Preliminary Study on Spatial and Temporal Distribution and Behavior of Tourists in Beihai Park in Winter

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Abstract. Tourists are the main users of the park, whose spatial and temporal distribution and behavioral characteristics are the most real reflection of the construction of the park environment. Tourists in Beihai Park were selected as the research object. Through field investigation and interview investigation, the main behavior characteristics of tourists in different time and space in winter were studied. Finally, from the perspectives of tourists relation with time and space, we analyze the existing problems, understand the causes of these phenomena, and then put forward the corresponding countermeasures and suggestions, and make suggestions on the construction and management of such parks.

1. Introduction

After entering the 21st century, with the change in the needs of citizens and tourists for urban parks, the design and transformation of urban parks have attracted more and more attention. One of the perspectives is to introduce environmental behavior into the design and renovation of parks, and to understand the needs of citizens and tourists through their behaviors. This not only can makes the design and reconstruction of the park more scientific, but also makes this research from the qualitative research into the field of quantitative research, so that the design and transformation of the park can better meet the needs of the general public. In recent years, foreign studies on the behavior of tourists in parks have become increasingly diverse. For example, through the survey of Lincoln Park, the differences in the use of different nationalities or ethnic groups in urban parks were elaborated to provide a basis for how the park should be management and serve different ethnic groups, and to provide a theoretical basis for them to establish a venue for ethnic exchanges[1]. From the perspectives of age and race, the behavior and preferences of tourists in the park were analyzed[2]. Relevant research was conducted from the perspectives of gender and ethnicity[3]. However, related research started relatively late in our country and research results are relative scarce. Research in this field mostly concentrates on the theoretical perspective, or draws lessons from foreign related research results, and research is mostly limited to the field of architecture, and its theory is rarely introduced into landscape design. It is precisely because of the scarcity of research in this filed that there is no corresponding theoretical support for the transformation and construction of our parks, and it is difficult to truly meet the needs of the citizens and tourists for the park environment. The purpose of this study is to (i) use Beijing Beihai Park as an example to explore the spatial and temporal
distribution and behavior characteristics of tourists in the Beihai Park in winter, and (ii) analyze the reasons and understand the needs of tourists for the park environment.

2. Materials and methods

2.1. Overview of Beihai Park and survey area
Beihai Park is located in the central area of Beijing City, adjacent to the Jingshan and the Palace Museum, together with the Zhonghai and the Nanhai, it is known as the Three Seas. It belongs to the ancient imperial garden of China. The park is centered in the Beihai, covering an area of about 71 hectares, covering 583 mu on the water surface and 480 mu on the land. In 1925, it was opened as a park. Beihai Park is the oldest and most complete imperial garden that China has preserved so far. It is a national key cultural relic protection unit and a national AAAA-level tourist attraction.

Due to the large area of Beihai Park, therefore, during the survey, some space in the park was selected for observation and study of the spatial and temporal distribution and behavior characteristics of tourists. The scope of the survey area is shown in Figure 1.

![Figure 1. Survey area](image-url)

2.2. Survey object and time
The survey object were tourists from Beihai Park. The investigation time was November 19, 2017.

2.3. Survey methods
Two survey methods were used in this survey: behavioral observation method and interview method.

2.3.1. Behavioral observation method.
Behavioral observation method according to the needs of research topic, the investigators have a purpose, in a planned way use their sense organs, or with the tools of observation, of the space environment the user activities were observed under natural state and the method to get the data[4]. Using behavioral observation method to observe the space of activities and the behavior of tourists in the survey area, and to mark the distribution and behavior patterns of people in different environments in different time periods. Finally, through data analysis and data collection, the activity status of
tourists behavior and its distribution in time and space are summarized. The observation of this behavior was mainly performed by fixed-point observation, follow-up observation, and photo-taking.

2.3.2. Interview method.
The interview method is a research method in which researchers gather psychological characteristics and behavioral data through verbal conversation with research subjects[5]. Through the interview method, the subjective feelings, attitudes, and feelings of the respondent to an event or object can be understood, and the psychological state and behavioral characteristics of the respondent can be analyzed in various aspects[6]. Randomly select tourists from the park for communication, to truly and intuitively understand the views and opinions of tourists, and initially grasp the overall evaluation of the park by tourists.

2.4. Survey data processing
Statistics, processing and analysis of survey data were performed using Excel 2003, and data were summarized in the form of questionnaires and analysis charts.

