JOURNAL OF H&T www.johat.org

# Analysis on the Spatial Pattern of Chinese Sport Tourism-Taking National Sport Tourism Demonstration Base and High-quality Event as an Example

**Yi Fan Zuo**
Physical Education Department, ShenZhen University, China
**Xiao Rong Chen**
Physical Education Department, ShenZhen University, China

**Abstract**

With the rapid expansion of Sport tourism industry at the moment, the development of “National Sport Tourism Demonstration Base” and “National Sport Tourism High-quality Event” are the two significant beginning steps. In this paper, GIS geospatial analysis method is used to analyze “National Sport Tourism Demonstration Base” (30 items) and “National Sport Tourism High-quality Event” (33 items), which are identified by China. According to their spatial distribution, the following pattern is formed: 1) the type of spatial distribution for “demonstration base” and “high-quality event” is aggregate distribution; 2) the spatial distribution of “demonstration base” and “high-quality event” forms Beijing-Tianjin-Hebei core circle and Eastern China core circle; 3) The hot spots of “demonstration base” and “high-quality event” are: central area in the Xinjiang Uyghur Autonomous Region, Tibet-Qinghai intersection area, middle part of Gansu Province and NeiMonggol-Beijing border region, Heilongjiang-Jilin region and southern part of Anhui Province, and the cold spots are south-central area in Fujian and central part of Guangdong; 4) There are 6 common items between “demonstration base” and “high-quality event”. The construction of “demonstration base” and the development of “quality event” are in concordance with the regional features of the hosting site, which can provide preferable ideas for the development of Sport tourism in China.

**Keywords:**GIS; National Sport Tourism Demonstration Base; National Sport Tourism Quality Event; Sport Tourism

## 1. Introduction

At present, China is in the decisive stage of completing the process of building a moderately well-off society in all aspects, and people's diverse needs for Sport, tourism and leisure are ever-growing. Sport tourism has become an important lifestyle, which turns into a key driver to develop the Sport industry. China has a

vast territory, with complex geographical environment, and various climatic characteristics, so this creates good natural conditions for developing Sport tourism in China. However, problems are still prominent, such as insufficient supply of Sport tourism in overall, simplex product structure, lagging infrastructure construction, and unfavorable institutional mechanisms. Aiming at the above problems, in order to integrate tourism and Sport industry as well as cultivate Sport tourism products, Office of China National Tourism Administration and General Office of General Administration of Sport of China jointly issued Notice on the Establishment of "National Sport Tourism Demonstration Base" and the Declaration of "National Sport Tourism Quality Event" (LBF (2017) No. 165) 1. The proposition of "National Sport Tourism Demonstration Base" and "National Sport Tourism High-quality Event" reflects that the tourism department and the Sport department strengthen the cooperation based on two activities, mobilize the initiative of all quarters of the society, accelerate the cultivation of Sport tourism consumption market, and continuously optimize the supply system of Sport tourism. It is of great significance for cultivating and expanding new growth points extent of economic development.

## 2. Research Progress of Sport Tourism

The earliest documentary records of Sport tourism can be traced back to the Olympic Games in 776 BC. In the past, researches on Sport tourism were more about Sport event tourism, focusing on the phenomenon of Sport tourism caused by major Sport events. However, under the background where the nation strongly advocates accelerating the development of fitness and leisure industry, Sport tourism is importance to the regional sustainable development strategy. Wang D et al. (2002) divided the Sport tourism market into leisure, fitness, battle witness, stimulation, competition, and others. These markets all have the characteristics of great potential, strong popularity, wide market coverage, younger pattern and promising prospects. Some studies show that Sport industry has the characteristics of complex connotation, huge consumption demand and relatively large dependence on a spatial place, but the tourism industry is borderless comprehension and spatial containment. Based on the joint market demand and shared resources of the tourism and Sport industry, three operable industrial fusion modes through the integrated management pattern can be developed: penetration fusion, reorganization fusion and extension fusion (Jiang G, 2013). Ratkowski, W et al.(2018)proposed that Sport events are not only an important factor for promoting regional development with significant effect on regional image, but also an important factor for attracting tourists. Considering the demand relation, a long-term strategy that takes into account economic and social aspects is required to be formulated.

Therefore, many studies have analyzed the characteristics of Sport and tourism, and learned that Sport tourism not only cultivates people's awareness of fitness and leisure, but also promotes the sustainable development of tourism. Faced with enormous Sport tourism projects, some researches are discussed in the form of individual cases. Zhou P et al. (2018) studied the integration mechanism and effect of traditional festival tourism industry of national Sport with the case study of Nadamu, NeiMonggol; Chen C (2018) taking the integration of white tea industry and sport tourism in Liyang as an example, expected to stimulate the development of white tea industry with the help of mature Sport tourism resources in Liyang area; Malchrowicz-MoskoE et al.(2018) interviewed 2, 098 participants in Sport heritage events in Poland, including tourists, local residents and organizers, and proposed that the establishment of organizations that stimulate small-scale Sport events and relevant Sport events combined with cultural heritage in specific areas, which will be conducive to the revival of local tourism and the promotion of regional image.

