capital in 1935, they were mainly concentrated in the present-day Yuzhong Peninsula and the coastal area, and there were only a small number of official residences, embassies and residential houses in the scenic areas of Gele Mountain, Jinyun Mountain and Nanshan Mountain, which were still independent scenic areas at that time. After the reform and opening up, the central urban area of Chongqing, China began to expand, and the scenic areas of Gele Mountain, Jinyun Mountain and Nanshan Mountain were gradually transformed into suburban scenic areas, and the construction of Chongqing has made great development since the administration in 1997, and the main urban area was further expanded. By 2007, with the formation of the nine districts of the main city, the relationship between Golak Mountain, Jinyun Mountain and Nanshan Scenic Area and the main city of Chongqing has undergone a qualitative change. Gele Mountain, Jinyun Mountain and Nanshan Scenic Area have become typical urban scenic spots with the development of Chongqing city.

1.2 Data sources

In July-August 2018, 213 questionnaires were randomly distributed in Gele Mountain, Jinyun Mountain and Nanshan Scenic Area, and 202 questionnaires were collected, with 200 valid questionnaires and an effective rate of 93.9%. The questionnaire mainly covered three aspects: demographic characteristics, recreation behavior characteristics and the importance of environmental variables. The design of the questionnaire uses a five-point Likert scale to assign scores, describe the importance of residents and tourists to the relevant environmental variables, and determine the factors that may have an impact on the recreation experience in urban scenic areas.

1.3 Analysis method

(1) Firstly, the data were obtained by issuing questionnaires to typical urban scenic spots in the main city of Chongqing (Gele Mountain, Jinyun Mountain and Nanshan Mountain), and then the survey data were entered using the statistical software for social sciences SPSS software and then subjected to reliability analysis, descriptive analysis and the application of principal component analysis in the factor analysis method to classify the recreation factors.

(2) According to the SPSS screening of recreation factors, combined with the resulting data processed through the Excle software, the application of mathematical formulas to calculate the weights hierarchically to form the scoring criteria.

(3) According to the needs of the research content, Photoshop CC2018, AtuoCAD2016, ArcGIS, origin8 and other software are used to assist in the process of explaining and illustrating the graphical representation.

2. Establishment of environmental factor system

2.1 Application suitability validation

Questionnaire survey was conducted for the importance of visitors to the recreation experience, and

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statistical analysis by SPSS software (Table 1). The results show that the recreation visitors who think that the recreation environment is very important to the recreation experience account for 41%, the recreation visitors who think that the recreation environment is important to the recreation experience account for 48%, the recreation visitors who think that the recreation environment is general to the recreation experience account for 8%, 6% of the recreation visitors who think that the recreation environment has little relationship to the recreation experience, think that the recreation environment has no relationship to the recreation experience for 2. The results show that most of the recreation visitors who think that the recreation environment is important to the the results show that most recreationists believe that the impact of recreation environment on recreation experience is crucial, which verifies the basis and premise of applying recreation opportunity spectrum theory in urban scenic areas.

Table 1: Statistical table of recreation opportunity significance

Importance of recreation opportunities	Frequency	Percentage (%)	Effective percentage (%)	Cumulative percentage (%)
Very important	82	41	41	41
Important	96	48	48	89
General	8	4	4	93
Not very relevant	12	6	6	99
No relationship	2	1	1	100
Total	200	100	100	100

2.2 Initial screening and formulation of environment variables at

This study was conducted by a combination of fieldwork, literature summaries, interviews with relevant people, and questionnaire surveys of recreationists. Based on the research status of the recreation opportunity spectrum, we select 20 papers with high recognition, screen out the environmental factors with high consensus, consider the main environmental characteristics of urban scenic areas and the recreation experience needs of recreationists, and then adjust and increase the factors by combining the resource characteristics and construction status of urban scenic areas, and make a preliminary analysis of the environmental variable system of urban scenic areas. The specific division is shown in Table 2.