3. Results and analysis

3.1. Temporal and spatial distribution of tourists in the survey area

3.1.1. Temporal distribution of tourists in the survey area.
Through observation of tourists and conversations with the staff, we learned that the daily distribution of tourist activities in the park was roughly as follows: Starting from 6:30 in the morning, the crowds of morning exercises entered the park one after another, and the number of people reached the first peak of the day from 7:00 to 8:30. Nowadays, morning exercise has become a symbol of Beihai Park, and morning exercise culture has become a famous brand of park culture. There are many people who come here for daily morning exercise. Most of them come to the park for morning exercises in groups. The morning exercise programs include running, Tai Chi, dancing and sword dancing. The morning exercise program of Beihai Park has become one of the cultural attractions that attract foreign tourist groups. After 8:30, the number of people has gradually decreased. Around 9:00 a trough is formed. After 9:00, the number of team tourists began to increase, reaching the peak of the day at around 10:00, and the rate of tourists out of the park was higher between 12:00-14:00. 14:00-15:30 is a period when the amount of tourists fluctuates greatly. The tour groups are the most important reason for the crest. After 16:00, tourists dropped significantly. After 17:00, due to dimming and people’s lack of security, most tourists only left for a short time near the attractions of the South Gate and the North Gate. They would leave soon after, and did not have the intention of visiting other attractions in the park. (Table 1)

| Time       | Percentage |
|------------|------------|
| 6:30—9:30  | 30%        |
| 9:30—12:30 | 38%        |
| 12:30—15:30| 21%        |
| 15:30—18:30| 11%        |

3.1.2. Spatial distribution of tourists in the survey area.
The park has the largest number of tourists, including the ancient buildings, the half-open space and the northern shore of the Beihai. For example, Beihai north shore space convenient location, line of sight, good lighting, the ducks in the Beihai gathered here, is the majority of tourists favorite garden space. The amount of tourists in the enclosed spaces in the park is relatively small. Such as the Haopujian on the east bank, where the sense of concealment and isolation is very strong, making people insecure.
3.2. The behavioral characteristics of tourists in the survey area

In public spaces, people’s outdoor activities can be divided into three types: necessity activities, spontaneous activities, and social activities[7]. Based on the special nature of the space environment in the park, the crowd is relatively more complex. The behavior activities of tourists in the survey area can be mainly divided into four types of behavior patterns: exercise behavior, recreational activity behavior, staying behavior, and sitting-off behavior. Among them, the main activity of tourists is exercise behavior, accounting for 43.5%, followed by recreational activity behavior, accounting for 36.8%, sitting-off behavior accounted for 13.2%, and the smallest proportion is staying behavior, accounting for 6.5%.

In order to facilitate investigation and research, the investigation area is now divided into 6 regions, and the behavioral characteristics of tourists within 6 regions are analyzed. The spatial relationship of the six regions is shown in Figure 2.

![Figure 2. The spatial relationship of the six regions](image)

The main activities in District 1 (Jingxinzhai) include tourists queuing to get tickets, taking pictures, sightseeing, and picnics. Generally speaking, the behavior of tourists is mostly spontaneous behavior and social behavior.

The main activities in Region 2 (North Bank Wharf) include dancing, walking, sightseeing, and writing. Overall, the behavior of tourists is mostly spontaneous behavior and social behavior.

The main activities in Region 3 (Xiaoxitian) include Tai Chi, taking photos and sightseeing. Generally speaking, the behavior of tourists is mostly spontaneous behavior and social behavior.

The main activities in Area 4 (Kowloon Wall) include Tai Chi, playing badminton, taking pictures, and teaching. Overall, the behavior of tourists is mostly spontaneous behavior and social behavior.

The main activities in District 5 (Wulongting) include playing, sightseeing, singing and relaxing. Generally speaking, the behavior of tourists is mostly spontaneous behavior and social behavior.

The main activities in Area 6 (Chanfu Temple) include taking photographs and sightseeing. Overall, the behavior of tourists is mostly spontaneous behavior and social behavior.
4. Conclusion and suggestions

4.1. Conclusion

- The amount of tourists in the Beijing Beihai Park varies greatly with time.
- Judging from the behavioral activities, the majority of people exercised and visited.

4.2. Suggestions

- Add seats and other service facilities according to the number distribution of tourists in the Beihai Park. According to the characteristics of spatial and temporal distribution of tourists, the number of half-open spaces should be appropriately increased to improve the utilization rate of the park space.
- Pay attention to creating a participatory landscape environment for tourists, increasing the attractiveness of the park and bringing people closer to each other. According to the difference in the activities of tourists, the large space will be miniaturized, regionalized, and functionalized to meet the needs of social activities of different groups of people.

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