This paper holds that, currently, the residents' awareness of participating in Sport tourism in China is still in a superficial level, and guidance is still required. The concept of "the Rich First Pushing Those Being Rich Later " is essential for Sport tourism projects. With the support of our country, a number of excellent "demonstration bases" and "high-quality events" are firstly established which will subsequently promote Sport tourism in surrounding areas and even the whole region. The geographical location is particularly important for regional Sport tourism, as what was demonstrated in Kang Y, Huang H(2018)'s study on the development model of Sport tourism scenic spots in Jiangsu, Zhejiang and Shanghai based on GIS, and Daniels MJ (2007)'s research and analysis on the characteristics of economic benefits related to Sport event tourism with the Central Geographic Theory. With the help of GIS spatial analysis methods, this paper will discuss the construction of "demonstration base" and the spatial distribution of "high-quality event" from the perspective of geographic location. Also, this paper will explore the internal relationship, and analyze the distribution characteristics between them and other peripheral things in detail, providing reference for the full scale development of Sport tourism in China in terms of development status of China's provinces and regions.

## 3. Empirical Research

### 3.1 Research Design

Spatial analysis is a frequently used method in geographic information science, based on the spatial position and physical form of geographical objects, combining attribute information to carry out comprehensive operation on

spatial data, and finally extracts spatial information（Yan H, Zheng J, Ge X,1999）. We used ArcGIS 10.2 software to conduct analysis for the host places of China's domestic Sport"demonstration base" and "high-quality event". Also we have completed the visualization processing of spatial geographical distribution, taking the administrative units at the district (county) level as the research object. Google Map was used to extract accurate geographic coordinates of statistical data, and then we carried out geospatial matching for the host places of "National Sport Tourism Demonstration Base" and "National Sport Tourism High-quality Event" with ArcGIS 10.2 software. Combining with the geographical environment, the paper explored whether to take measures to local conditions with reasonable layout. The Kernel density of spatial distribution was calculated, and then hot and cold spots analysis was conducted to highlight the roleof geographical location in layout and development.

### *3.2 Analysis and Discussion*

#### 3.2.1 Research object selection

This paper collected 30 "National Sport Tourism Demonstration Bases" and 33 "National Sport Tourism high-quality Events" identified by Office of China National Tourism Administration and General Office of General Administration of Sport of China. The data is summarized; refer to appendix for more details.

" National Sport Tourism Demonstration Base"refers to influential Sport tourism destinations, which equipped with complete infrastructure and complete supporting services. On the basis of protecting natural resources and ecological environment, take full advantage of natural landscapes such as mountains, ice and snow, lakes and forests and combined with all the Sport that can be applied to the natural environment, to build a Sport, health and leisure gathering area and industrial belt with local characteristics. It includes two types, one is composed of natural landscapes, addingSport elements on the basis of the original environmental resources, forming a demonstration base of Sport tourism with natural landscape as the core. The other type is orientated to build Sport venue, Sportpark, Sport economic zone, Sport resort, construct Sport park by building and utilizing the surrounding resources, forming a demonstration base of Sport tourism with Sport as the core. By summarizing and sorting out the list, it is found that the statistical quantity of artificially constructed "National Sport Tourism Demonstration Base" is 18, accounting for 60% of the total. And the statistical quantity of natural landscape "National Sport Tourism Demonstration Base" is 12, accounting for 40% of the total.

Sport event tourism is the tourism activity guided by Sport events, and it has the dual purpose of Sport and tourism, and achieves pleasant physical and mental effects through a variety of Sport means（Cao X,2012）. And "National Sport Tourism Quality Event" can be understood as a national level tourism activity guided by brand events with certain influence (Refer to Appendix 2 for more details).

### 3.2.2 Spatial Distribution of "Demonstration Base" and "Quality Event"

#### (1) Provincial Scale Analysis

Using Quantities in ArcGIS10.2 for visualization, the distribution of "demonstration base" and "quality event" is obtained, provinces with the largest number of "demonstration bases" and "quality events" are: Jiangsu Province and Xinjiang Uygur Autonomous Region with the number of 4, next is Shandong, with the number of 3, except Tibet Autonomous Region, Qinghai Province and Liaoning Province only have number of 1, the rest provinces have 2 "demonstration bases" and "quality events".

Using the Average Nearest Neighbor tool of Spatial Statistics Tools in ArcGIS10.2 software, it is concluded that, the average proximity index of the total number of "demonstration bases" and "quality events" is 0.646074, point elements have three spatial distribution types: Clustered, Random and Dispersed, and the output result of "demonstration base" and "quality event" is clustered.

#### (2) Kernel Density Estimate

Density analysis is used to calculate the spatial aggregation area. In this paper, kernel density estimate method is used. Kernel density estimate is used to calculate the density of points around each output raster pixel. Conceptually, each point is covered by a smooth surface, and a peak value of the surface value appears at the position of the point. As the distance from the point increases, the surface value decreases, when the distance from the point is equal to the search radius, the surface value is zero. More generally, it is considered that geographic events can occur anywhere in space, but the probability is different at different locations. The probability of event occurrence at point dense area is high, and probability of event occurrence at point sparse area is low (PhilippK.J,2012).