Table 2: Environmental factors of urban scenic spots

Serial number	Natural Environment	Serial number	Social Environment	Serial number	Management Environment
1	B Degree of vegetation cover	1	S road accessibility	1	M Dining Facilities
2	B Biodiversity	2	S Quietness	2	M Recreation Facilities
3	B The naturalness of the landscape	3	Location of S spots	3	M Sanitation Facilities
4	B Air Quality	4	S feels far from the city	4	M Vegetation Maintenance
5	B Ecological Humanities	5	S Visitor Intensity	5	Maintenance of M facilities
6	B Cultural Features	6	The realization of S recreation motive	6	M Environmental Health Management
		7	S Degree of accessibility of recreational activities	7	M Explanation Service
		8	S activity program richness	8	M Marking System
				9	M night lighting
				10	M Accommodation Facilities

3. Urban Scenic Area Recreation Opportunity Spectrum Construction

3.1 Importance analysis of environmental factors

Based on the difference in size and usage, three typical urban scenic spot visitors in the main city of Chongqing, Gele Mountain, Jinyun Mountain and Nanshan Scenic Area, were selected as questionnaire

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subjects. From September to December 2018, a simple random sampling method was used to select recreationists who were able to answer the questionnaire in each urban scenic spot, and the sample size was determined to be 150. The importance level of the "1-5" scale was used to screen and identify the environmental factors that may have an impact on the recreation experience in urban scenic areas.

The questionnaire data were collected through field research and entered into the application software IBM SPSS Statistics 21 for statistical analysis. The data on the importance scores of environmental factors in the questionnaire were subjected to standard deviation and mean descriptive statistical analysis. Among them, the standard deviation reflects the differences in the perceived importance of environmental variables by recreationists, and the mean reflects the differences in the perceived importance of each environmental variable to the experience according to the surveyed recreationists.

Table 3: Descriptive statistics of the importance of environmental factors table

Environmental factor variables	N	Average value	Standard deviation	Variance
B Degree of vegetation cover	200	4.11	0.749	0.561
B Biodiversity	200	4.09	0.84	0.705
B Ecological Humanities	200	4.04	0.921	0.848
B The naturalness of the landscape	200	4	0.814	0.663
B Air Quality	200	3.99	0.814	0.663
M Environmental Health Management	200	3.97	0.907	0.823
B Cultural Features	200	3.96	0.861	0.742
M Marking System	200	3.96	0.887	0.787
M Sanitation Facilities	200	3.92	0.979	0.958
Location of S spots	200	3.91	0.863	0.746
S feels far from the city	200	3.91	0.803	0.645
S Degree of accessibility of recreational activities	200	3.87	0.984	0.968
S activity program richness	200	3.85	0.944	0.892
M Recreation Facilities	200	3.84	0.996	0.993
The realization of S recreation motive	200	3.82	0.962	0.925
M Dining Facilities	200	3.8	1.004	1.008
S Quietness	200	3.76	0.99	0.98
S road accessibility	200	3.74	0.875	0.766
S Visitor Intensity	200	3.59	0.957	0.916
M Explanation Service	200	3.53	1.037	1.074
M Vegetation Maintenance	200	3.51	0.814	0.663
Maintenance of M facilities	200	3.48	0.885	0.784
M night lighting	200	2.97	0.879	0.773
M Accommodation Facilities	200	2.92	1.036	1.073
Valid N (list status)	200			