Kernel density estimate refers to the point density value at SS1, ..., Si, ..., Sns of n events distributed in the research range R is , its estimated value is denoted as , and the estimated point density at τ is expressed as:

$$\hat{\lambda}(S) = \sum_{i=1}^{n} \frac{1}{\tau^2} k\left(\frac{S - S_i}{\tau}\right)$$

In the formula, k ( ) represents Kernel weight function, $\tau > 0$, is called broadband, that is, the spatially extended width of the surface with S as its origin, the selection of $\tau$ value will affect the smoothness of the estimation of distribution density; S-Si is the distance between S and Si at density estimation point（Lu M, Yang L, Wang J,2017.

Conduct Kernel density analysis by using Kernel Density tool integrated in Spatial Analyst of ArcGIS10.2. After several experiments, the search radius is selected as 500km, by summarizing “demonstration base” and “quality event”, the Kernel density distributions are generated respectively, refer to Figure 1.

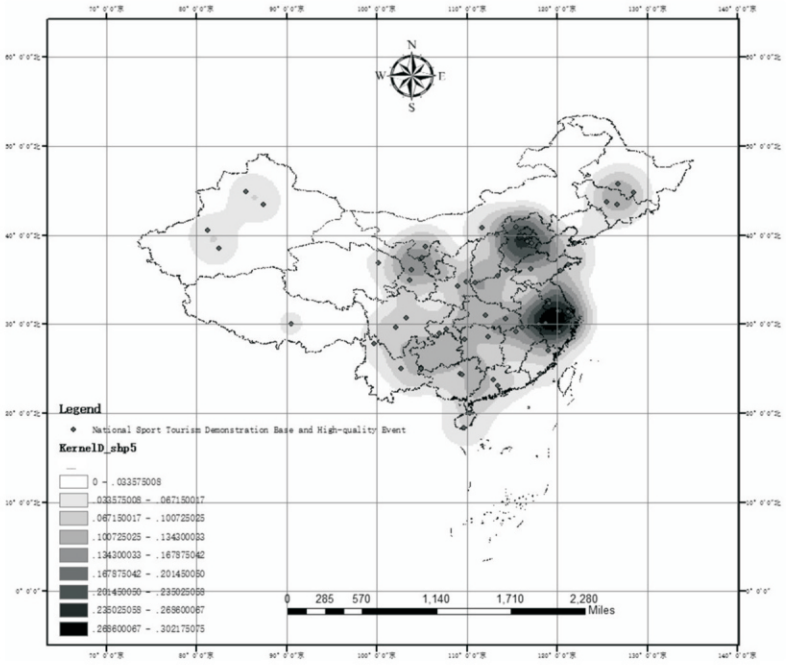


**Figure 1.** The Kernel Density Distributions Map by summarizing“National Sport Tourism Demonstration Base” and “National Sport Tourism Quality Event”

From Figure 1, it can be seen that “demonstration base” and “quality event” form two high-density core circles, Beijing-Tianjin-Hebei center ring and center ring in East China. By calculating the spatial distance between projects, the hosting site for “demonstration base” and “quality event” in Beijing, Tianjin, Hebei can be obtained, the geographical locations are close to each other, using ArcGIS spatial measurement function, none of them are more than 150km apart. At the same time, the distribution of “demonstration base” and “quality event” in Jiangsu, Zhejiang and Anhui is very concentrated, and the

number of projects is relatively large. The geographical spatial location of the project itself and the number of projects lead to the formation of the center ring.

The reason can be analyzed as follows: firstly, due to the advantages such as developed economy, large population and perfect tourism industry system for the above-mentioned areas, which is the core condition for the formation of tourism demonstration base. Secondly, the development and utilization of tourism resources in such areas are more reasonable and scientific, surrounding landscape and cultural environment enables the tourism industry has more significant advantages compared with other provinces and regions.

At the same time, the development of Sport events in Beijing, Tianjin and Hebei and East China is very rapid. The central representative cities of the two high density core circles are Beijing and Shanghai respectively, Beijing is the capital of China, the economic and political center, and Shanghai is the city with the highest GDP and the center of finance and trade in China（Niu Y, Rao S,2017. Not only they have developed traffic and rapidly developing society, they also have a high degree of internationalization and more developed and perfect stadiums and gymnasiums, for example, the national Sport tourism demonstration base created for hosting the 2008 Olympic Games - Beijing Olympic Park, and National Sport Tourism quality event - Shanghai Formula 1 Chinese Grand Prix, which are no doubt highlighting the solid strength for Beijing and Shanghai in organizing Sport events.

**(3) Analysis of Cold and Hot Spots**

Analysis of Cold and Hot Spots is different from Provincial Distribution Analysis, using Getis-OrdGi* index in Arcgis, this tool is used to identify spatial clustering with statistically significant high (hot) and low (cold) values（Wu Q, Li X , Zhang M,2017）. The local sum of one element and its adjacent elements shall be compared with the sum of all elements; when there is a great difference between the local sum and the expected local sum and it cannot be a random result, a significant z score will be produced, z score represents multiple of standard deviation（Cui X, 2014）. The higher the z score, the closer the high value (hot spot) clustering. The aggregation degree of “demonstration base” and “quality event” can be recognized intuitively, and the spatial distribution of hot and cold spots is also measured, the formula is (Li N, Li Y, Du Z,2013):

$$G_i^*(d) = \frac{\sum_{j=1}^{n} w_{ij}(d)x_j}{\sum_{j=1}^{n} x_j} \quad (1)$$

In formula 1, $w_{ij}$ is the spatial weight matrix, $x_j$ represents the quantity of "demonstration base" and "quality event" in all provinces and regions of the

country. In order to standardize it for computing purposes:

$$Z(G_i^*) = \frac{G_i^* - E(G_i^*)}{\sqrt{Var(G_i^*)}} \quad (2)$$

In formula 2, $E(G_i^*)$ and $V_{ar}($ ted values and variances of $G_i^*$, respectively. When $Z(G_i^*)>0$, it represents the quantity of "demonstration base" and "quality event" in region i mainly shows clustered distribution, that is, hot spot; when $Z(G_i^*)<0$, it represents the distribution value of "demonstration base" and "quality event" in region i shows spatial agglomeration with low values, that is, cold spot.

With county as the administrative unit, spatial correlation characteristics of "National Sport Tourism Demonstration Base" and "National Sport Tourism Quality Event" are drawn. (Refer to Figure 2).

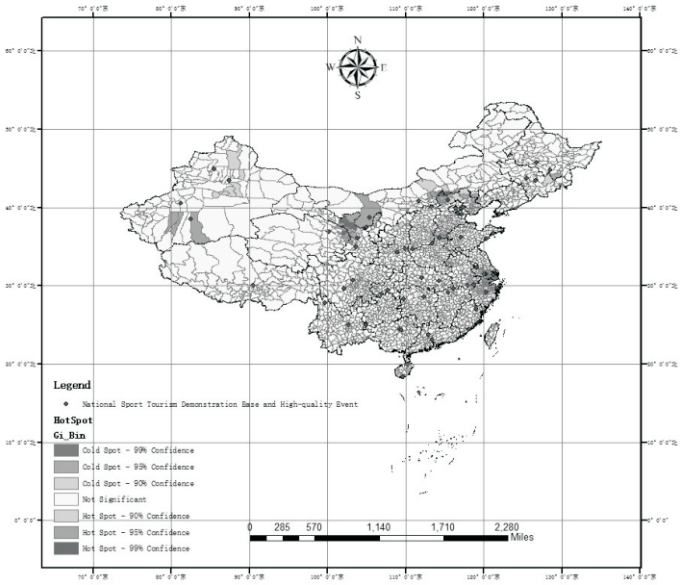


**Figure 2.** Cold Hot Spot Distribution Map of"National Sport Tourism Demonstration Base" and "National Sport Tourism Quality Event".

As shown in the figure, the spatial distribution of "demonstration base" and "quality event" is divided into four types: hot spot, sub-hot spot, sub-cold spot and cold spot. The red area is a hot spot area with large value and high hot spot. The hotspots of "demonstration base" and "quality event" appear in the following areas: Central Xinjiang, Tibet-Qinghai intersection area, Middle Gansu Province, Inner Mongolia-Beijing border area, Heilongjiang-Jilin Region, and Southern Anhui Province. The blue area is the dense area of low value cold

spots, it has a small quantity of "demonstration base" and"quality event", mainly includes the south-central part of Fujian and the central part of Guangdong. Generally speaking, the hot and cold spots of "demonstration base" and "quality event" have significant spatial differences, the overall distribution is divided by the Yangtze River, and it has distinct blocky distribution characteristics.

The red area or the light red area is the high concentration area of Sport tourism. "Demonstration bases" and "boutique Sport events" in these areas are far more than other areas. And there are rich Sport tourism resources in these areas, which can drive the development of the Sport tourism industry in the surrounding areas. These areas are called hot areas of Sport tourism. The blue area or the gray area is the low concentration area of Sport tourism. Excluding the original included items, there is no demonstration base or boutique Sport event in the surroundings. Hence, isolated areas are formed here. The probability of Sport tourism occurrence in the surroundings is low. These isolated areas are called cold areas of Sport tourism.