As shown in Table 3, the surveyed tourists have different perceptions of the importance of different environmental factors on the recreation experience. Among them, the mean values of vegetation cover and biodiversity are 4.11, and the mean values of ecology, humanities and landscape naturalness are very close to each other, 4.04 and 4.00 respectively. The mean values of the above four environmental factors are above 4, which indicate that they have a greater influence on the recreation experience. These four environmental factors show that natural and human resources are very important to the recreation experience of urban scenic areas. This also indicates that although urban scenic spots are different from independent scenic spots, they still retain the core content of scenic spots, and the recreation experience is highly dependent on the human and natural environment in line with the current situation. The mean values of accommodation facilities and night lighting are 2.92 and 2.97 respectively, the scores of both environmental factors are lower than 3 but relatively similar, reflecting the low perception of nighttime recreation experience by visitors, which may be related to the location of urban scenic spots as well as the provision of nighttime recreation content and the degree of nighttime opening. In addition, tourists mainly return to the same day trip, and lack of understanding of the night attractions of the city scenic spots, most choose half-day trip or one-day trip, resulting in two low average. In the long run, these two environmental factors may play an important role in the impact of recreation experience as the scale of the city gradually becomes larger and the urban scenic spots gradually become more perfect. In order to analyze the impact of environment on recreation experience more comprehensively and prospectively, all 24 factors will be environmental factors for subsequent analysis.

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3.2 Environmental factors determination

First, the significance scores of the 24 environmental variables generated from the screening were analyzed for reliability using SPSS software, and the Cronbach's alpha value was obtained as . 862 > 0.7, which indicates that the importance scores of these 24 environmental variables have high reliability, and also proves that the screened environmental variables have a high degree of validity and fully meet the conditions for doing further factor analysis. The KMO test and Bartlett's sphere test were conducted on the importance scores of environmental variables, The KMO value was 0.869, this indicates that the questionnaire values have structural validity and are very suitable for doing factor analysis. And the Bartlett sphere degree test yielded a companion significant value Sig. of 0, which is significantly smaller than the significant reference value of 0.05, indicating that the questionnaire values are significantly correlated.

In this study, SPSS software was used to conduct factor analysis to find out the factors with corresponding characteristics of the recreational environment. Principal component analysis was selected for the study, which assumes that all the variables analyzed are error-free, and that the correlation coefficient matrix of the sample represents the overall correlation coefficient matrix. Several variables are analyzed by principal component analysis, and the author selects the most important components with the largest variance from several components, and ignores the components with small variance and low importance. The rotated factor loading matrix, the total variance explained by the environmental factors (Table 4) and the gravel plot (Figure 1) were obtained by factor analysis. From Table 4, the information content of the first principal component factor is 25.691%, the information content of the second principal component factor is 10.166%, and the information content of the third to seventh principal component factors are 9.547%, 8.505%, 7.193%, 6.405%, and 4.615%, respectively. 1-7 principal component eigenvalues are greater than 1 and the cumulative variance contribution rate reaches According to the principle that the extracted factors should have a cumulative information content of 50% or more, these 7 factors can be retained as valid principal component factors.

Table 4: Total variance of environmental factor explanations

Ingredients	Initial Eigenvalue			Extraction of squares and loading			Rotate square and load		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	6.166	25.691	25.691	6.166	25.691	25.691	3.042	12.673	12.673
2	2.44	10.166	35.857	2.44	10.166	35.857	2.981	12.42	25.093
3	2.291	9.547	45.404	2.291	9.547	45.404	2.924	12.183	37.276
4	2.041	8.505	53.909	2.041	8.505	53.909	2.846	11.86	49.136
5	1.726	7.193	61.101	1.726	7.193	61.101	1.978	8.241	57.377
6	1.537	6.405	67.506	1.537	6.405	67.506	1.895	7.895	65.271
7	1.108	4.615	72.121	1.108	4.615	72.121	1.644	6.849	72.121
8	.....	.....	.....						

Extraction method: Principal component analysis

In addition, combined with the gravel plot in Figure 1, it can be seen that the curve shows a clear downward trend from left to right, the first factor on the leftmost side is at the highest point of the plot, and the rest of the factors gradually decline, starting from the 7th factor, the decreasing trend of the later factors gradually becomes slower and the amount of change is smaller, which proves that the selection of 7 factors is more appropriate.