Through the analysis, distinct distribution characteristics in the host areas are found where "demonstration bases" and "boutique Sport events" exist, and Sport events launched in the hot areas have regional features, for instance, desert projects in the middle region of Xinjiang; ice and snow projects in the border area between Inner Mongolia and Beijing, and between Heilongjiang and Jilin; bicycle and mountain outdoor projects, etc. in the south area of Anhui. These areas combine unique natural resources (including desert, snow, forest, lakes, mountains, etc.) and local traditional Sport humanity resources which have spread for a long time, creating fitness and leisure clusters and industrial belts with regional characteristics (Guo X,2011). The distribution condition in the cold area reflects that Sport tourism resources in the south area are rare. There are two reasons for that. The first is the terrain factor, Plains and hills are distributed in the south area; it has small fluctuation, lower gradient, uneven ground and incessant low hills. Mountain projects require big topographical fluctuation, and bike projects require no many hills. Such a terrain is not suitable for launching the two kinds of Sport events. The second is the climate factor,The south area is dominated by tropical and subtropical monsoon climate; it is hot and rainy in summer, and it is mild and has less rain in winter. Under the influence of subtropical monsoon climate, it has high temperature in the whole year; its precipitation is above 800mm; the windward slope of mountains has more precipitation. The eastern coastal area is subject to the huge influence of typhoons in summer and autumn, and the temperature in winter is more than 0℃ (Zhang R, Hou Z,2004). These two factors lead to that water Sport, snow and ice Sport, aviation Sport, racing and motorcycles Sport, etc. are hard to be developed perennially in the south area,

except Hainan with a special geographical position. Thus, the central and south parts of Fujian and the middle part of Guangdong become the cold areas, which fully demonstrate the above two factors. The two provinces choose “marathon” as the regional boutique event, since marathon has few requirements for terrain and climate. In addition, marathon tends to publicize cities. It is not closely related to the development of local Sport tourism resources.

Aiming at the distribution condition in the cold areas, the researcher suggests strengthening in-depth digging and development of Sport tourism resources in the south area, pay attention to development of Sport humanity resources under the condition that the area is subject to the bad influence of terrain, climate and other natural factors, for instance, Lingnan national traditional Sport culture in Guangdong province, Sport culture of minorities in the Xiangxi region, Hu’nan province, MinnanSport culture in Fujian province.

### 3.2.2 Spatial correlation of Sport demonstration bases and boutique events

The establishment of “demonstration bases” and the development of “boutique events” are to resolve some issues caused by the rapid development of Sport tourism. There must a connection between the two. Taking the “demonstration bases” as the basic data, the researcher used buffer analysis in the Arcgis10.2 toolbar, set 50km as the buffer radius, then calculated the number of “boutique events” in the buffer area through the intersection analysis. The final study results are shown in Figure 3.

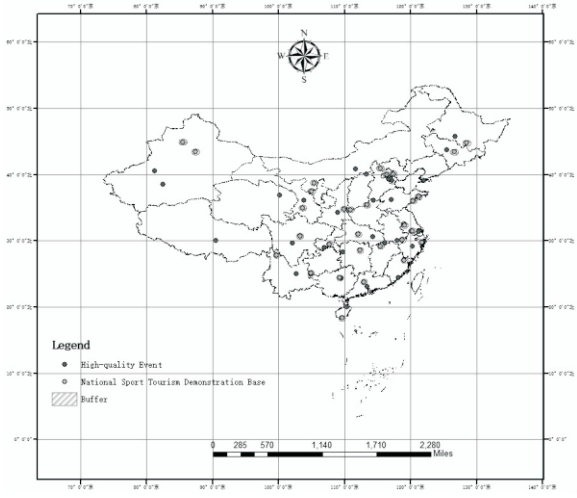


**Figure 3** National Sport Tourism demonstration bases and National Sport Tourism boutique events intersection

According to the figure 3, statistics have been made that there are 6 National Sport Tourism boutique events intersected with National Sport Tourism demonstration bases. And the corresponding National Sport Tourism demonstration bases are found and displayed in Table 1.

**Table 1** National Sport Tourism boutique events within 50km buffer area in National Sport Tourism demonstration bases

| National Sport Tourism boutique event | National Sport Tourism demonstration base |
|---|---|
| F1 Motorboat World Championship Liuzhou (China) Grand Prix | Baili Liujiang Sport Tourism Demonstration Base |
| International Mountain Tourism and Outdoor Sport Conference | Xingyi Municipal Wanfenglin Ecological Sport Park |
| "Not just cycling"· China Certification Competition of 24H Cycling around the Taihu Lake | Lihu National Sport Tourism Demonstration Base |
| Wuxi Marathon | Lihu National Sport Tourism Demonstration Base |
| National Desert Fitness Competition | Sha'potou National Sport Tourism Demonstration Base |
| Beijing International Long-distance Running Festival | Beijing Olympic Park |

Currently, only 18% in 33 National Sport Tourism boutique events is held in the National Sport Tourism demonstration bases. Such distribution is favorable to expand the covering area of Sport tourism. From Table 3, it can be known that "boutique events" developed in the demonstration bases usually have a wide covering range, for example, outdoor sport in the ecological park or cycling around the lake, etc. In comparison with other races, boutique events have a more extensive influence. Its driving effect is not just limited to "demonstration bases". It doesn't impede or influence the development of the Sport tourism industry in the whole region.

Traffic is the most important factor among the components of a tourist destination. The whole tourism traffic system includes roads, terminal facilities, vehicles, etc.(Ding L, Wu X ,Ding J,2006). "Demonstration bases" and "boutique events" are respectively established and held in the place with convenient traffic. The researcher made the buffer analysis of road traffic (including expressway, level-A roads, level-B roads) and railway traffic (including five vertical and three horizontal main trunk lines) through Arcgis10.2 toolbar, set 10km, 15km, 20km and 30km as the buffer radius through experiments, and derived Figure 4.

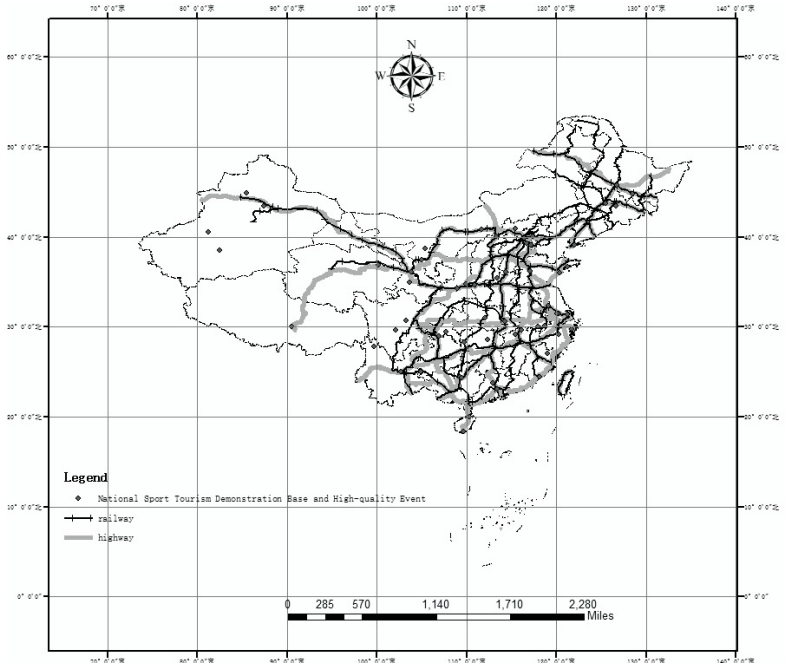


**Figure 4.** Traffic intersection map of National Sport Tourism demonstration bases and National Sport Tourism boutique events

Then, the researcher calculated the number of "demonstration bases" and "boutique events" in the traffic buffer area through the intersection analysis. And the related research results are shown in Table 2.

**Table 2.** Intersection analysis of "National Sport Tourism demonstration bases" & "National Sport Tourism boutique events" and traffic modes

| Traffic mode | 10km | 15km | 20km | 30km |
|---|---|---|---|---|
| Road (Unit: one) | 36 | 42 | 46 | 52 |
| Railway (Unit: one) | 27 | 32 | 39 | 45 |

From the table, it can be seen that the number of "demonstration bases" and "boutique events" are more than half within 10km in terms of roads and it is 82.53% within 30km; the number of "demonstration bases" and "boutique events" nearly reach half within 10km in terms of railway, and it is 71.42% within 30km. The establishment of "demonstration bases" and launching of "boutique events" are largely subject to the influence of traffic. Traffic is the most basic requirement for establishing a demonstration base or holding a race. Effectiveness, safety and rapidity of the traffic system will directly affect the emergence, evolution and expansion of a tourism destination. Completeness of traffic facilities and rationality of traffic stations, humanity of

basic traffic facilities, and the close combination of new technologies and the traffic market will have a positive and long influence on the sustainable development of future Sport tourism （Bian X, Wang S,2003）. In a word, the distribution of natural landscape and humanity landscape resources and economic differences among regions were taken into consideration in establishment of "demonstration bases" and launching of "boutique events". It hopes to promote the project development and drive the development of Sport tourism in the whole region through the market demands. The nation confirms that "Sport tourism demonstration bases" and "Sport tourism boutique events" are the products of governmental macro-economic control. The government emphasizes the regional coordinated development and orderly layout. Under the condition with convenient traffic and perfect basic services, projects should be launched according to the regional characteristics, and the suitable development mode should be adopted.

**Conclusion**

**(1)** Statistical data show that Jiangsu Province and Xinjiang Uygur Autonomous Region have the most "demonstration bases" and "boutique events", and they respectively have four items. "Demonstration bases" and "boutique events" are distributed in the aggregation mode. Through research, it is found that due to establishment of "demonstration bases" and holding of "boutique events", two high-density core circles are formed. And they are Beijing-Tianjin-Hebei core circle and east China core circle. The hot areas of "demonstration bases" and "boutique events" include the middle part of Xinjiang, border area between Tibet and Qinghai, middle part of Gansu, border area between Inner Mongolia and Beijing, as well as between Heilongjiang and Jilin, and south area of Anhui. The cold areas include middle and south part of Fujian and central part of Guangdong. 6 "boutique events" were held in the "demonstration bases". "Demonstration bases" and the sites where "boutique events" are distributed, have convenient traffic. Their coverage rate within 30km in terms of road is 82.53%, and it is 71.42% within 30km in terms of railway.