In the rotated component matrix (Table 5), respectively, shows the contribution and influence degree of each influencing factor for the 7 principal component influencing factors, it can be seen that the selection of each factor for the determination of the principal component will contribute more than 0.5 of itself, thus it can be obtained that the selection of environmental factors is guided by the scientific mathematical quantification. Analysis of the commonality of the characteristics of the factors in the 7 environmental factors, at the same time, comprehensive consideration of the differences in the environment of the recreation site and the degree of support for recreation activities, the specific naming of the 7 environmental factors are: attractions recreation perception, recreation use quality, recreation facilities support, maintenance and navigation, ecological and human characteristics, natural landscape features, night recreation and accommodation.

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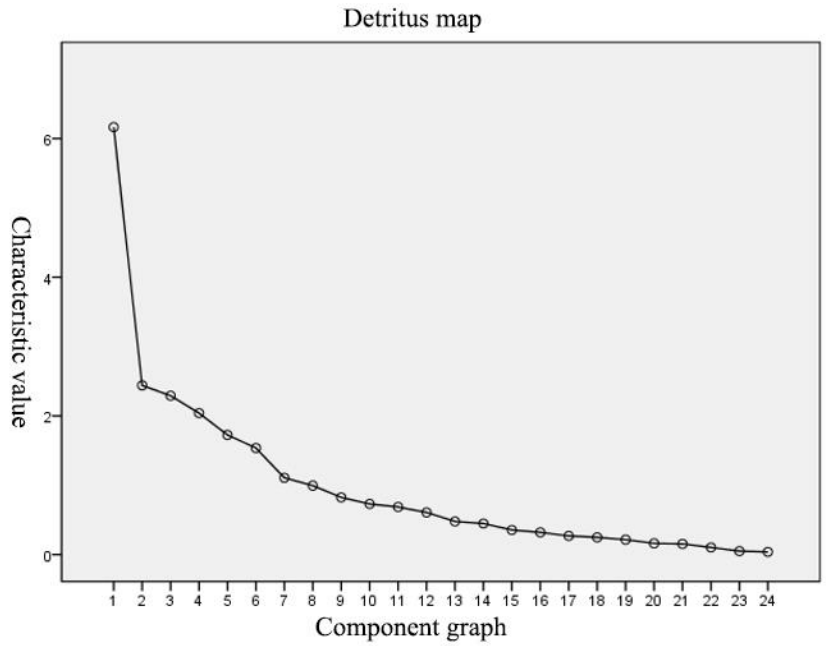

Figure 1: Gravel map of recreation environment factors

Table 5: Rotation component matrix

Environmental factor variables	Ingredients						
	1	2	3	4	5	6	7
S road accessibility	.777						
S Quietness	.725						
Location of S spots	.695						
S feels far from the city	.677						
S Visitor Intensity	.613						
The realization of S recreation motive		.959					
S Degree of accessibility of recreational activities		.942					
S activity program richness		.939					
M Dining Facilities			.919				
M Recreation Facilities			.918				
M rest facilities			.873				
M Vegetation Maintenance				.794			
Maintenance of M facilities				.792			
M Environmental Health Management				.682			
M Explanation Service				.655			
M Marking System				.563			
B Ecological Humanities					.882		
B Cultural Features					.869		
B Degree of vegetation cover						.745	
B Biodiversity						.676	
B The naturalness of the landscape						.633	
B Air Quality						.605	
M night lighting							.825
M Accommodation Facilities							.768

Extraction method :Principal components.
Rotation method :Orthogonal rotation method with Kaiser standardization.
a. The rotation converges after 6 iterations.

3.3 Indicator system establishment

Factor weights indicate the relative importance of each factor in the evaluation. The calculation process requires three steps, firstly obtaining the coefficients of the factors in the linear combination of each principal component, secondly calculating the initial weight values of individual factors, and finally

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normalizing the weight values of individual factors[21] . According to the construction hierarchy of the index system, the weights of each level are the sum of the weights of its lower levels, and the method of superposition is adopted layer by layer, which finally forms the table of scoring types and assignment criteria of urban scenic area recreation opportunity spectrum, as shown in the table 6, and the order of secondary environmental factors is adjusted in the list of factor weights of each level for the convenience of subsequent scoring.

Table 6: Factor weights for each level of the recreation opportunity spectrum

Tier 1 Indicators	Weights	Secondary indicators	Weights	Tertiary indicators	Weights
Natural environmental factors	0.27	F1 natural landscape features	0.18	B Degree of vegetation cover	0.045
				B Biodiversity	0.045
				B The naturalness of the landscape	0.044
				B Air Quality	0.044
		F2 Eco-humanistic features	0.09	B Ecological Humanities	0.044
				B Cultural Features	0.045
Social environment factors	0.32	F3 place recreation perception	0.21	S road accessibility	0.041
				S place quiet level	0.040
				Location of S spots	0.043
				S feels far from the city	0.041
				S Visitor Intensity	0.043
		F4 recreation use quality	0.11	The realization of S recreation motive	0.043
				S Degree of accessibility of recreational activities	0.042
				S activity program richness	0.032
Managing environmental factors	0.41	F5 Recreation Facilities Support	0.12	M Dining Facilities	0.033
				M Recreation Facilities	0.043
				M Sanitation Facilities	0.042
		F6 Maintenance and Guided Tours	0.21	Maintenance of M vegetation	0.042
				Maintenance of M facilities	0.043
				M Environmental Health Management	0.039
				M Explanation Service	0.044
				M Marking System	0.039
		F7 Night Recreation and Accommodation	0.08	M night lighting	0.044
				M Accommodation Facilities	0.038

3.4 Grading system establishment

By establishing a spectrum of recreation opportunities in urban scenic areas, the recreation opportunity scoring system is analyzed and summarized according to the assessment conditions and interconnections of each graded factor spectrum. This scoring system consists of a table of scoring types of recreation opportunities and a model for scoring recreation opportunities of place attributes in urban scenic areas. The scoring model of recreation opportunities for place attributes in urban scenic areas is as follows.

$$S_{ROS} = S_i \times W_i$$

Where.S_{ROS} is the rating value of attractions and area recreation opportunities. S_i is the grading factor rating value, each three-level single factor full score of 5. W_i is the grading factor weight value.

By combining the above studies, we calculate different spatial recreation opportunity scores according to the weight of each factor and recreation opportunity scoring model, and judge the level of recreation opportunity. As the level of management conditions and quality of recreation in urban scenic spots improve with the construction of scenic spots, sites with high management level and high quality of recreation have higher scores, and these sites have scores lower than 2.5. Therefore, according to the principle of averaging, every 0.5 points differ by one level, where the total score of Sros evaluation is between (0, 2.5) for natural scenery recreation type, which is a low suitable level of recreation opportunities; the score is between ((2.5, 3.0) for ecological and humanistic recreation type, as a moderate suitable level of recreation opportunities; score between (3.0, 3.5) for rural landscape recreation type, as a high suitable level of recreation opportunities; score between (3.5, 5.0) for urban service recreation type, as a high suitable level of recreation opportunities.

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3.5 Recreation opportunity spectrum determination

Table 7: Recreation opportunity spectrum of urban scenic spot

City Scenic Area ROS	Natural scenery recreation type	Ecological and humanistic recreation type	Countryside landscape recreation type	Urban service recreation type
Degree of natural landscape destruction	+	++	+++	+++
Ecological and humanistic features	+	+++	++	+++
Place recreation perception	+	++	+++	+++
Quality of recreation use	+	++	+++	+++
Recreation facilities support	+	++	+++	+++
Maintenance and Guided Tours	+	++	++	+++
Night-time excursions and accommodation	+	+	+++	+++
Environmental characteristics	The recreational environment is dominated by natural scenery with little artificial transformation, and only a few traces of artificial transformation. There is no motorized traffic capacity, basically the walking paths are dominant, the area has a low level of management, and managers rarely appear.	The recreation environment is dominated by natural and ecological landscapes with a certain degree of artificial transformation, and is a rich area of humanistic landscapes, with a small number of motorways and a quiet overall environment. The open space has some hard pavement and rest facilities.	The recreation environment is mainly ecological-humanistic and rural with a low degree of nature, with certain service facilities and artificial structures, a high degree of artificial plant maintenance, and a high degree of regional management.	This type of space assumes an important role in urban scenic areas for the collection and distribution of tourists; it has a very low degree of naturalness, highly artificial vegetation and a full range of artificial structures and facilities.
Activity Type	Among them, single visitor activity, low activity density, short duration, high degree of quiet, high landscape aesthetics, low degree of site hardening, etc. The types of activities are mainly sports, scenery viewing and hiking.	Some people have more activities than the natural scenery type, but do not do direct contact with the environment, and the degree of management is higher.	Visitor activities are more abundant, with a higher duration and density.	The types of visitor activities are diverse and dense; the places are well maintained, with a good guide system and the highest frequency of managerial patrols.