**(2) Necessary conditions for establishing "National Sport Tourism demonstration bases" and holding "National Sport Tourism boutique events" include "traffic", "natural ecology" and "cultural environment", "infrastructure" and public services", Sport culture, and policies and regulations. At the present stage, planners of demonstration bases and boutique events mainly pay attention to outdoor mountain Sport, aquatic Sport and ice snowSport.**

**(3) With the rapid development of economics, steady improvement of**

**people's living quality and improvement of people's material conditions, healthy development of people's bodies and hearts is attached great importance. People's demands for Sport and tourism and leisure rise accordingly. Single Sport project can't meet the demands of tourists. The policy related to establishment of "National Sport Tourism demonstration bases" puts forward that the government will increase investment in this field, so as to satisfy tourists' demands. Low-level Sport events can't attract more tourists. Due to the issuance of the policy on "National Sport Tourism boutique events", Sport events' exposure rate increases, more overseas tourists will be attracted to China. It is required to pay attention to the promotion mode of "National Sport Tourism boutique events". It is necessary to reduce competitiveness of National Sport Tourism boutique events, increases a project's entertainment and fitness values, so that the masses can take part in it, thus driving the development of the local tourism industry.**

## References

Bian X, Wang S.(2003).Exploration and Analysis of the Role of the Traffic System in the Development of the Tourism Destination. *Journal of Anhui University*,(6):132-138.

Cao X.(2012).Research on basic theories of Sport events tourism. *Journal of Zhejiang Normal University (Natural Science Edition)*,35(2):221-225.

Chen C.(2018)Study on the combination development path of Sport tourism and white tea industry - taking Liyang as a case.*Fujian Tea*,40(7):125.

Cui X.(2014). Spatial pattern and spillover effect of land use efficiency. *Economy and Management*,28(5):19-25.

Daniels MJ.(2007).Central place theory and sport tourism impacts. *Annals of Tourism Research*, 34(2):332-347.

Ding L, Wu X ,Ding J.(2006).Construction and Application of the Urban Tourism Competitiveness Evaluation Index System. *Economic Geography*,(3):511-515.

Guo X.(2011).Research on the Interactive Relationship between Leisure Sport and Leisure City Construction - Taking Hangzhou, Hanghai and Chengdu as examples. *Journal of Nanjing Sport Institute (Social Science Edition)*, 25(5):28-31.

Jiang G.(2013).Discussion on docking and fusion of Sport industry and tourism industry. *Commercial Times*,(34):129-130.

Kang Y, Huang H.(2018).Temporal and spatial evolution characteristics of Sport tourism scenic spots-taking Jiangsu, Zhejiang and Shanghai as examples. *Journal of Wuhan Institute of Physical Education*,52(2):36-42.

Li N, Li Y, Du Z.(2013).Influence of location on the development of villages and towns

and spatial difference analysis - taking Chang'an district in the Xi'an city as an example. *Journal of Xianyang Normal University*,28(2):42-47.

Lu M, Yang L, Wang J.(2017). Research on point group density mapping application based on estimation of nuclear density.*Engineering of Surveying and Mapping*,(4):70-74+80.

Malchrowicz-MoskoE, Poczta, J.(2018).A small-scale event and a big impact-is this relationship possible in the world of sport? The meaning of heritage sporting events for sustainable development of tourism-experiences from Poland.*Sustainability*,10(11).

Niu Y, Rao S.(2017).Research on regional distribution characteristics of Sport events held and undertaken by China. *Journal of Xi' an Physical Education University*,(6):1-8.

PhilippK.J.(2012).Beauty of data: data analysis with open sourcetools.*Tsinghua University Press*.

Ratkowski, W, Ratkowska. J (2018).Sport events as a determinant of sport tourism. *Baltic Journal of Health and Physical Activity*,10(1):86-94.

Wang D,LuL, Liu C.(2002).Sport tourism market characteristics and productsdevelopment. *Tourism Journal*,(1):49-53.

Wu Q, Li X , Zhang M.(2017).Research on spatial pattern and influence factors of leisure agriculture demonstration sites of Hubei province. *Regional Research and Development*,36(1):158-163.

Yan H, Zheng J, Ge X.(1999).Research on GIS applications.*Journal of Zhejiang Silk Institute of Technology*,(01):39-42.

Zhang R, Hou Z.(2004).Explore the fusion of nature and humanity from the perspective of the mountain environment. *Low-temperature Architecture Technologies*,(04):24-25.

Zhou P, Bai J.(2018).Mechanism and effect of combination of traditional national festival Sport and tourism industry-taking Nadam, Inner Mongolia as a case.*Journal of Xi' an Physical Education University*,35(1):82-87.

## Appendix

Appendix 1 Lists of "National Sport Tourism demonstration bases" and "National Sport Tourism boutique events"

| Province (Region, City) | National Sport Tourism Demonstration Base | National Sport Tourism Boutique Event |
|---|---|---|
| Beijing | Beijing Olympic Park | Beijing International Long -distance Running Festival |
| Tianjin | Jizhou (Tianjin) International Skiing Park | Haihe (Tianjin) International Dragon Boat Competition (Haihe Dragon Boat Festival) |
| Hebei | Zhangjiakou Municipal Wanlong Skiing Park | Langfang (China) · Dishili Kite Festival & National Kite Championship |
| Shanxi | Shengtian Lake Scenic Spot of Ruicheng, Yuncheng City | Activity of Datong National W alking around the Ancient City |
| Inner Mongolia | Off-road e Group Alashan Dream Desert Auto and Aviation Paradise Scenic Spot | Inner Mongolia (International) Equestrian Festival |
| Liaoning | | Dalian International Marathon Race |
| Jilin | BeidahuSport Tourism Econo mic Development Zone | Jingyuetan (Changchun) "Vasa" International Skiing Festival |
| Heilongjiang | YaBuLi Ski Tourism Resort | Harbin "Huayi Cup" Sport Dance (International Standard Dance) International Open Tournament |
| Shanghai | | F1 China Grand Prix |
| Jiangsu | 1. Lihu National Sport Tourism Demonstration Base<br>2. HongshanSport Resort | 1. Wuxi Marathon<br>2. Not just riding · China Certification Competition of 24H Cycling around the Taihu Lake |
| Zhejiang | Dongqian Lake (Ningbo) Tourism Resort | Hengdian Marathon |
| Anhui | Hui-Hang Ancient Road Scenic Spot of Xuancheng City | Mount Huangshan (Yixian County, China) International Mountain Bike Festival |
| Fujian | BaishuiyangSport Tourism Demonstration Base of Fujian Province | Xiamen International Marathon Race |
| Jiangxi | LushanXihai Scenic Spot | International Competition of Cycling around the Poyang Lake |
| Shandong | 1. Qingdao Olympic Sailing Center<br>2. Haiyang National Beach Sport Demonstration Base | Taishan International Mountaineering Competition |
| Henan | Yuntai Mountain Scenic Spot of Jiaozuo City | Anyang Aviation Sport Culture Tourism Festival |
| Hubei | Flying Lover Town, Jingmen City | Wuhan International River Crossing Festival |
| Hunan | Yiyang Olympic Park | Take the road on which the Red Army had traveled · Crossing the Xiangxi by Hiking |
| Guangdong | Gulong Gorge Original Eco -tourism Spot in Qingyuan City | Guangzhou Marathon |
| Guangxi | BailiLiujiangSport Tourism Demonstration Base | F1 Motorboat World Championship Liuzhou (China) Grand Prix |
| Hainan | Wu Zhi Zhou Island Tourism Spot in Sanya City | International Road Cycling around Hainan Island |
| Chongqing | Karst Tourism Spot in Wulong District | Wansheng (Chongqing, China) "Black Valley Cup" International Badminton Challenge & China Badminton Association Point Race |

| | | |
|---|---|---|
| Sichuan | Xiling Snow Mountain Scenic Sp ot in Chengdu City | 100km International Outdoor Mountain Sport Challenge Around MinyaKonka Mountain in Tibetan Autonomous Prefecture of Garzê of China |
| Guizhou | Wanfenglin Ecological Sport Park in Xingyi City | International Mountain Tourism and Outdoor Sport Conference |
| Yunnan | Meili Snow Mountain in Diqing Tibetan Autonomous Prefecture | Colorful Yunnan Gryffindor International Bicycle Festival |
| Tibet | | Tibet(China) Mountaineering Conference |
| Shaanxi | Tongzhou Lake Scenic Spot, Dali County, Weinan City | Xi'an City Wall International Marathon |
| Qinghai | | International Road Cycling around Qinghai Lake |
| Gansu | Zhiliguan National AAAA Sport Tourism Scenic Spot | Lanzhou International Marathon |
| Ningxia | Shapotou National Sport Tourism Demonstration Base | National Desert Fitness Competition |
| Xinjiang | Xinjiang Silk Road International Resort | China Ring Tower (International) Rally |
| Xinjiang Construction Corps | Junyan Desert Ecological Tourism Scenic Spot and Desert Off-Road Base | "Taklimakan Desert Gate" Off -Road Challenge in Alaer City |

**Appendix 2 Classification list of "National Sport Tourism Boutique Tournament"**

| Category | Number | Proportion |
|---|---|---|
| Marathon and other track and field projects | 9 | 28% |
| Aquatic Sport project | 3 | 9% |
| Traditional National Sport Project | 2 | 6% |
| Ice and snow Sport project | 1 | 3% |
| Dance | 1 | 3% |
| Car and motorcycle racing | 3 | 9% |
| Bike | 6 | 18% |
| Outdoor mountain Sport | 6 | 18% |
| Badminton | 1 | 3% |
| Aviation Sport project | 1 | 3% |

## About the Authors

**Yi Fan Zuo**, master student at Shenzhen University. He specializes on Sport tourism and intangible cultural heritage tourism.E-mail: zuoyifan2018@163.com

**Xiao Rong Chen,** Ph.D., Professor, Dean of the Research Institute for Exercise and Health Science Shenzhen University, Managing Director of Chinese Society for SportHistory. She is the corresponding author of this article and he engaged in researches onSport tourism, intangible cultural heritage tourism, etc. email: cxr819@163.com