Note: The importance level of each indicator is divided into three levels: high, medium and low, and is expressed by "++++, +++, +", which is only used for horizontal comparison, not for vertical comparison of the importance of various indicators.

According to the surveyor's personal preference in the questionnaire to select the ideal degree in different types of recreation environment, using a Likert-type 5-point scale to assign the quantitative results, the importance of the indicators in different recreation environments show obvious differences. The physical environment condition of each type of recreation environment is expressed by each index, which will help the planners and managers of urban scenic areas to adopt more scientific decisions to determine the setting of recreation projects, to propose measures to protect the resources and environment, and to avoid the blind setting and construction of recreation projects in the scenic area, the overload use of places and excessive interference with the recreation environment, which affects the quality of recreation experience of recreationists. Research and analysis of different types of recreation environment in the importance of the perception of the indicators of recreation, different recreation environment reflects the focus of the indicators there are differences, the following is a descriptive analysis of the four types of environment, these four types of recreation environment in the development and construction intensity in order from low to high (Table 7).

4. Conclusion and Discussion

4.1 Conclusion

In this study, 24 environmental factors of recreation opportunities in urban scenic areas were screened and determined, and SPSS software was used to do principal component analysis on the environmental factors to form the classification of environmental factors, and it was concluded that the recreation opportunity spectrum of urban scenic areas can be composed of three indicators and their subdivided tertiary factors, namely, natural and social management factors of urban scenic areas and horizontal factors. On this basis, the "seven criteria and four categories" method is proposed to determine the

ISSN 2616-5783 Vol.6, Issue 1: 67-76, DOI: 10.25236/AJHSS.2023.060110

recreation opportunity spectrum of urban scenic spots. In addition, this study establishes the weight scoring standard and level assessment model of recreation opportunities in urban scenic areas. By applying the mathematical formula to calculate the variance contribution rate of each factor after principal component analysis, the weight scoring standard of urban recreation opportunities spectrum is obtained. The constructed rank assessment model can quickly identify the types of recreation opportunities, which can help urban scenic area managers and planners to judge the conditions of scenic spots and attractions.

4.2 Discussion

Based on the current situation of visitor experience research, this study tries to introduce the recreation opportunity spectrum method for the empirical study of the combined experience of recreation environment and recreation activities, but the study itself is somewhat challenging. Based on the research results of this paper, the following shortcomings are proposed: First, the recreation opportunity spectrum theory itself has been developed more mature, and is also increasingly localized in China, but there are fewer quantitative methods. This research method has strong operability though. However, the method may ignore the potential influencing factors due to the one-sidedness of thinking in the preliminary assumptions. Second, this study mainly conducted data collection through questionnaires, which is a more subjective way of sample collection. In the whole process, there are inevitably certain limitations, how to truly respond to the recreation needs of recreationists need to be further studied. Third, due to professional constraints, this study is only from the perspective of recreation, in the specific enhancement and transformation measures in the study of theoretical and methodological thinking, the specific indicators of the relevant only to some important aspects of the discussion, and the technical aspects of the content, but also need to improve the relevant research.

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ISSN 2616-5783 Vol.6, Issue 1: 67-76, DOI: 10.25236/AJHSS.2023.060110

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